




~ MAPS ~
Representing our world





What is a map

Definition.....

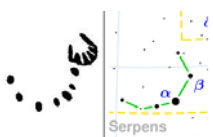

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Cartography (map making) – a brief history

Lascaux (17000 yr BP): picture or map ?




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Cartography (map making) – a brief history

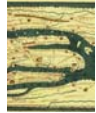

Babylonian maps (4500 yr BP)




Greek maps (2500 yr BP)



Chinese & Roman maps (1700 yr BP)

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1550 onwards: the age of exploration

The birth of modern maps


- Mapping enforced 'ownership'
- Cartography enhanced by the development of new technologies






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Why make maps ?

Key functions

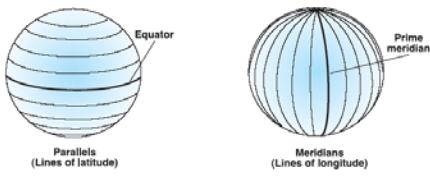
- Find position
- Find route
- Measure:
 - Distance
 - Length
 - Area
 - Height
 - Gradient
 - Aspect

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Fundamental element of a map

The X-Y co-ordinate system
 Cartesian (planar) systems use *meridians* & *parallels*



Parallels
(Lines of latitude)

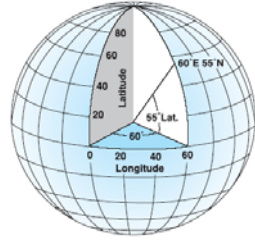
Meridians
(Lines of longitude)

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ERT Conservation

Fundamental element of a map

X-Y co-ordinate systems
 Meridians & parallels divided into degrees, minutes and seconds



Latitude

Longitude

60° E 55' N

60° Lat.

60°

0 20 40 60

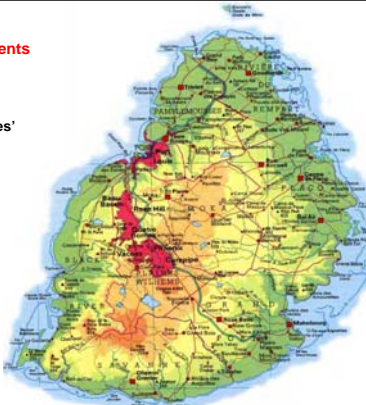
0 20 40 60



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Additional map elements

- Direction
- Scale
- Standardised 'features'

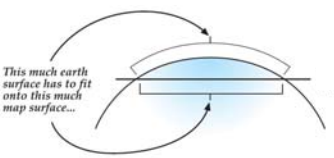


A major problem with maps

Illustration: ESRI 2000


From 3d to 2d
Flattening a curved surface causes 'distortion'





This much earth surface has to fit onto this much map surface...

therefore, much of the earth's surface has to be represented smaller than the nominal scale.

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Problems arising from distortion

3d to 2d distortion causes false measurement of one of following:

- Direction
- Shape
- Area
- Distance

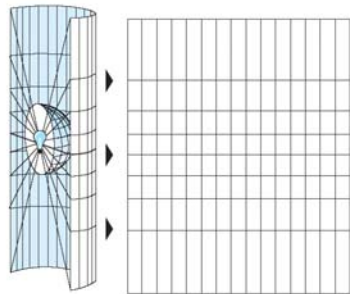
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The solution: map projection

Illustration: ESRI 2000



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