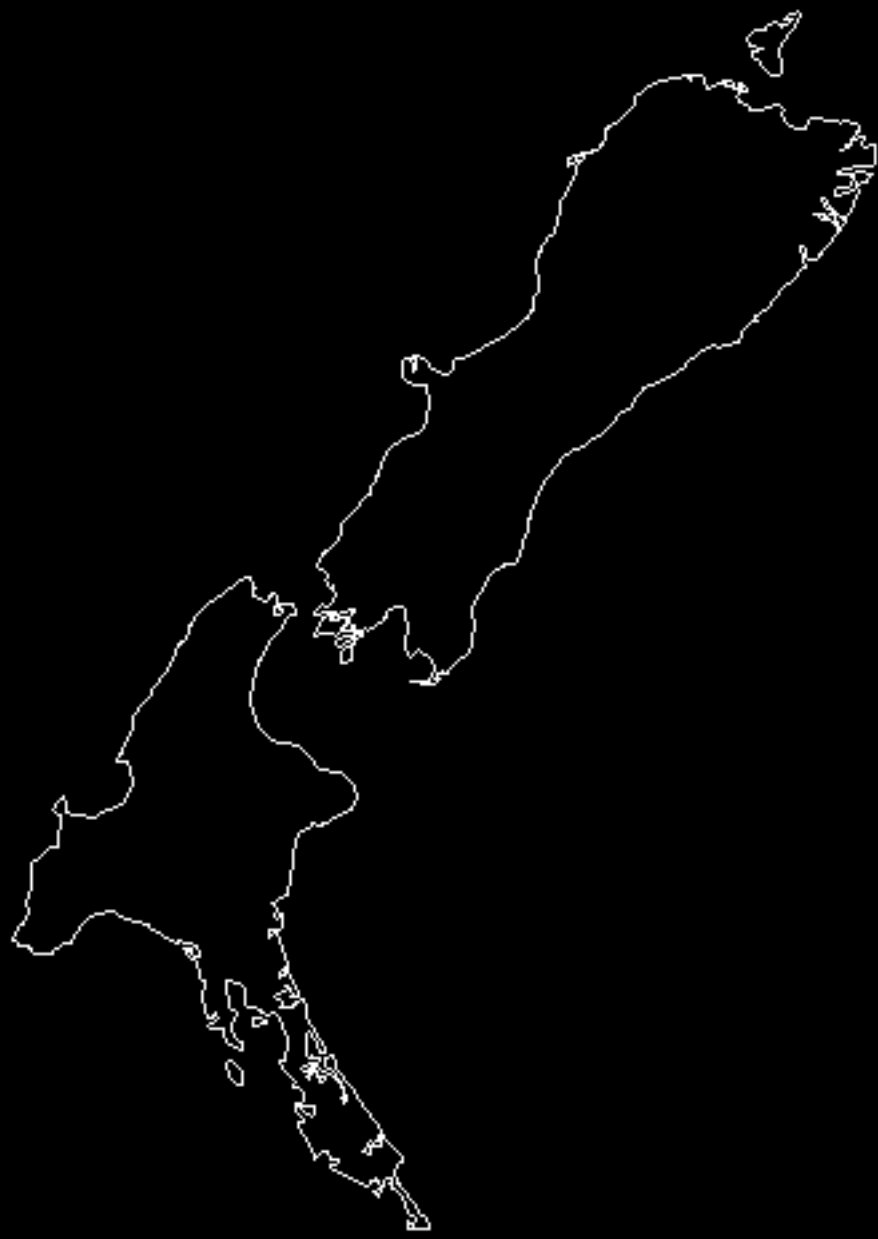


Cartoficcións

Julian Oliver
Slides, INCLUSIVA-NET Keynote
Madrid 2008

Cartography: the most influential artform?

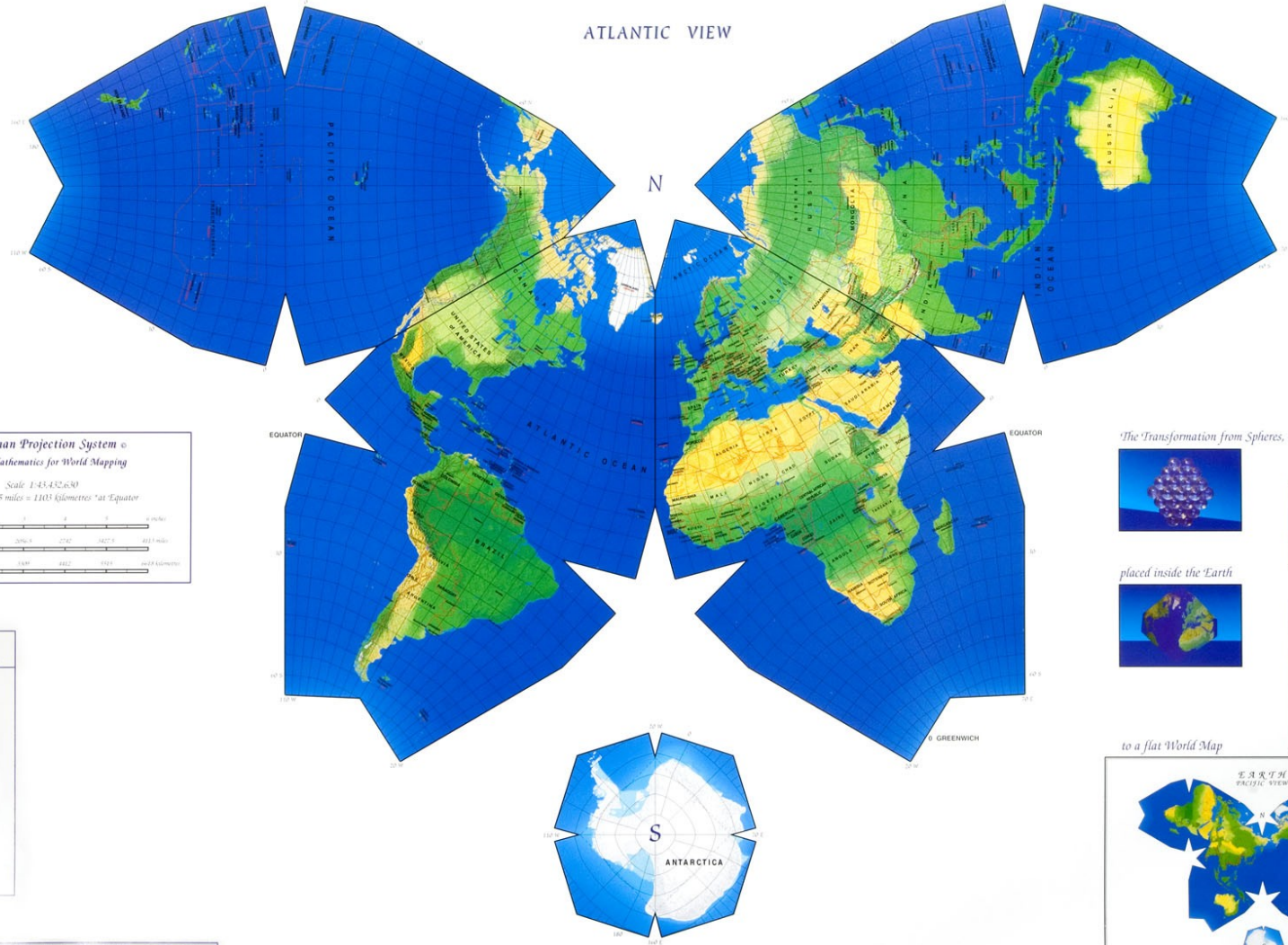






EARTH

ATLANTIC VIEW



Waterman Projection System
A New Mathematics for World Mapping

Scale 1:43,432,630
 1 inch = 685.5 miles = 1103 kilometres "at Equator"

Colour Code
 Atmos View from Orbit
 Cloud-Free Summer Conditions

Blue	Oceans
Dark Blue	Lakes
Light Blue	Shorelines
Green	Rain Forests
Light Green	Sub-Tropical Forests
Yellow-Green	Snow-capped Mountains
Yellow	Temperate Forests & Tundra
Orange	Savannah & Prairies
Light Orange	Deserts
White	Polar Snow
Light Blue	Permanently Ice Shelf
White	Glaciers
White	Water Mountains
White	Arctic Boundaries
Star	Capital Cities
Star	Major Cities
Star	Small Cities

The Most Accurate & Realistic World Map for Relative Size, Shape, & Position of All Lands!

The Transformation from Spheres, Closely-Packed to a Polyhedral globe

placed inside the Earth

then unfolded

to a flat World Map

EARTH ATLANTIC VIEW

Population Distribution 1/100th of Humanity



All maps are a distortion of reality, a biased view of the world.

1. All maps are smaller than the reality they represent.

2. Map symbols necessarily exaggerate and generalise information, often at the exclusion of other information

3. Projections

All maps require imagination to be interpreted

The imaginary eye of the Çatalhöyük, Anatolia.

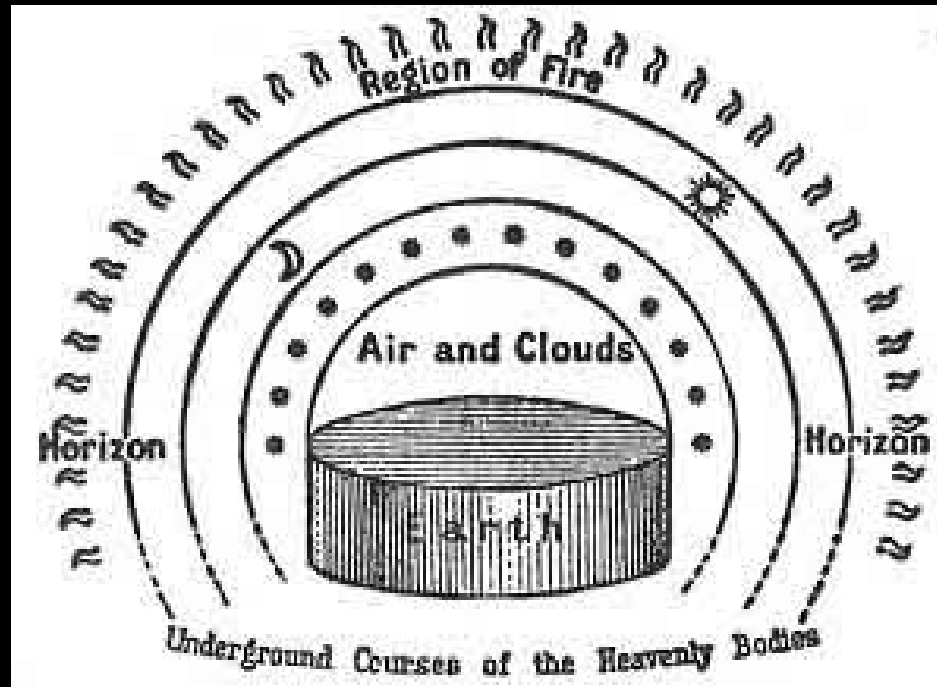


Madrid

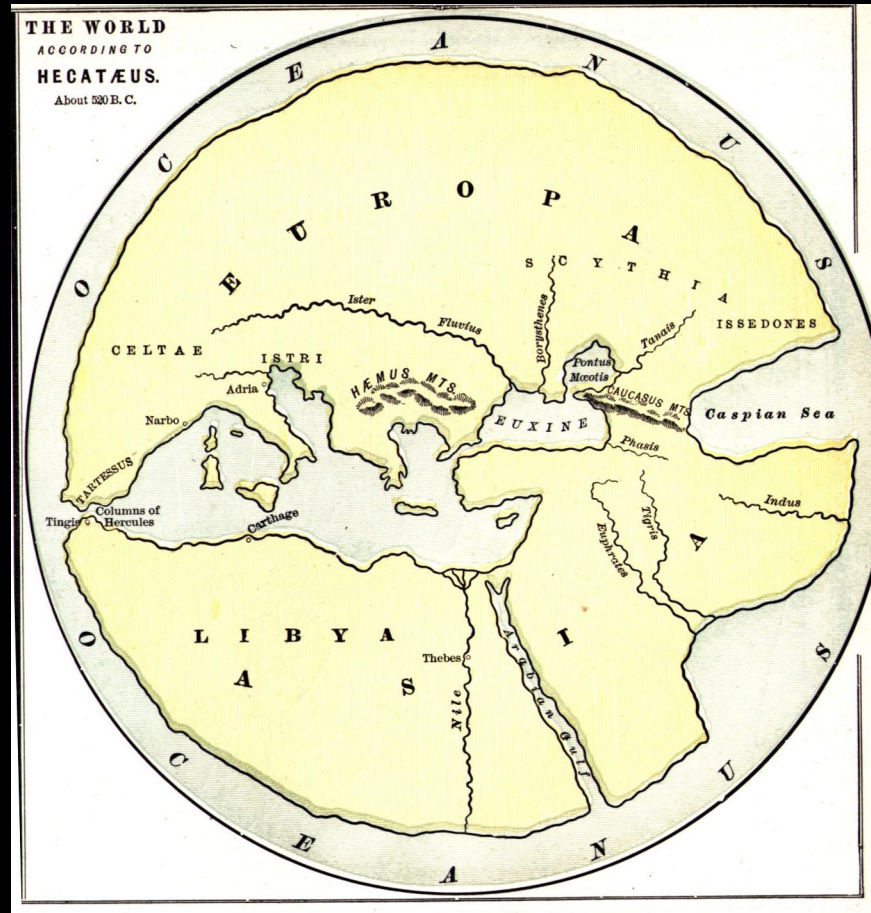


What shape is the world?

Anaximander (c. 611 – 546 BCE)

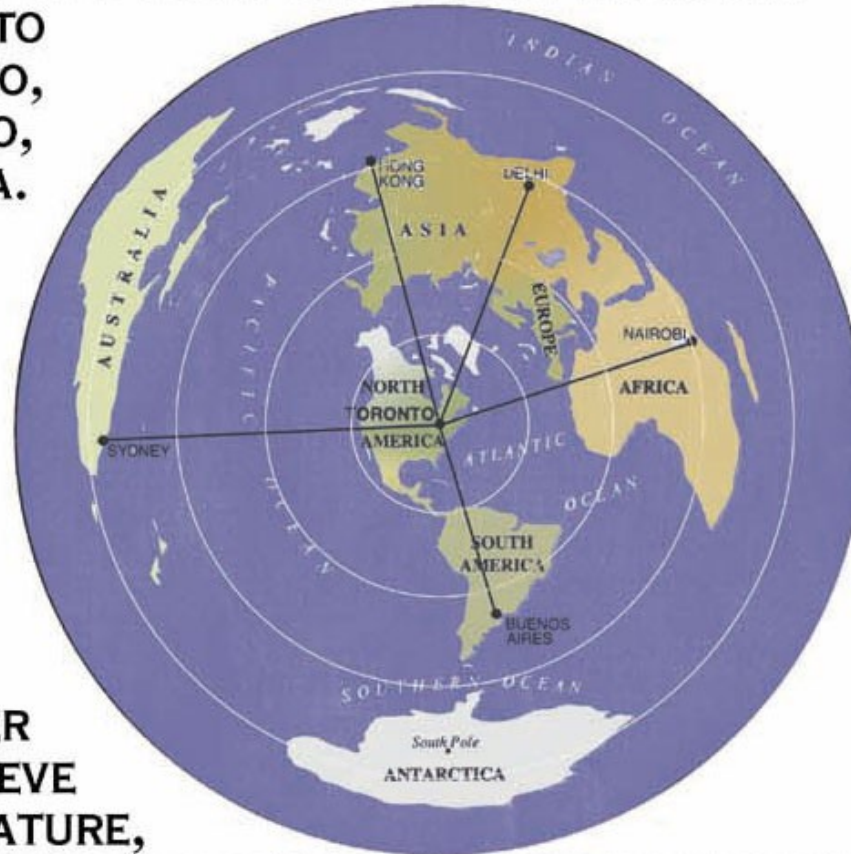


Hecataeus (c. 550–c. 476 BC)



Subject-centered worlds

GUELKE'S EQUIDISTANT PROJECTION TELLS YOU EXACTLY HOW FAR IT IS FROM ANYWHERE ON EARTH TO TORONTO, ONTARIO, CANADA.

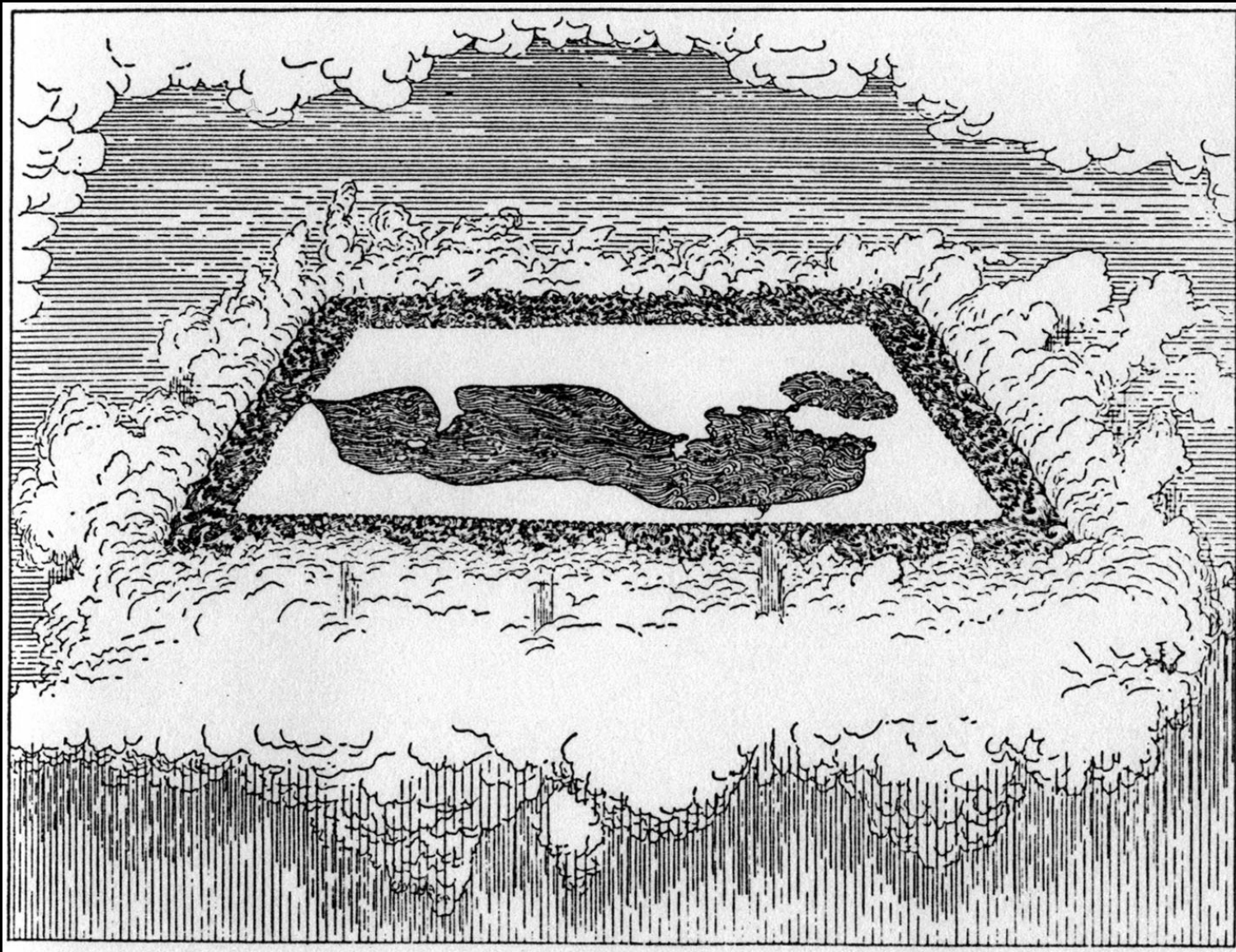


IN ORDER TO ACHIEVE THIS FEATURE, YOU NEED TO SACRIFICE SOME SHAPES AND SIZES.

www.diversophy.com/guelke.htm

©Leonard Guelke. All rights reserved

Anaximenes (c. 585 BC–c. 525 BC)



Pythagoras (580 and 572 BC)

“It's probably a sphere and quite hot in the middle”

Aristotle (384 BC – 322 BC)

“I think he's right.”

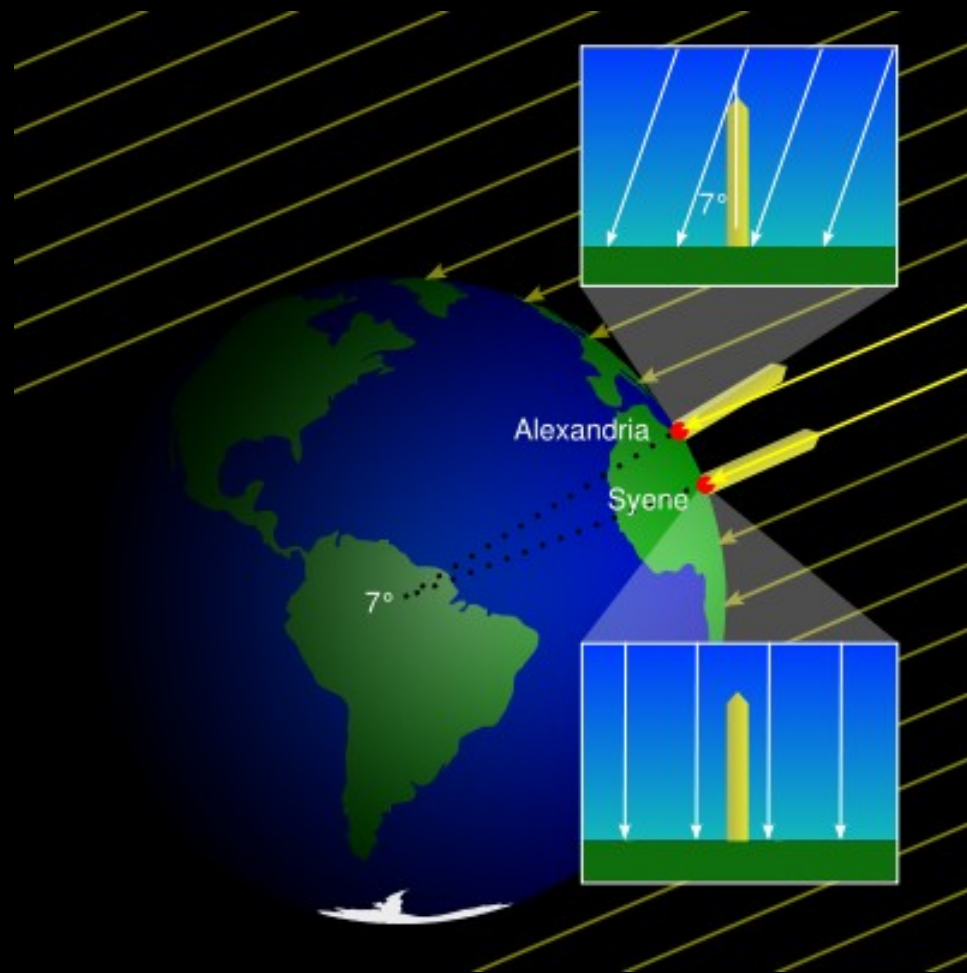
Eratosthenes (276 BC - 194 BC)

Circumference from a shadow

Science of Geography given a mathematical basis

Earth got an 'up'

Longitude, latitude, "geography"

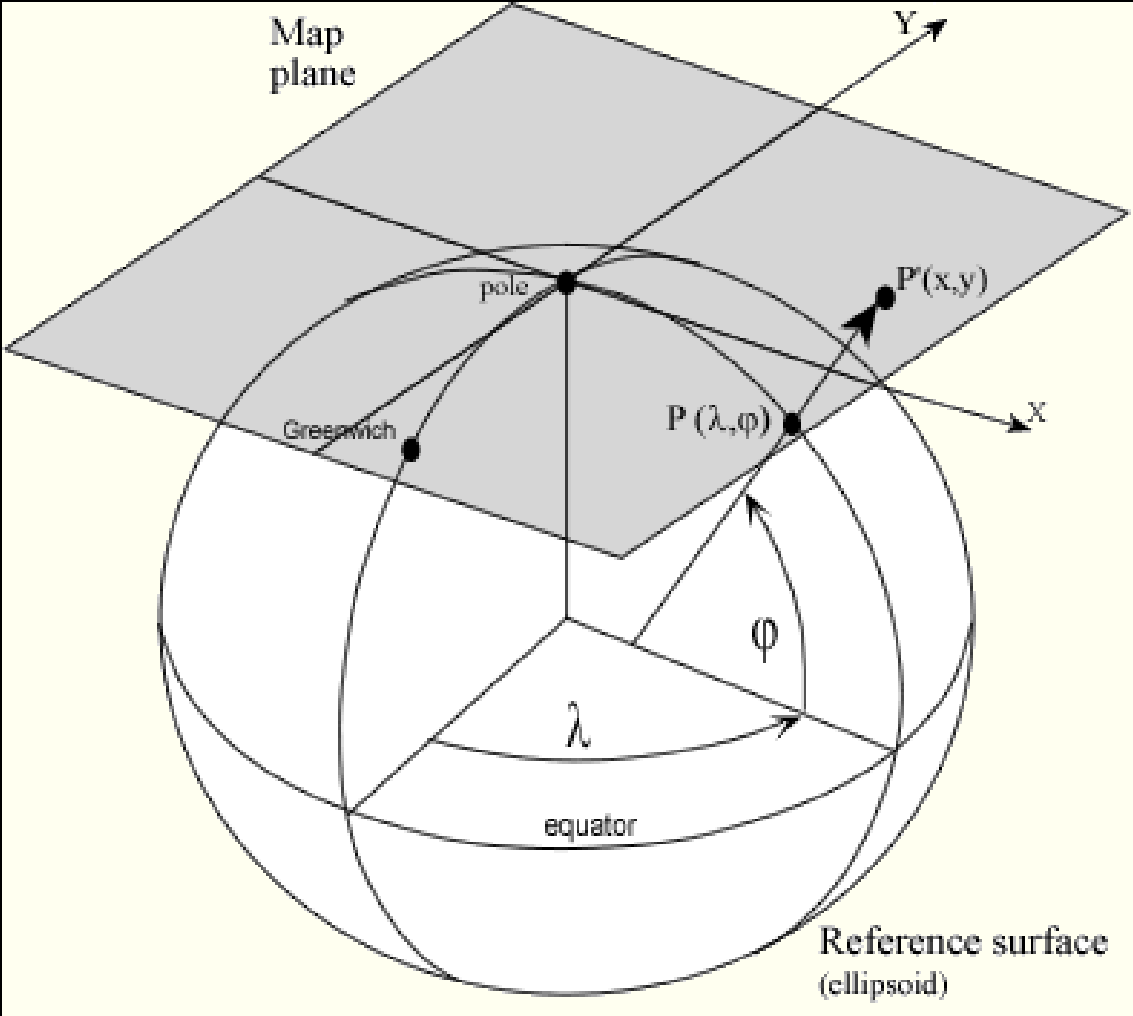






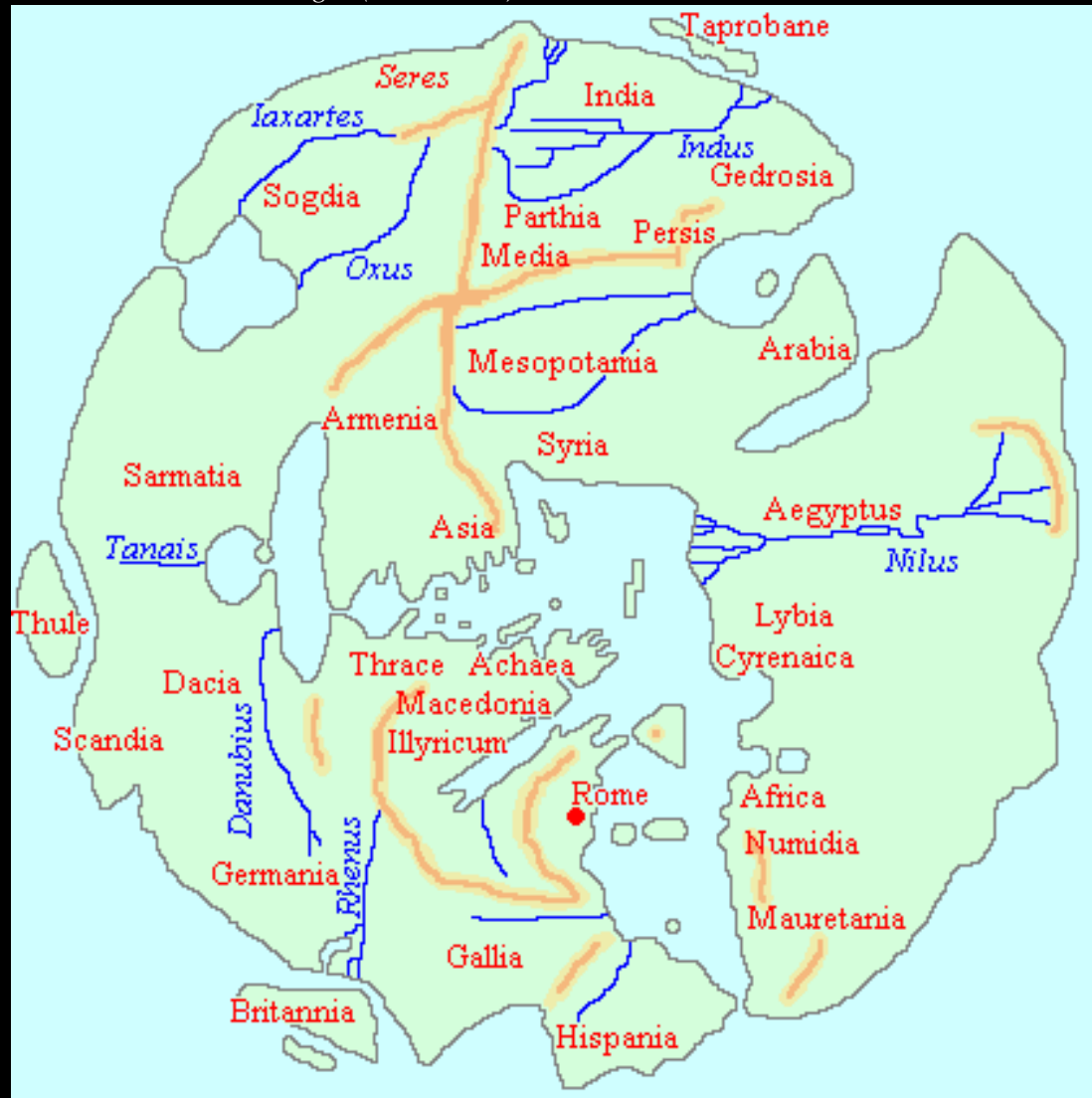
Ptolemy 83 CE died 161 CE.





Agrippa (c. 63 BC–12 BC)

the Agrippa map, by the Roman and right-hand man of Octavian, Marcus Vipsanius Agrippa. Agrippa map was carved into marble and set up in the Porticus Vipsania, not far from the Via Flaminia. (The monument was finished by Agrippa's sister Polla.). Reconstructed by Pliny the Elder and German, Konrad Peutinger (1465-1547).











A T-O
World



The Hereford Map:



The Hereford Mappa Mundi

By kind permission of The Dean and Chapter of Hereford Cathedral and the Hereford Mappa Mundi Trust

From Naomi Reed Kline, *Maps of Medieval Thought: The Hereford Paradigm*
(The Boydell Press, 2001)

Hereford Map: the world is frightening outside of Europe.

From Naomi Reed Kline, *Maps of Medieval Thought: The Hereford Paradigm*
(The Boydell Press, 2001)



* Bestiary 'Animals'
† Mythical 'Animals' (non-bestiary)
‡ Other

- 1* **Aualerion** (Alerion): Inscription: *Au[is]alerion · par in mundo · (Alerion. There is one pair in the world.)*
- 2* **Lacertus** (Lizard): Inscription: *Lacertus · (Lizard.)*
- 3* **Spitacum** (Parrot): Inscription: *Solinus · yndia mittit auem spitacum [=psittacum] · colore uiridi · torque puniceo · (Solinus. India produces the parrot, a green bird with a purple collar.)*
- 4* **Elephantes** (Elephants): Inscription: *Yndia mittit eciam elephantes maximos · quorum dentes ebur esse creditur · quibus yndei turribus in positis in bellis utuntur · (India also sends out the biggest elephants, whose teeth are believed to be ivory and which the Indians make use of in war by putting turrets on them.)*
- 5* **Dracones** (Dragons): Inscription: *Dracones · (Dragons.)*
- 6‡ **Marsok** (Marsok): Inscription: *· Marsok bestia · transmutata · (The Marsok, a transforming beast.)*
- 7* **Phenix** (Phoenix): Inscription: *Phenix auis · Hec quingetis [quingentis] uiuit annis · est autem unica auis in orbe · (The phoenix bird lives for 500 years and is the only one of its kind in the world.)*
- 8* **Cocadrillus** (Crocodile): Inscription: *Cocadrillus (Crocodile.)*
- 9* **Satirii** (Satyrs): Inscription (partially unreadable): *Satirii · (Satyrs.)*
- 10* **Eale** (Yale): Inscription: *Solinus · Eale nascitur in yndia · equino corpore · cauda elephanti · nigro colore · maxillis caprinis · preferens cornua ultra cubitalem longa · neque enim rigent · sed mouentur · ut usus exigit preliandi · quorum cum uno pungnat · alter replicat · (Solinus. The eale is born in India, with a horse's body, an elephant's tail, black in color, with a goat's jaws, bearing horns more than a cubit in length; they are not stiff, but move as use in fighting demands; it fights with one, and folds the other back.)*
- 11† **Fauni** (Centaurs): Inscription: *Fauni · semi caballi homines · (Centaurs are half horse, half human.)*
- 12† **Sphinx** (Sphinx): Inscription: *spinx auis est penna · serpens pede · fronte puella · (The Sphinx, feathers like a bird, legs like snakes, the face of a girl.)*
- 13‡ **Cirenus** (Cirenus): Inscription: *Auis cirenus · (Cirenus Bird.)*
- 14* **Salamandra** (Salamander): Inscription: *Salamandra · dracona uenenosa · (Salamander, a poisonous snake.)*
- 15* **Mandragora** (Mandrake): Inscription: *Mandragora erba mirabiliter uirtuosa (Mandrake, a wonderfully powerful plant.) The mandrake, although a plant, is described in the bestiary.*
- 16* **Rinosceros** (Rhinoceros): Inscription: *Solinus · In yndia nascitur Rinosceros cui color buxeus · in naribus cornu unum mucronem excitat · que aduersus elephantes preliatur · par ipsis in longitudine · sed breuior cruribus · naturaliter aluum petens · quam solam intelligit ictibus peruia · (Solinus. The Rhinoceros is born in India. Its color is that of the boxwood tree. On its nose is a single horn which it thrusts upward like a sword point when fighting against elephants. Because it is the same length but has shorter legs it naturally attacks the whites of the*

- eyes which it knows are the only things vulnerable to its blows.)
- 17* **Monoceroti** (Unicorn): Inscription: *Ysidorus in libro XII · ethimologiarum capitulo · ii · Sicut asserunt qui naturas animalium scripserunt · Huic monoceroti uirgo puella proponitur: que uenient: sinum aperit · in quo ille omni ferocitate deposita · capud [=caput] ponit · sic que soporatus uelud [=uelut] inermis capitur · (Isidore in book XII of the *Etymologiae*, chapter ii. Just as they have affirmed who have recorded the characters of animals: before this unicorn is set a virgin girl, who opens her lap to it as it approaches, on which, with all ferocity laid aside, he puts his head, and thus made sleepy is taken as if harmless.)*
 - 18† **Mermaid** (Mermaid): No inscription
 - 19* **Miles Maris** (Sea Soldier): Inscription: *miles · maris (Sea Soldier.) The image appears as a 'sword' fish. The swordfish appears in the bestiary.*
 - 20* **Basiliscus** (Basilisk): Inscription: *Basiliscus · semipedalis · est albis lineis maculatus · (The Basilisk is half-footed and marked with white stripes.)*
 - 21* **Leopard** (Leopard): Inscription: *Leopard · (Leopard.)*
 - 22* **Leo** (Lion): Inscription: *Leo · (Lion.)*
 - 23* **Formice** (Ants): Inscription: *Hic grandes formice[s] · auream sericam [=seruant] arenas · (Here giant ants guard sands of gold.)*
 - 24* **Buglossa** (Buffalo): Inscription: *Buglossa · (Buglossa (Ox-tongue).)*
 - 25‡ **Genetis** (Genet): Inscription: *Genetis · (Genet.)*
 - 26* **Scorpio** (Scorpion): Inscription: *Scorpio · (Scorpion.)*
 - 27* **Ursus** (Bear): Inscription: *Vrsus · (Bear.)*
 - 28* **Simia** (Ape): Inscription: *Simea · (Ape.)*
 - 29* **Ostricius** (Ostrich): Inscription: *Ostricius · capud auct corpus gruis · pedes utiuli · ferrum comedit · (The Ostrich has a head like a goose, a body like a crane, and feet like a calf. It eats iron.)*
 - 30* **Linx** (Lynx): Inscription: *Linx uidet per muros · et mingit lapidem nigrum · (The Lynx sees through walls and pisses black stone.)*
 - 31† **Velus aureum** (Golden Fleece): Inscription: *velus aureum · propter quod iason · a pelo [=Pelia] rege · missus est · (The Golden Fleece for which Jason was sent by king Pelias.)*
 - 32* **Pines** (Pines): Inscription: *Pines · (Pines (Pica?))*
 - 33‡ **Tigolopes** (Tigolopes): Inscription: *Tigolopes · (Tigolopes.)*
 - 34* **Bonnacon** (Bonnacon): Inscription: *In frigida nascitur animal qui dicitur bonnacon · capud taurinum · iuba equina · cornua multiplici flexu · profluoio citi uentris fimum egerit · per longitudinem trium iugerum · cuius ardor quicquid [=quidquid] attigerit · adurit · (In Phrygia there is born an animal called bonnacon; it has a bull's head, horse's mane and curling horns; with a discharge from its swift gut it emits dung over an extent of three acres which burns whatever it touches.)*
 - 35* **Griphes** (Griffins): Inscription: *Griphes capitibus et alis aquileas · corpore leones imitantur uolando · bouem portabunt · (Griffins, their heads and wings are like those of eagles, their bodies like lions', they can carry an ox as they fly.)*

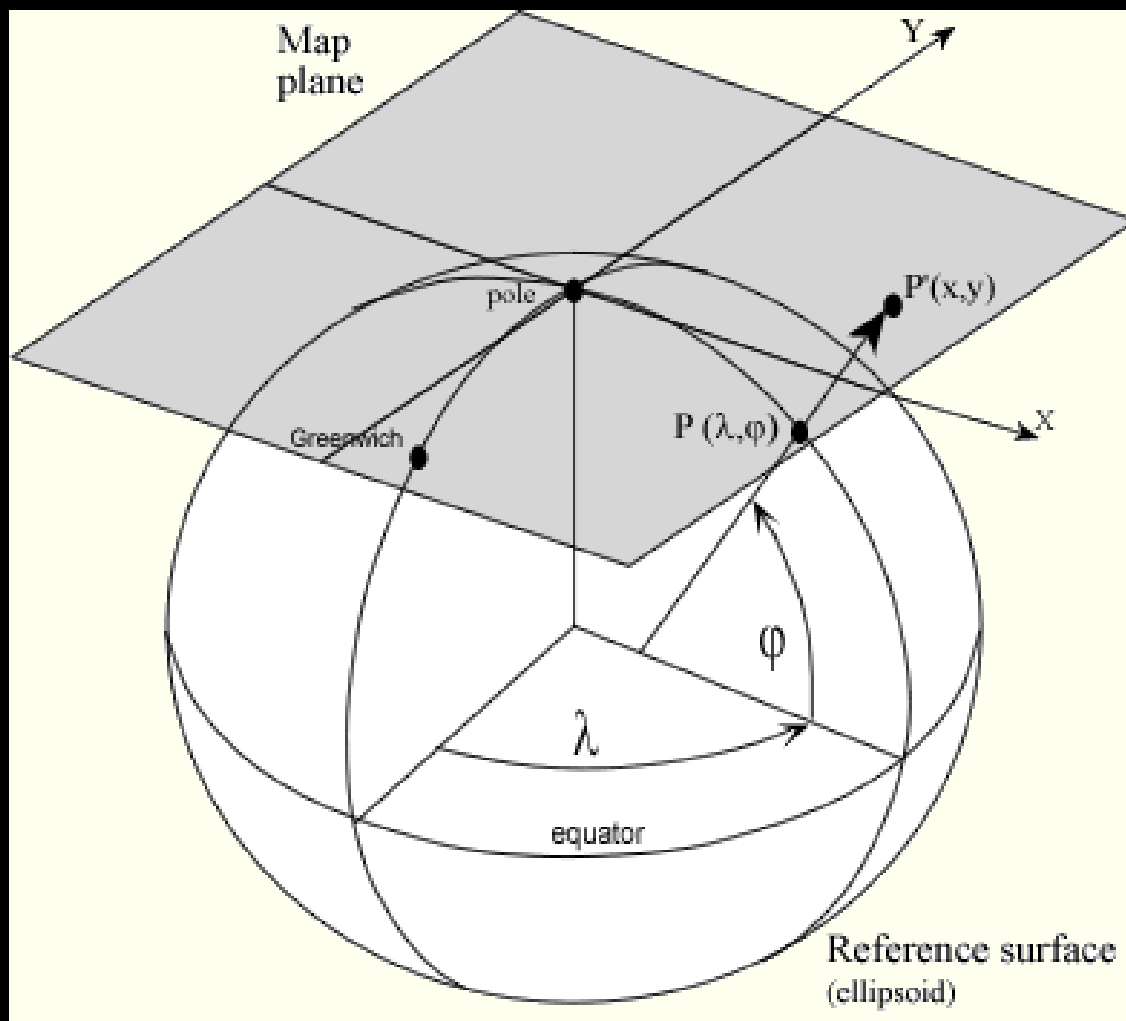
From Naomi Reed Kline, *Maps of Medieval Thought: The Hereford Paradigm*
(The Boydell Press, 2001)



'STRANGE' RACES (clockwise)

- 1 **Gigantes** (Giants): Inscription: *Gigantes* · (Giants.)
- 2 **Pandea** (Pandea): Inscription: *Pandea gens yndie a feminis regitur* · (The Pandean people of India are ruled by women.)
- 3 **Corcina** (Corcina): Inscription (no image): *Gens corcina circa malleum montem habitant · cuius umbra ab [=ad] aquilonem cadunt hyeme ad austrum estate* · (The Corcina people live around Mount Malleum, whose shadows fall north in winter, south in summer.)
- 4 **Nibei** (Nibei): Inscription (no image): *Nibei · gens nibie · ethiopes · christianissimi* · (The Nubians. The Nubians of Ethiopia are very Christian.)
- 5 **Mahum** (Mohammed): Inscription: *Mahum* (Mohammed.)
- 6 **Judei** (Jews): Inscription: *Judei* · (Jews.)
- 7 **Satirii** (Satyrs): Inscription (partially unreadable): *Satirii* · (Satyrs.)
- 8 **Ambari** (Abarimon): Inscription: *Gens sine auribus · ambari dicti · quibus adversis plantis* · (A people without ears called the Abarimon because the soles of their feet face backwards.)
- 9 **Fauni** (Centaurs): Inscription: *Fauni · semi caballi homines* · (Centaurs are half-horse, half-human.)
- 10 **Gens labro** (Amyctyrae): Inscription: *Gens labro prominenti · unde sibi faciem obumbrans · ad solem* · (People with a very large lip with which they shade their faces from the sun.)
- 11 **Scinopodes** (Scinopodes): Inscription: *Scinopodes · qui uni cruri mire sceleres [celeris] · plantis obumbrantur · idem sunt [sunt] monoculi* · (The Scinopodes, a strange and wicked (swift) one-legged race who are shaded by the sole of the foot; they are of the same [race] as the One-eyes.)
- 12 **Gens ore** (Straw-drinkers): Inscription: *Gens ore concreto calamo cibatur* (A people with rigid faces who are nourished through straws.)
- 13 **Sienee gentes** (Syene): Inscription (no image): *Sienee gentes* · (Syene people.)
- 14 **Gens uterque sexus** (Hermaphrodites): Inscription: *Gens uterque sexus innaturales · multimodis modis* · (A bisexual people, unnatural in many of their customs.)
- 15 **Himantopodes** (Himantopodes): Inscription: *Himantopodes · fluxis nisibus · crurium repunt potius quod [=quam] incedunt · et pergendi usum lapsu potius destinant [quam] a gressu* · (Himantopodes. They crawl along with effort on shaky legs rather than walk and they try to travel by sliding rather than by steps.)
- 16 **Gaetuli, Natabres, Garamantes** (Gaetuli, Natabres, Garamantes): Inscription (no image): *Hic · barbari · getuli · natabres · et garamantes · habitant* · (Here dwell the barbarians Gaetuli, Natabres and Garamantes.)
- 17 **Philli** (Phylli): Inscription: *Philli pudicicium uxorum probant · obiectu nouiter natorum serpentibus* · (The Phylli test the modesty of their wives by exposing their newborn children to snakes.)
- 18 **Trocoditee** (Troglodytes): Inscription (no image): *Trocoditee* · (Troglodytes.)
- 19 **Blemee** (Blemyae): Inscription: *Blemee · os · et oculos habent in pectore* · (The Blemyae have their mouth and eyes in their chests.)
- 20 **[Epiphagi]** (unnamed): Inscription: *Isti os et oculos habent in humeris* · (These people have eyes and mouth on their shoulders.)
- 21 **Trocodite** (Troglodytes): Inscription: *Trocodite · mire sceleres · specu accolunt · serpentes edunt · feras saltibus apprehendunt* · (The Troglodytes, marvelously wicked they dwell in caves; they eat snakes, they capture wild animals by jumping.)
- 22 **Marmine Ethiopes** (Marmini): Inscription: *Marmine ethiopes · quaternos oculos habent* · (The Ethiopian Marmini have four eyes.)
- 23 **Agriophagi** (Agriophagi): Inscription: *Agriophagi · Ethiopes solas panterarum et leonum carnes edunt · habe regem · cuius in fronte [oculus] unus est* · (The Ethiopians Agriophagi eat only the flesh of panthers and lions, they have a king with only one eye in his brow.)
- 24 **Gangines Ethiopes** (Gangines): Inscription: *Gangines ethiopes · amic[ita] cum eis non est* · (The Gangines of Ethiopia, there is no friendship with them.)
- 25 **Gansmir** (Gansmir): Inscription: *Gansmir* · (represented by man with ski.)
- 26 **Cinocephales** (Cynocephali): Inscription: *In hoc tractu sunt cinocephales* · (The Cynocephali are in this tract of land.)
- 27 **Alani** (Alans): Inscription (no image): *Alani sithe* · (Scythian Alans.)
- 28 **Griste** (Gryphae): Inscription: *Hic habitant griste homines nequissimi · nam inter cetera facinora · etiam dicitur hostium suorum · tegumenta sibi · et equis suis faciunt* · (Here the Gryphae live; most wicked men among their other crimes they even make covering themselves and their horses from the skin of their enemies.)
- 29 **Terraconta** (Terraconta): Inscription: *Terraconta inquam inhabitant Turchi de stirpe Gog · et Magog · gens barbara et immunda · iuuenum [=iuuenum] carnes · et abortiuam manducantes* · (The island of Terraconta where the Turks dwell, descendants of Gog and Magog; a barbarous and unclean race, devouring the flesh of youths and abortions.)
- 30 **Catharum** (Satarchae): Inscription (no image): *Catharum [=Satarchae] · sithe · vsu auri argenticque dampnato · in eternum a publica [publica] se auaricia dampnauerunt [=uindicaerunt]* · (The Satarchae Scythians. Having condemned the use of gold and silver, they have forever saved themselves from punishment.)
- 31 **Scitotauri** (Scithotauri): Inscription (no image): *Scitotauri · sithe · pro hostiis cedunt aduenas* · (The Scithotauri Scythians kill strangers for religious sacrifices.)
- 32 **Scitharum gens** (Scythari): Inscription (no image): *Scitharum gens interius habitantium · asperior ritus · spem incolunt · pocula non ut essedones de amicis · sed de inimicorum capitibus sumentes · amant prelia · occisorum cruorem ex uulneribus ipsius bibunt · numero cedium hoc crescit · quarum expertum esse · apud eos prophanum esse* · (The Scythari people inhabit the interior. They have rather harsh rituals. They are cave-dwellers making cups, not like the Essedones from the skulls of friends but of their enemies. They love war; they drink the blood of enemies from their wounds; their reputation





Every world map distorts one or more of either:

True Shape

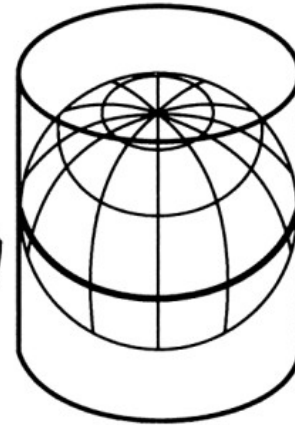
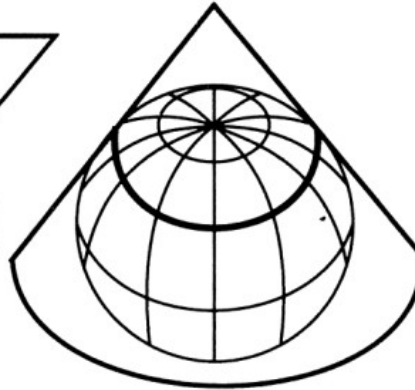
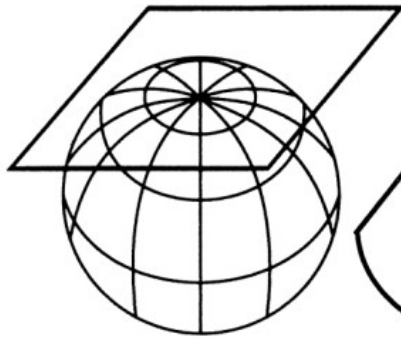
True Area

True Distances

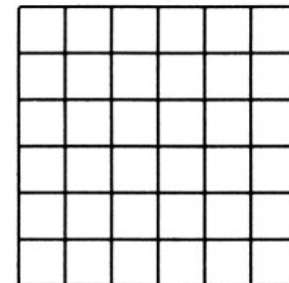
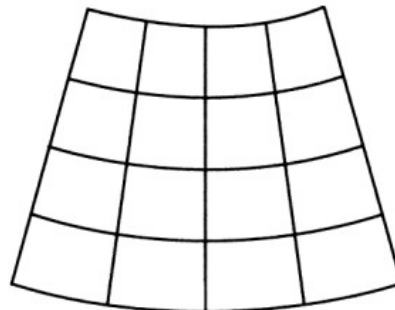
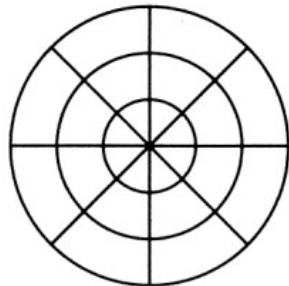
True Directions

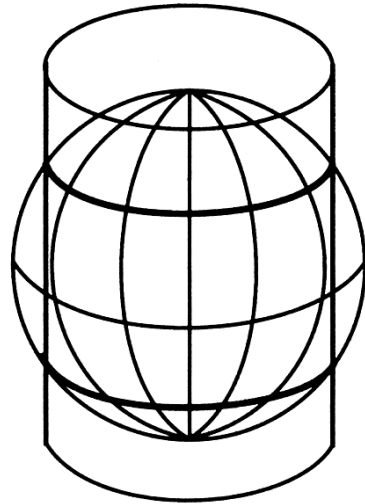


Flattenable surfaces

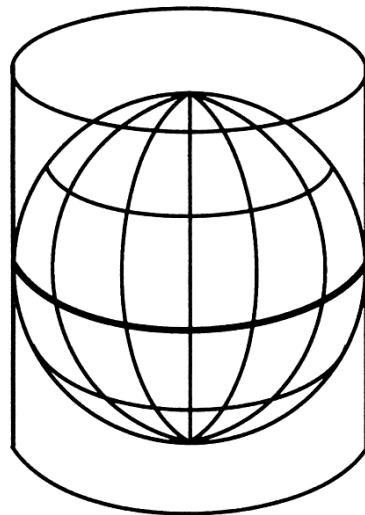
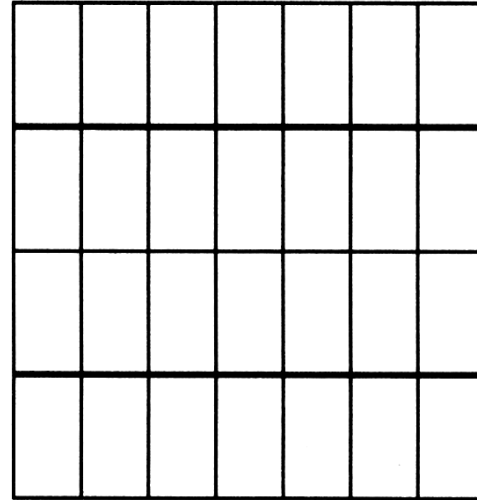


Flat maps

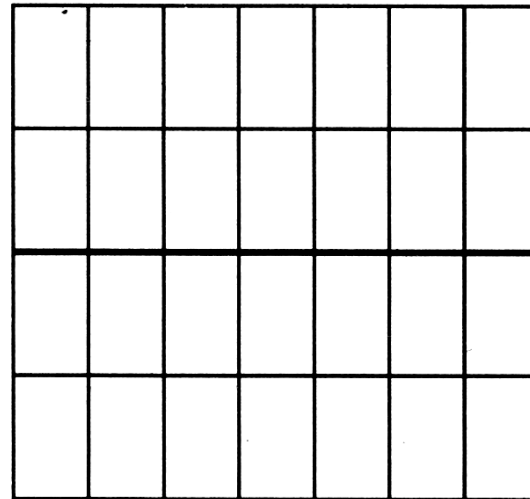


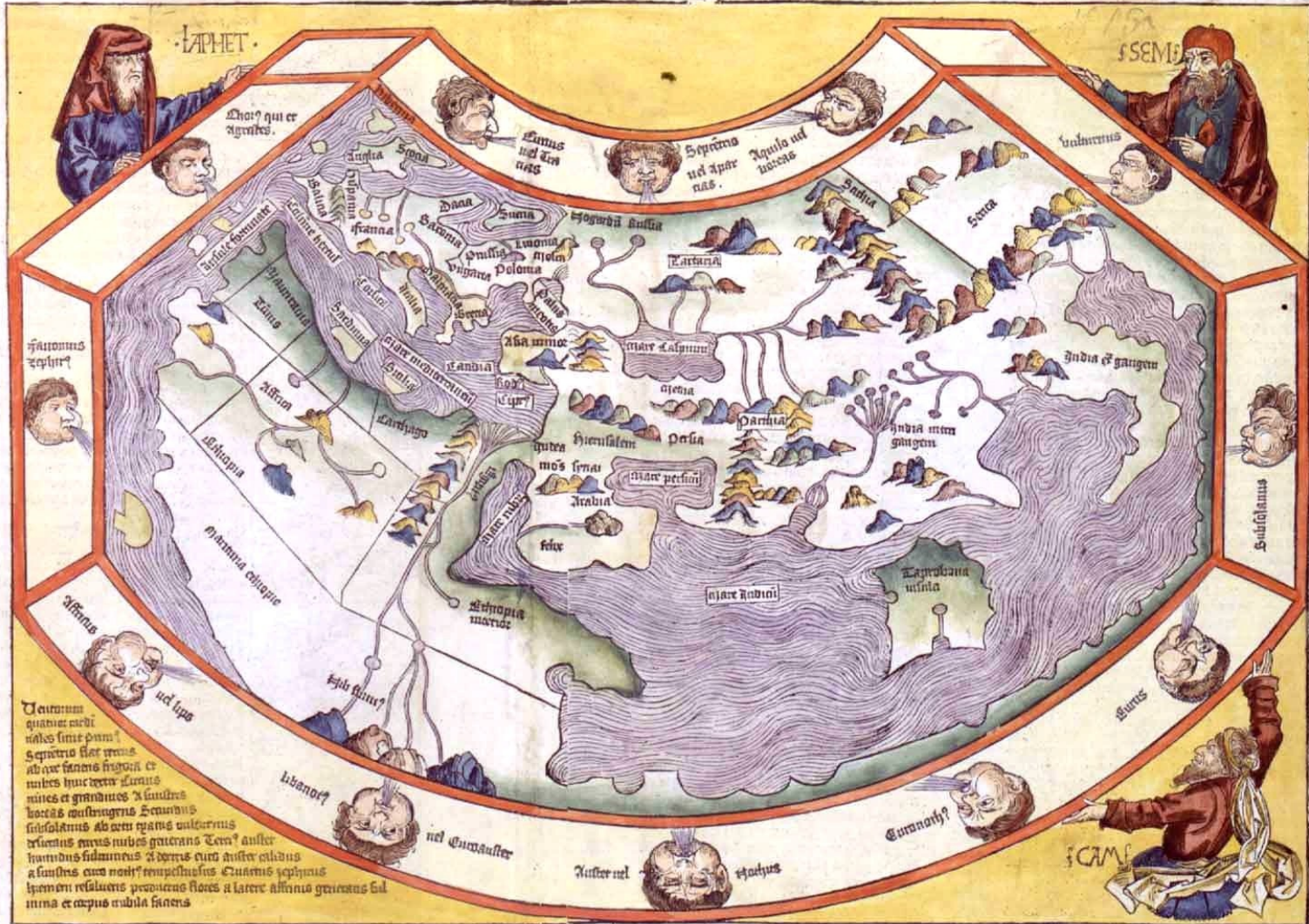


Secant cylindrical



Tangent cylindrical





Orbis dicitur a rota et est quibet figura spherica et rotunda. Et ideo mundus orbis dicitur quia rotundus est et de orbis terre vel orbis terra dicitur. Dicitur autem secundum viros quod filii sem obtinuerunt asiam filii chanaan affricam et filii iaphet europam. Item in li. Etby. aserit quod orbis diuisus est in tres partes si non equiter. Nam asia a meridie per orientem usque ad septentrionem puenit. Europa vero a septentrione usque ad occidentem puenit. Sed affrica ad occidentem per meridies se extendit. Sola quoque Asia

continet vnam partem nostre habitabilis. scilicet medietatem. scilicet africa et europa aliam medietatem sunt sortite. Inter has autem partes ab oceano mare magnum progreditur. easque interfecit: quapropter si in duas partes orientis et occidentis orbem diuidas in vna erit asia in alia vero affrica et europa. Sic autem diuiserunt post diluuium filii Noe: inter quos Sem cum posteritate sua asiam. Iaphet europam: cham affricam possederunt. ut dicit glo. super Gen. x. et super libro Paralippo. primo. Item dicit Aristotomus Ibi totus et plinius.

Genoese nautical chart of the world, 1457.





Fig. 199.—Discovery of America, 12th of May, 1492.—Columbus erects the Cross and baptizes the Isle of Guanahani (now Cat Island, one of the Bahamas) by the Christian Name of St. Salvador.—From a Stamp engraved on Copper by Th. de Bry, in the Collection of “Grands Voyages,” in folio, 1590.

Post-Ptolemaic Period the world
became 'known'.

Maps became fact.



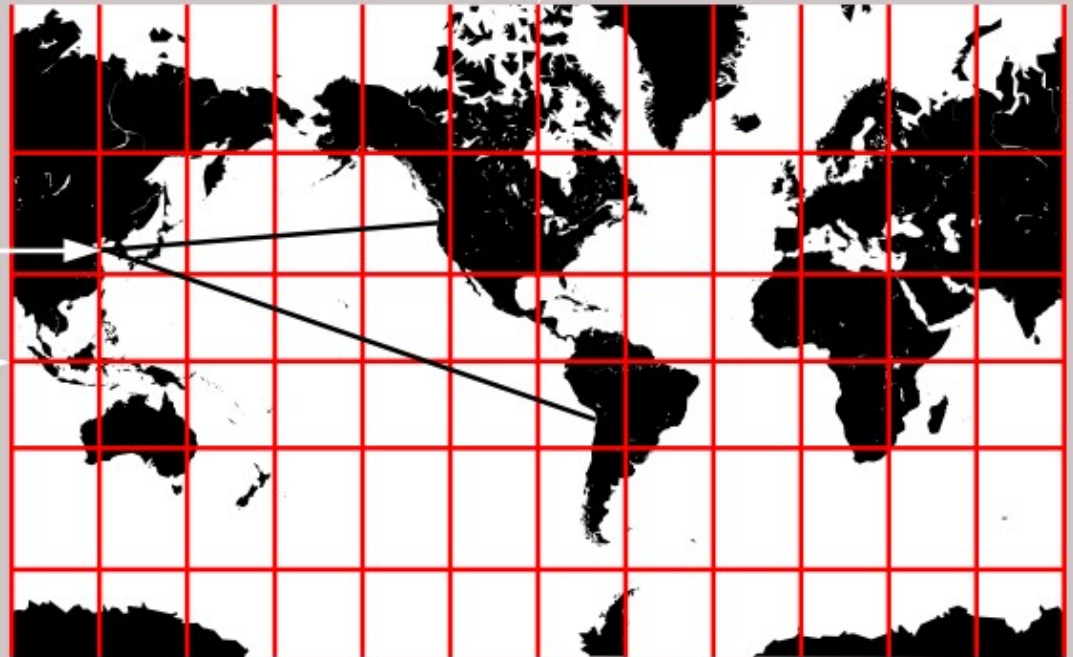
Central meridian
(selected by mapmaker)

Great distortion
in high latitudes

Examples of rhumb lines
(direction true between
any two points)

Equator touches cylinder
if cylinder is tangent

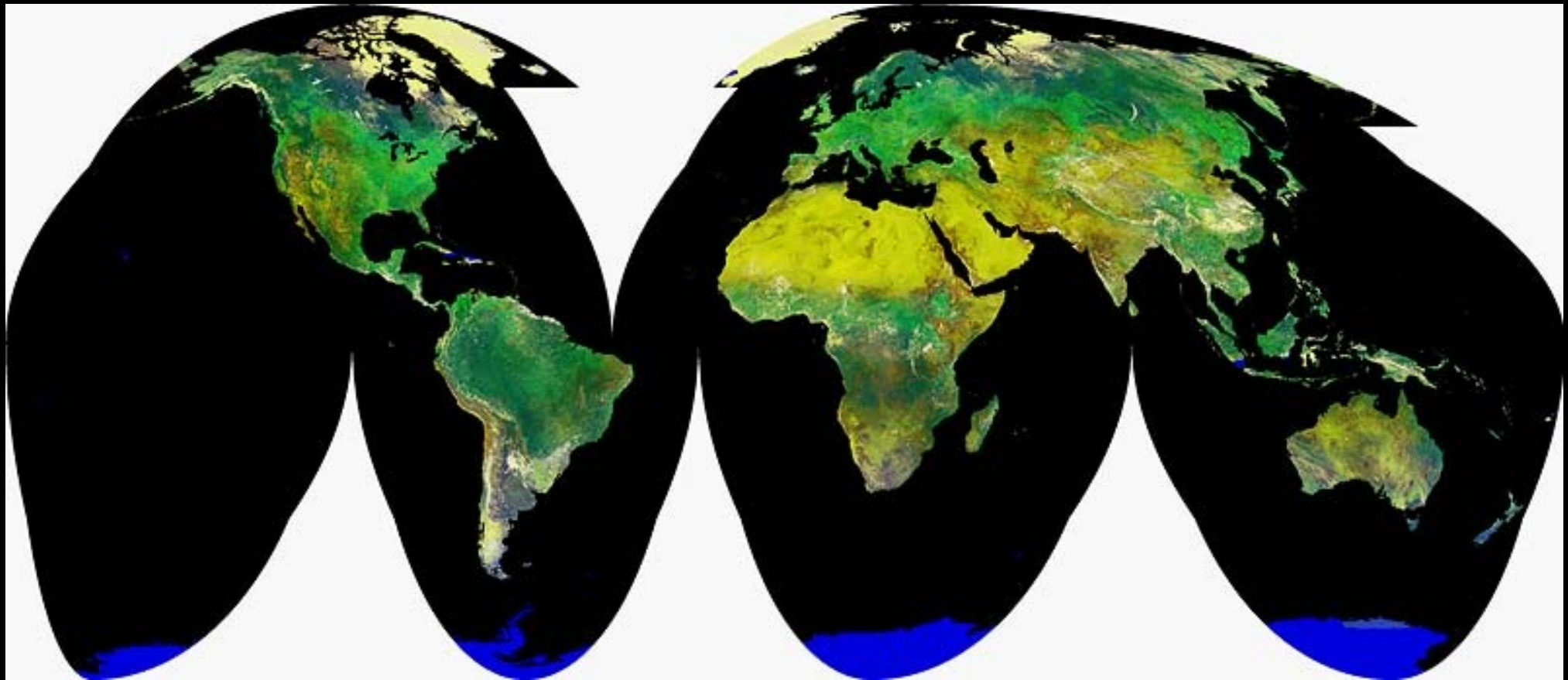
Reasonably true
shapes and distances
within 15° of Equator



Fool's Cap Map (c. 1590). Mercator Projection



Goode's Interrupted Homolosine Projection



All the different uses for maps:

Navigation

Resource management

War

Planning

All the different uses for maps (2):

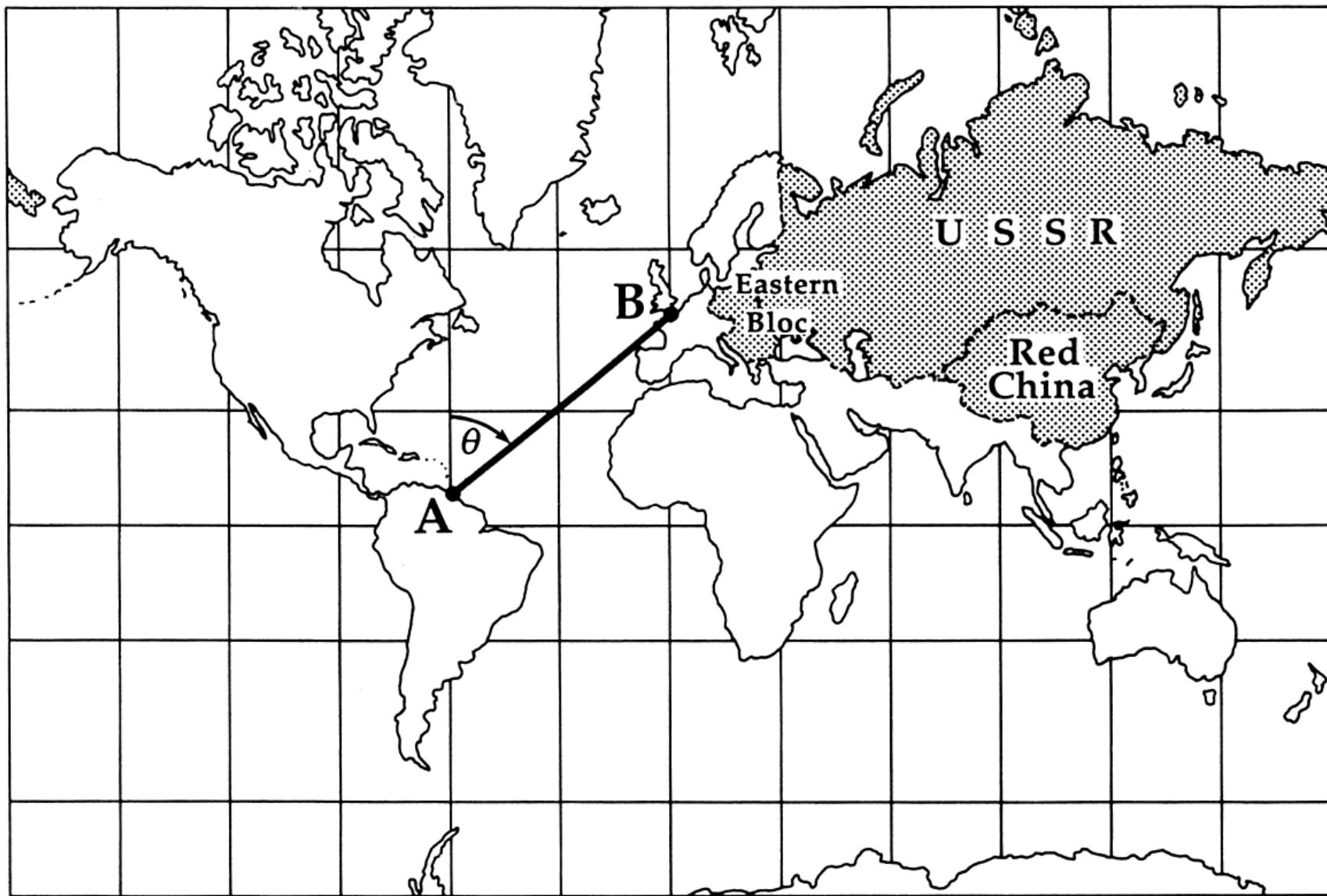
...Religious Propaganda

Political Propaganda

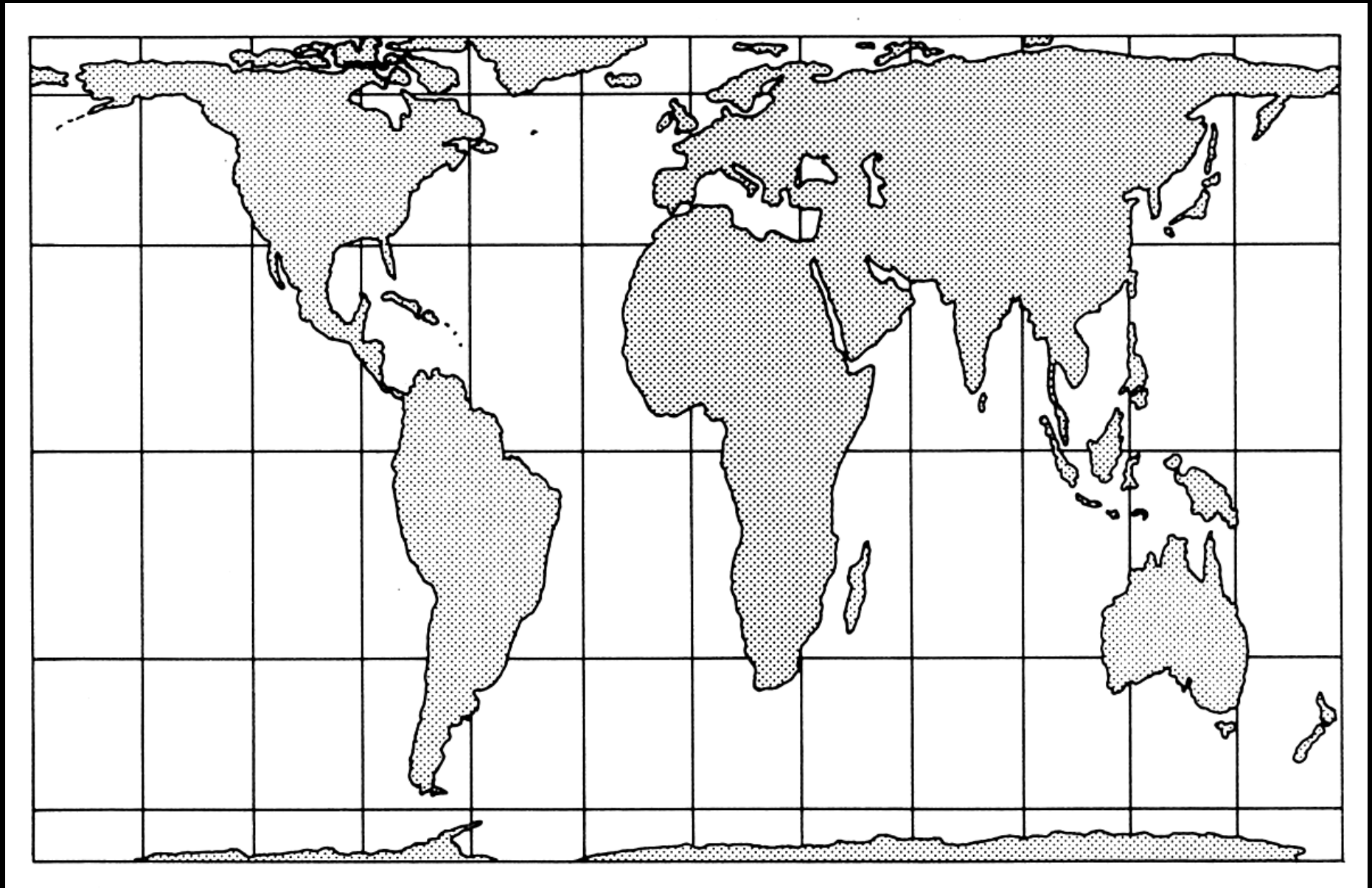
Military Propaganda

Disinformation

(all of the above in one map)



The Peters Equal-Area Projection



Population Cartogram



Visual proof of the Arab lie about Israeli "aggression"



Map published during the 1973 war by the Jewish fund of Canada

A STUDY IN EMPIRES

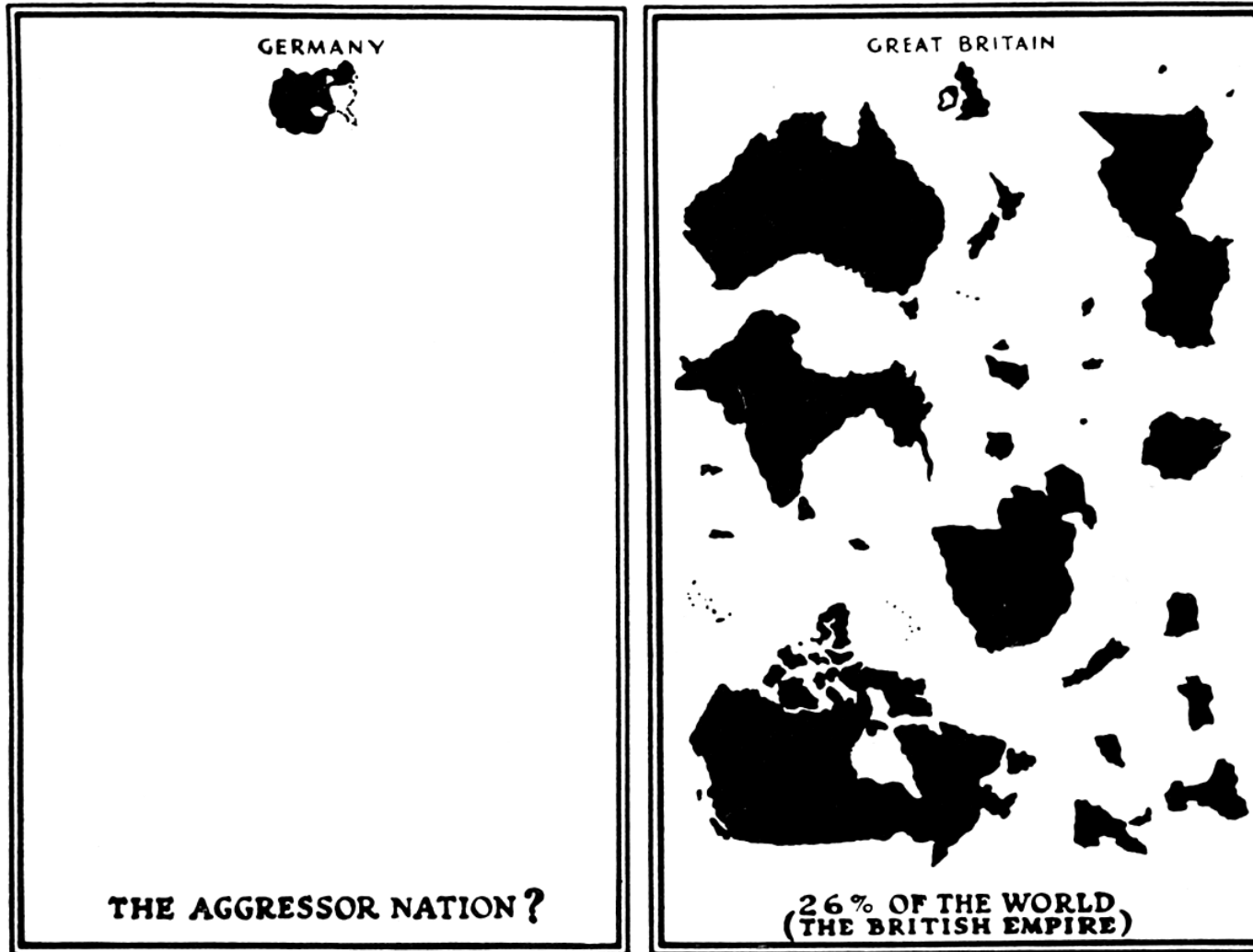


FIGURE 7.11. "A Study in Empires" (*Facts in Review* 2, no. 5 [5 February 1940]: 33).

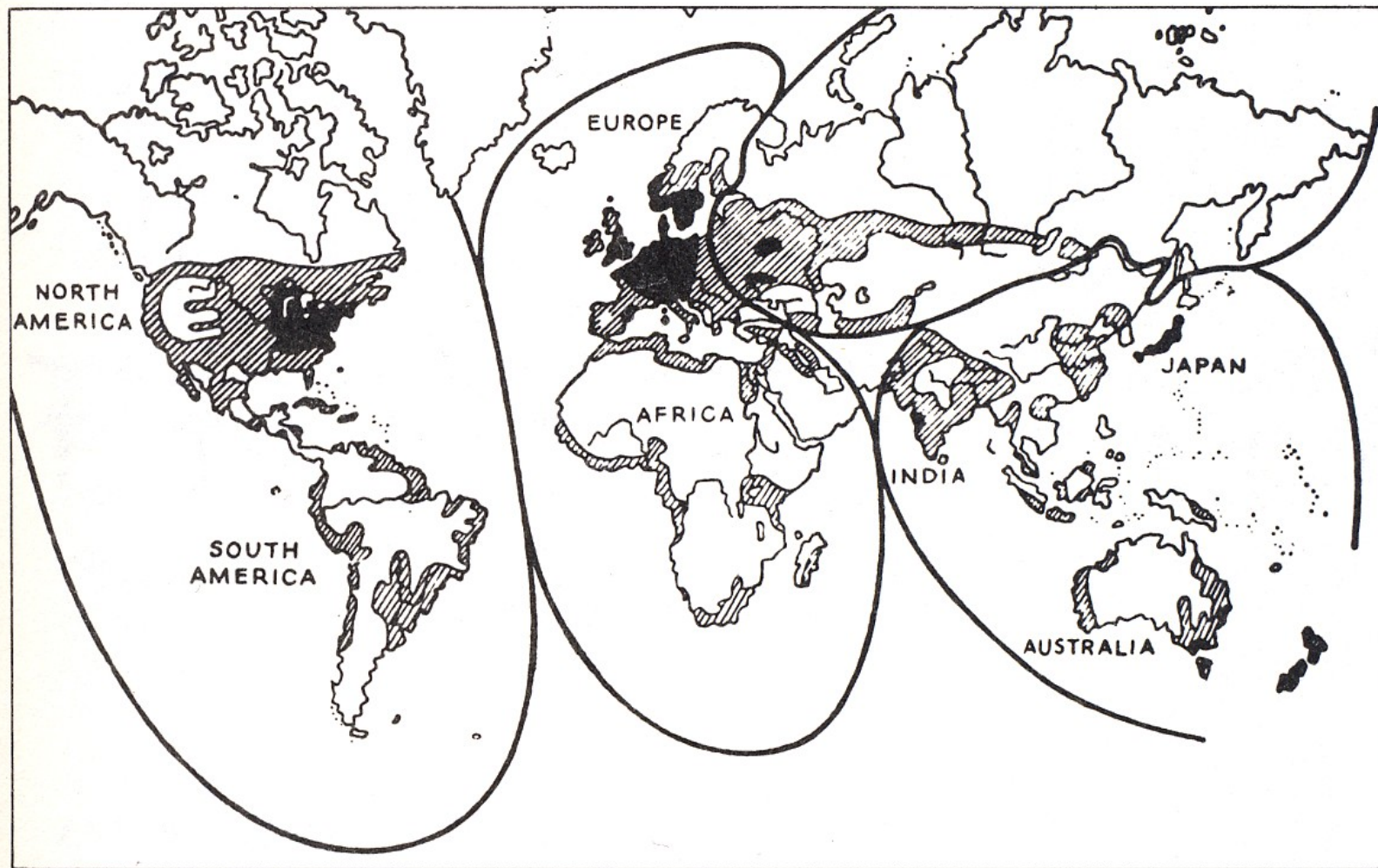


FIGURE 7.16. "Spheres of Influence" (*Facts in Review* 3, no. 13 [10 April 1941]: 182).

Peenemuende: Test Stand 7. First Man-Made object reaches space



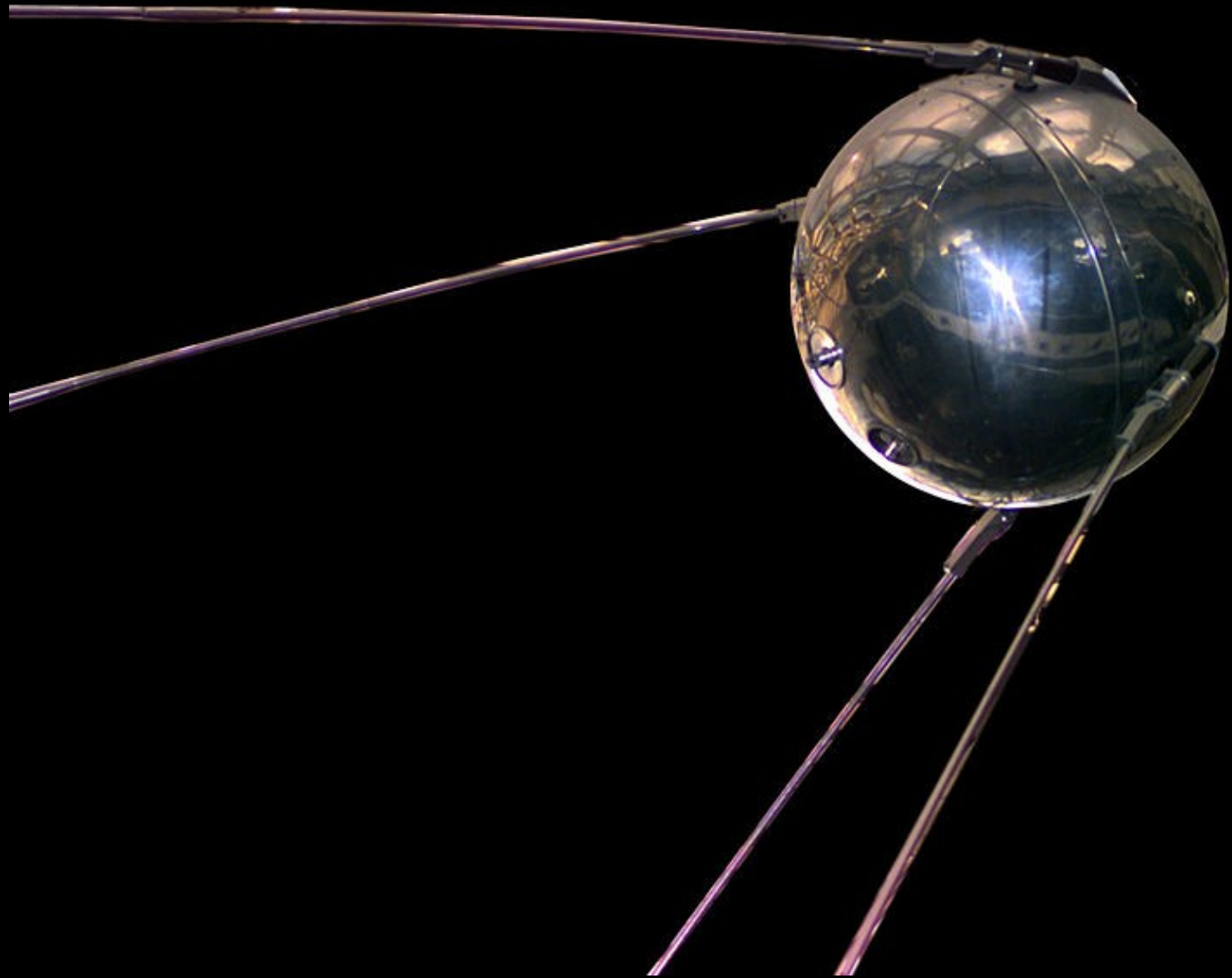
Wernher Von Braun (1912 - 1977)



V2 Rocket



Sputnik 1

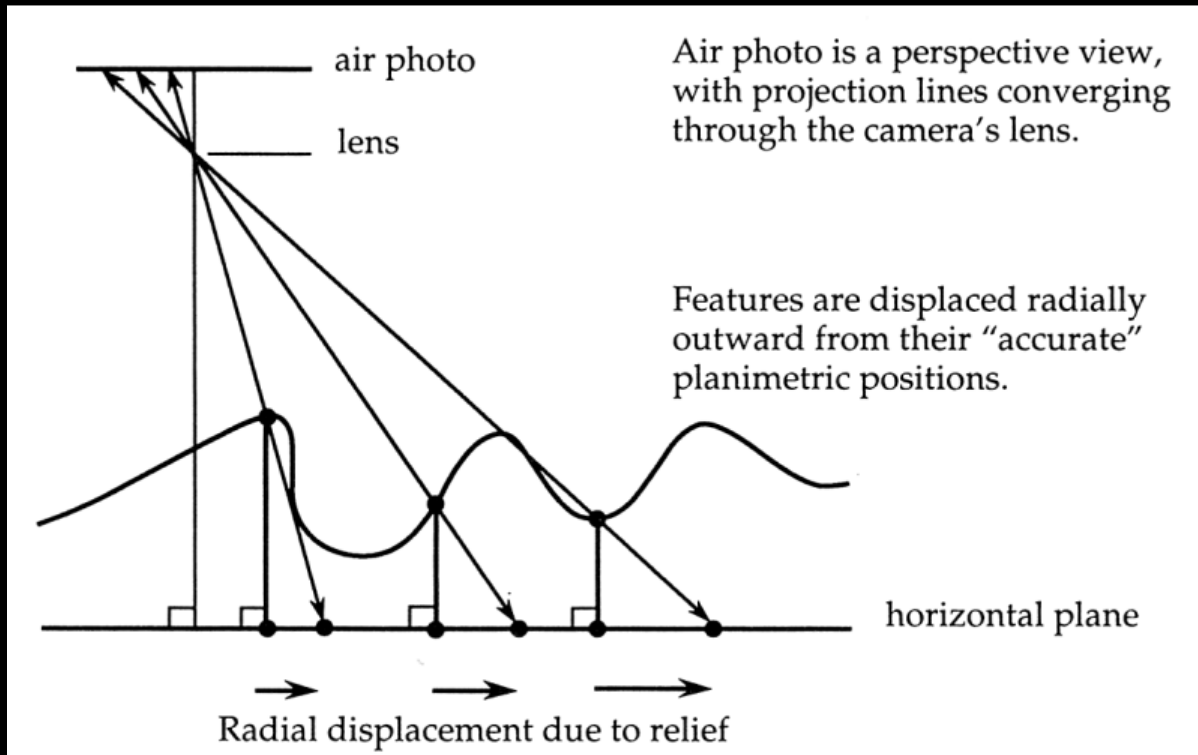
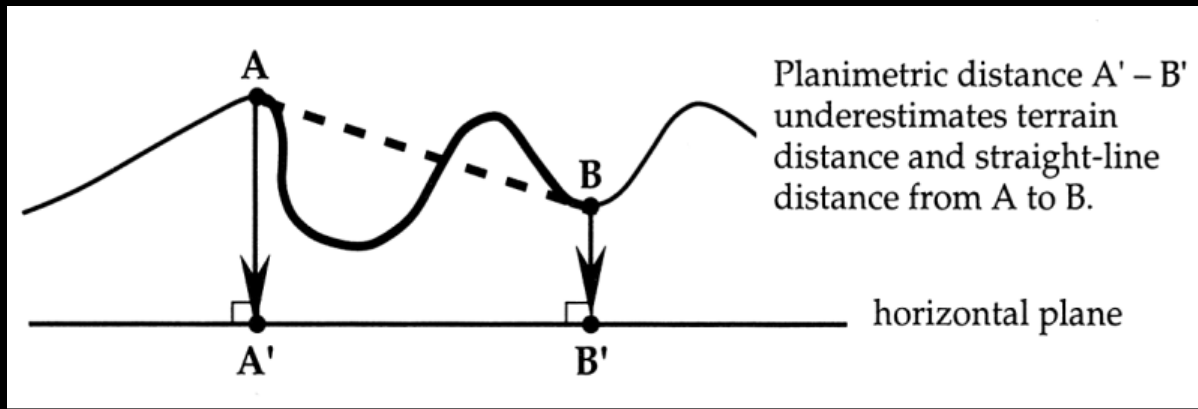




Google

The perfect map?

Google Maps bias: Camera bias



Google Maps bias: Space data vs Place data

- Names and Lines
- Prioritises navigation (passage)
- Prioritises locations (what's a location?)
- Contains no place-full data

Google Maps bias: generalisation

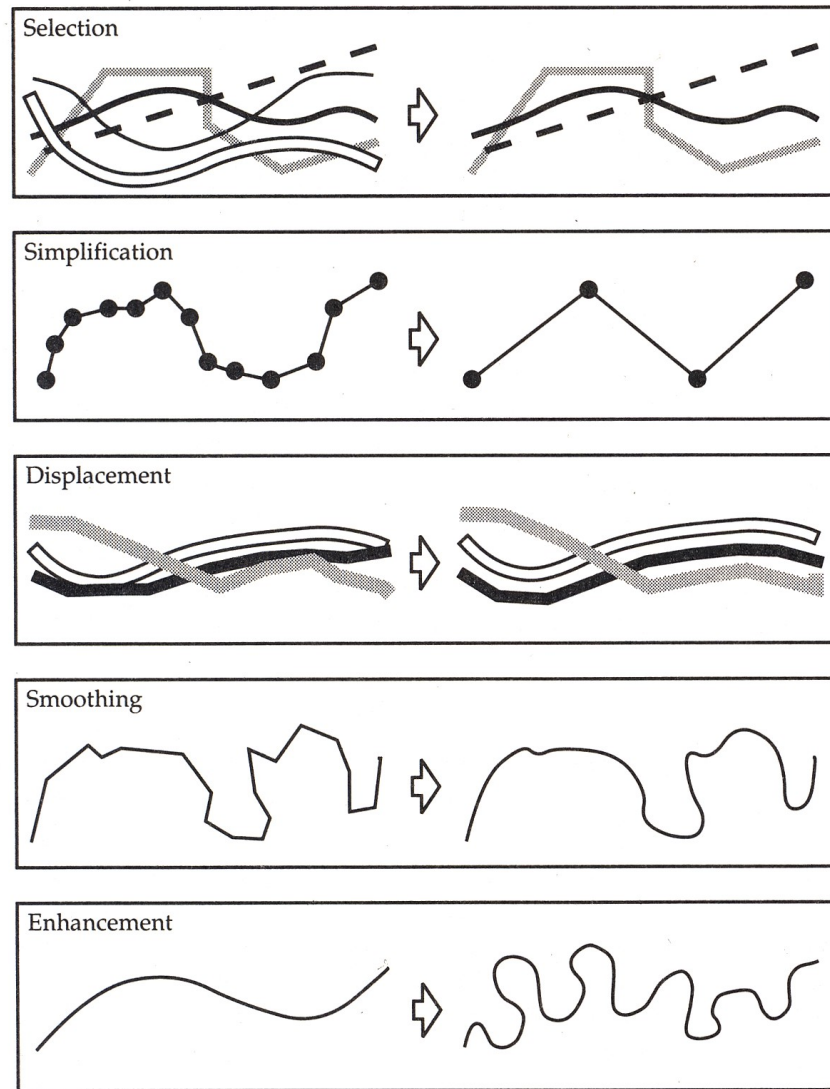


FIGURE 3.1. Elementary geometric operations in the generalization of line features.

Edited earth



Whose earth is it anyway?

Katrina

Post hurricane Gulf Coast maps replaced by pre-hurricane maps

Baghdad

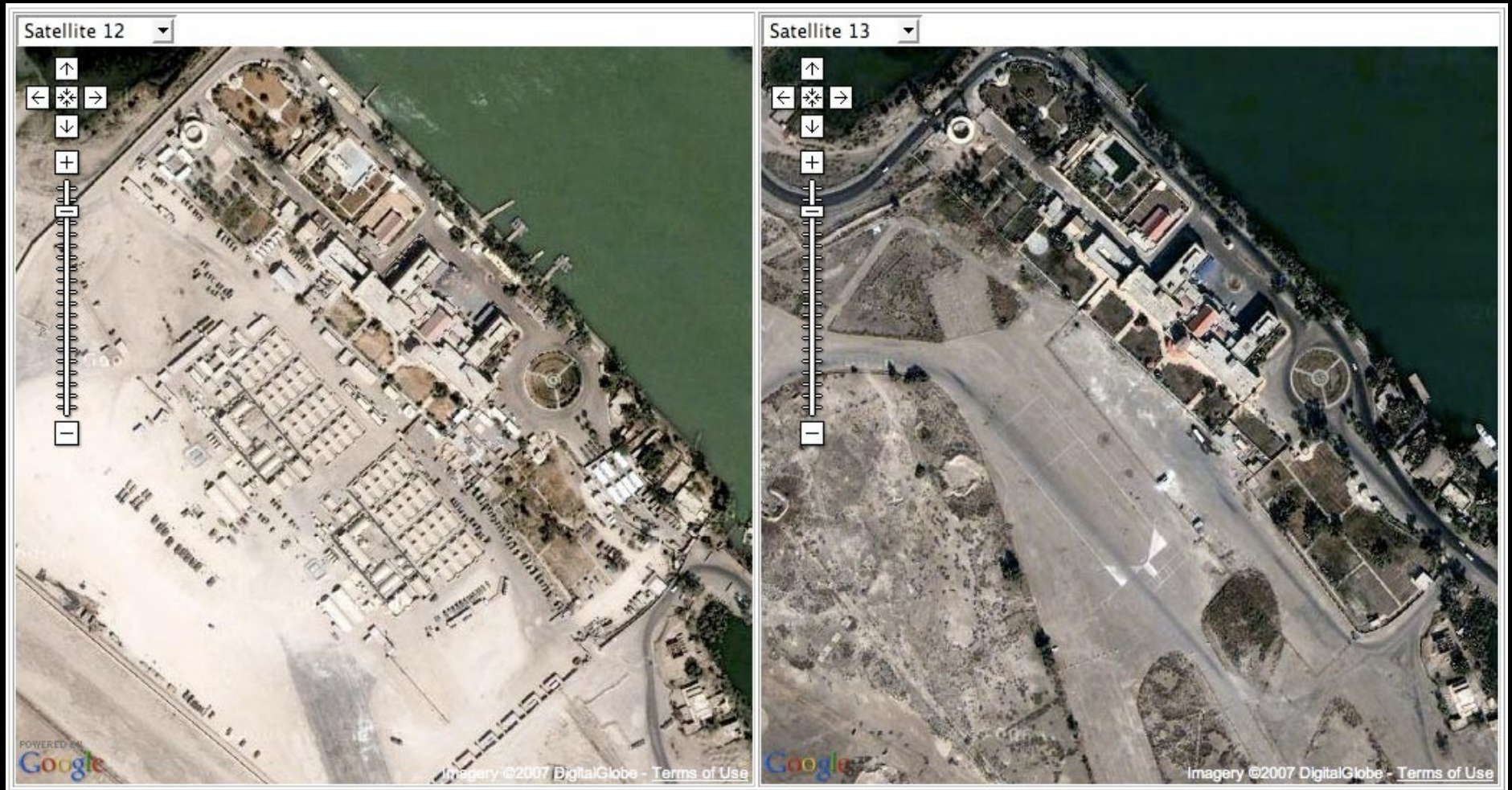
Missing data/disparities

Basra

Selective erasure

Staffordshire Regiment battle group

Disappearing Hotel of the Staffordshire Regiment Battle Group.



Google's imaginary Earth of multiple temporality

RECENS. ET INTEGRA ORBIS DESCRIPTIO



ORONTIVS F. DELPH. REGI
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