Cartography I

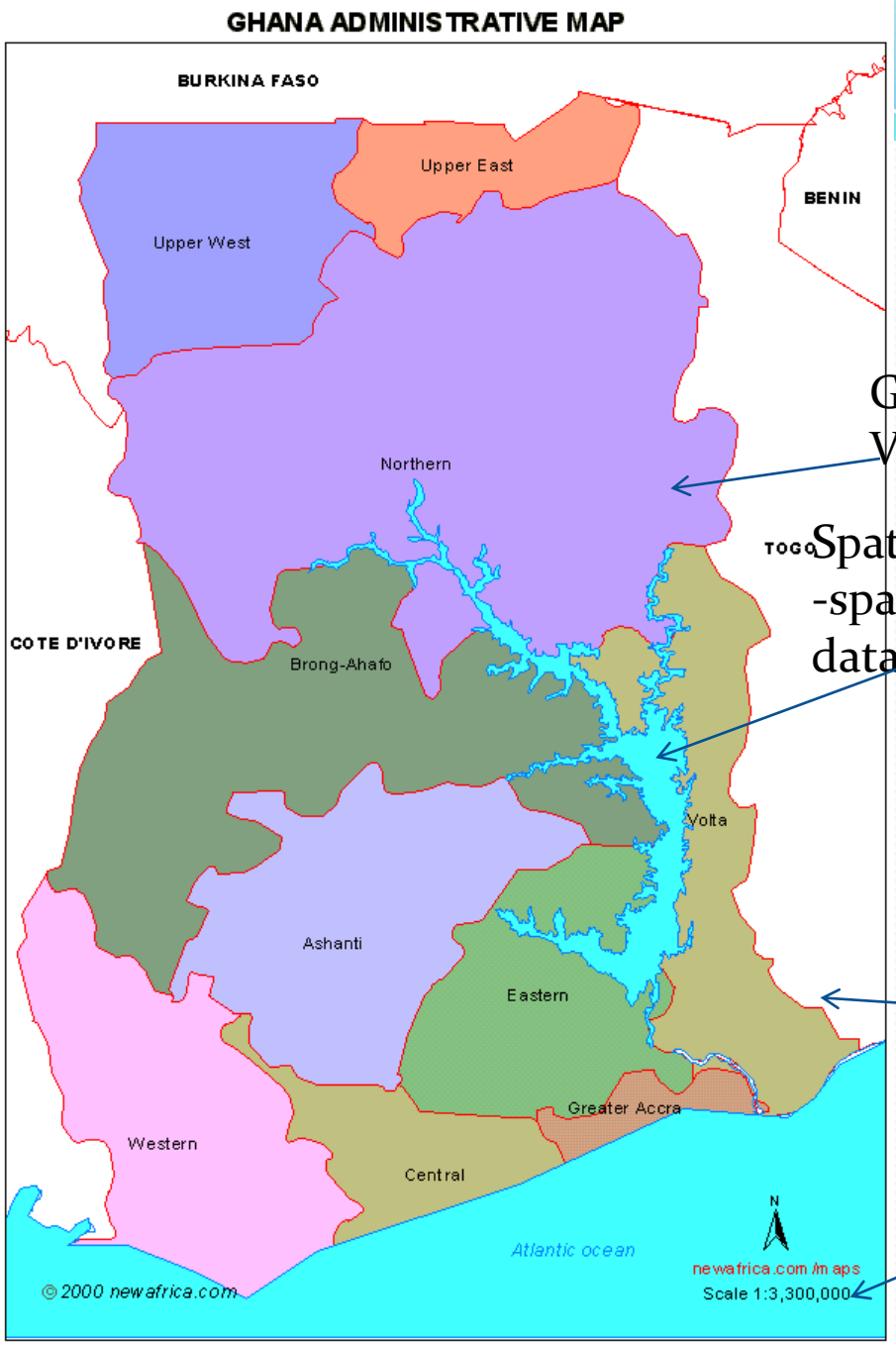
LECTURE 2

Maps- Definition

- “A map is a representation or abstraction of geographical reality. A tool for presenting geographic information in a way that is visual, digital or tactile”(Board, 1990)

Mapping elements- (content of the map)

- Spatial information – x,y and z coordinates
- Graphic representation- colour choices
- Scales- ratio of measurement on map to that on the ground.
- Symbols use of point, line and area symbols



Graphic representation- Visual symbols- Berton's

Spatial information -spatial(x,y) and non-spatial data

Symbol- lines, Area to rep geo

Scale 1:13300 000

Maps-Map Functions and Map types

- Classify based on two characteristics
- Scale
- Purpose or content
- Small-scale maps(1:1,000,000)
- Medium-scale maps(1:25000-1:1,000,000)
- Large-scale maps(larger than 1:25,000)
- General-purpose maps- Topographical maps
- Special-purpose maps-Qualitative & Quantitative maps. Aka thematic maps

Maps-Map Functions and Map types

Map Functions and Map types

Maps-Map Functions and Map types

Maps-Examples of thematic maps:

- Cadastral Maps-
- Astronomical maps- heavenly features-
- Relief maps- elevation differences
- Geological maps- rocks, earth crust
- Weather maps-weather conditions over a period
- Climatic maps-climatic conditions
- Vegetation- flora
- Cultural map- cultural pattern
- Political map- boundaries b/n different states

Maps-Examples of thematic maps:

- Military map- route and points for the military
- Historical map- shows past events
- Tourist map- tourist sites/features

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map

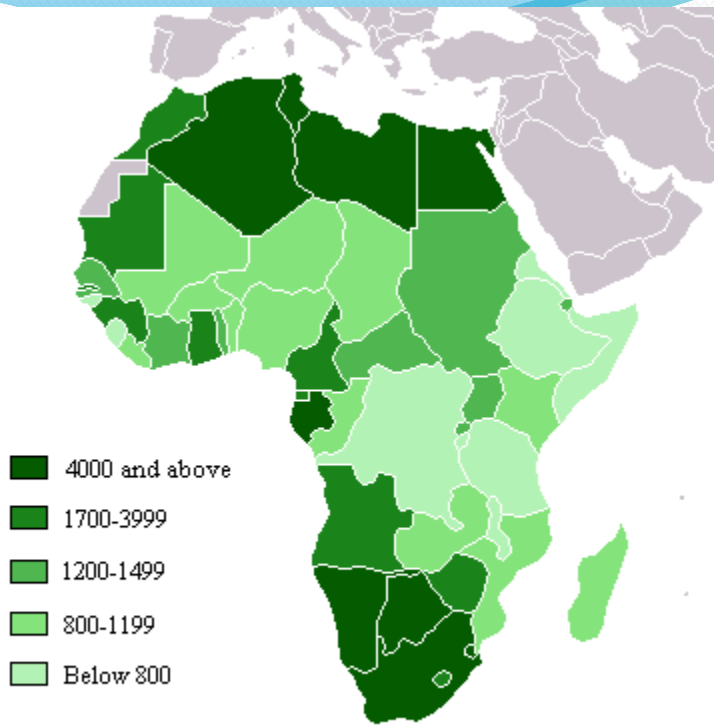
1. CHOROPLETH MAP

   Map numeric data

   Polygons

   Different intensities of gray

E.G Growth of single agric crop- green



map

1. DOT MAP

Dots are used to represent attribute

Placed near where the attribute can be found

Dots placement

Precise

Random

Centroid of polygon

We should be able to count

Points should coalesce in dense areas

map

1. Proportional Symbol Map

Raw count(value) of an attribute are used to size a symbol

Any shape could be used- usually Circles

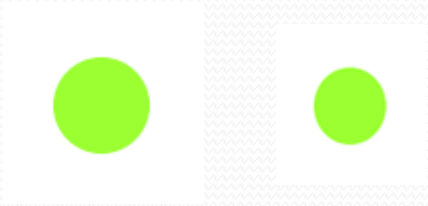
Symbols can also represent aggregated value(e.g average household income is socio-economic value)

map

1. Why Circles for proportional symbol maps?
   a) Compact
   b) Circle scaling easy comparatively
   c) Visually stable- less eye irritation

map

- Scaling- map as interpreted by user- amounts associated with each symbol
- Methods
  - Absolute- direct proportional scaling
  - Apparent magnitude scaling

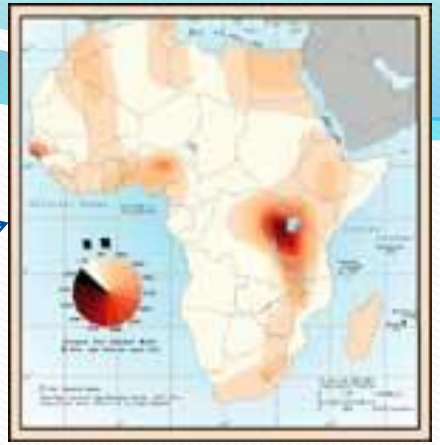


- inflate symbol sizes for underestimated values

12, 200, 250, 500- Inflate the 12 cases of murder?

Yes

- Range graded scaling- data dived into groups and different symbol sizes to help distinguigh categories

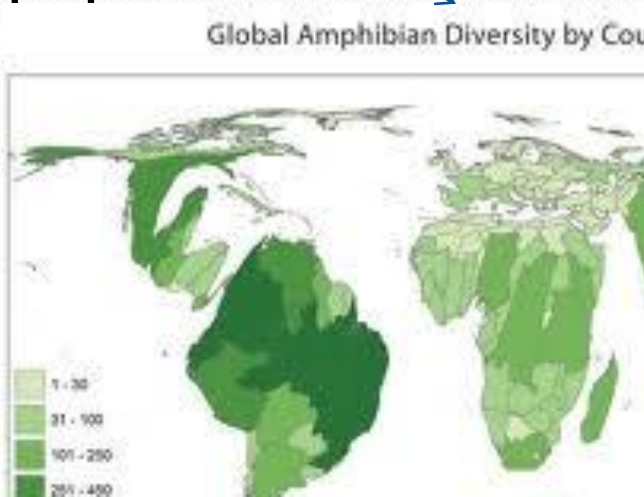


map

- Isarithmic map
  1. Isometric-points
  2. Isophletic- data occur over space

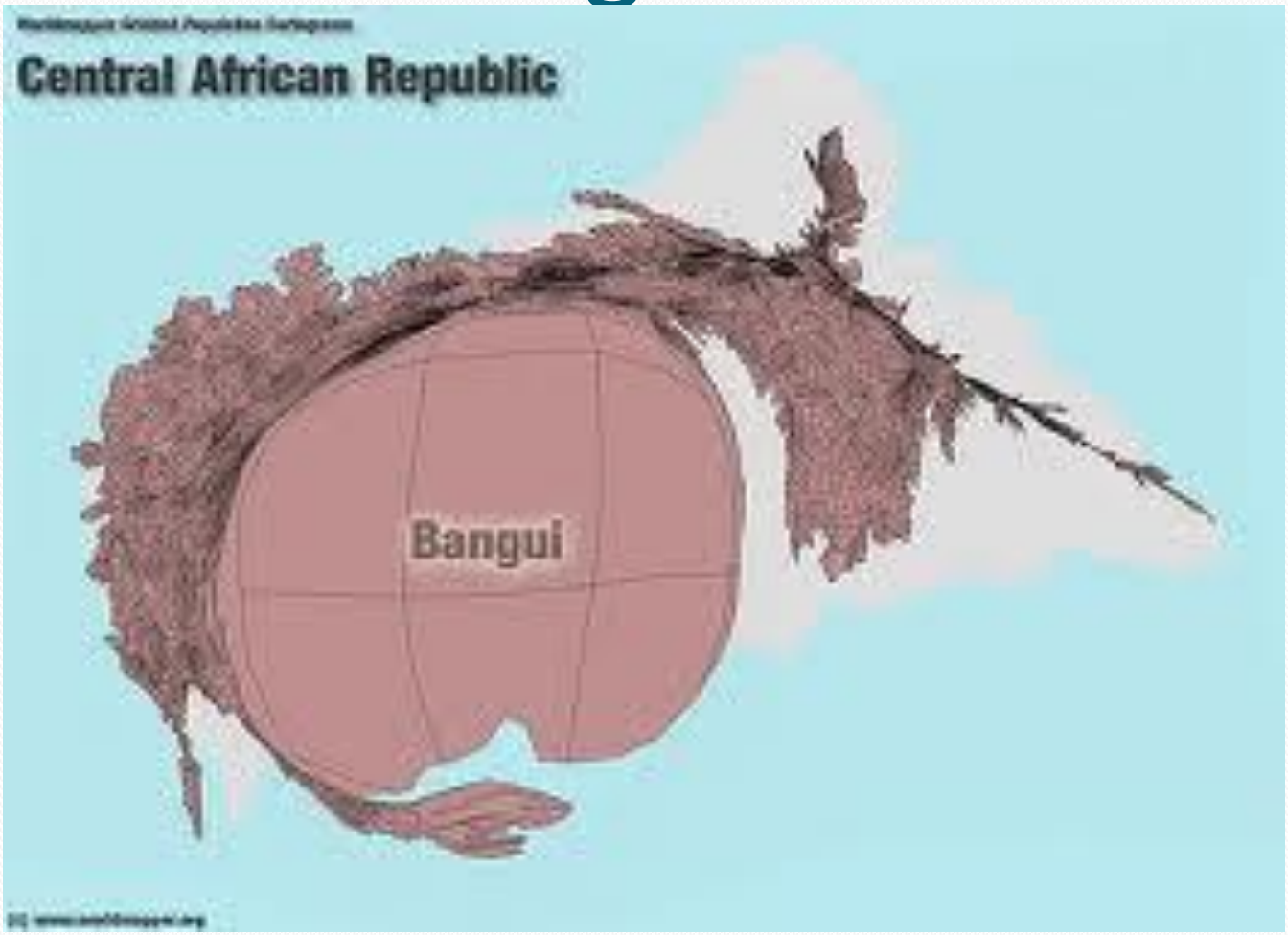
3d phenomenon mapped 2d

- Cartogram- draw spatial units proportional to the variable in question- amphebian population



- Virtual maps/Mental maps

Population cartogram!



map

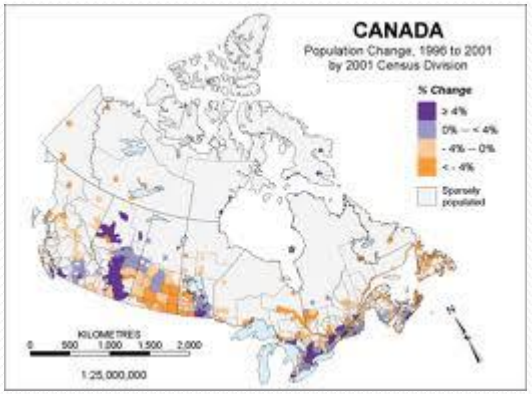
- Map dissemination- paper,digital, disk, www
- Topographic Map/Thematic Map
- Topographic maps supply a general realistic and complete simplified, to scale rep of terrain
- Thematic maps represent the distribution of one particular phenomenon(quantity and/or quality)
- Normally topo maps are a base to them. Maps

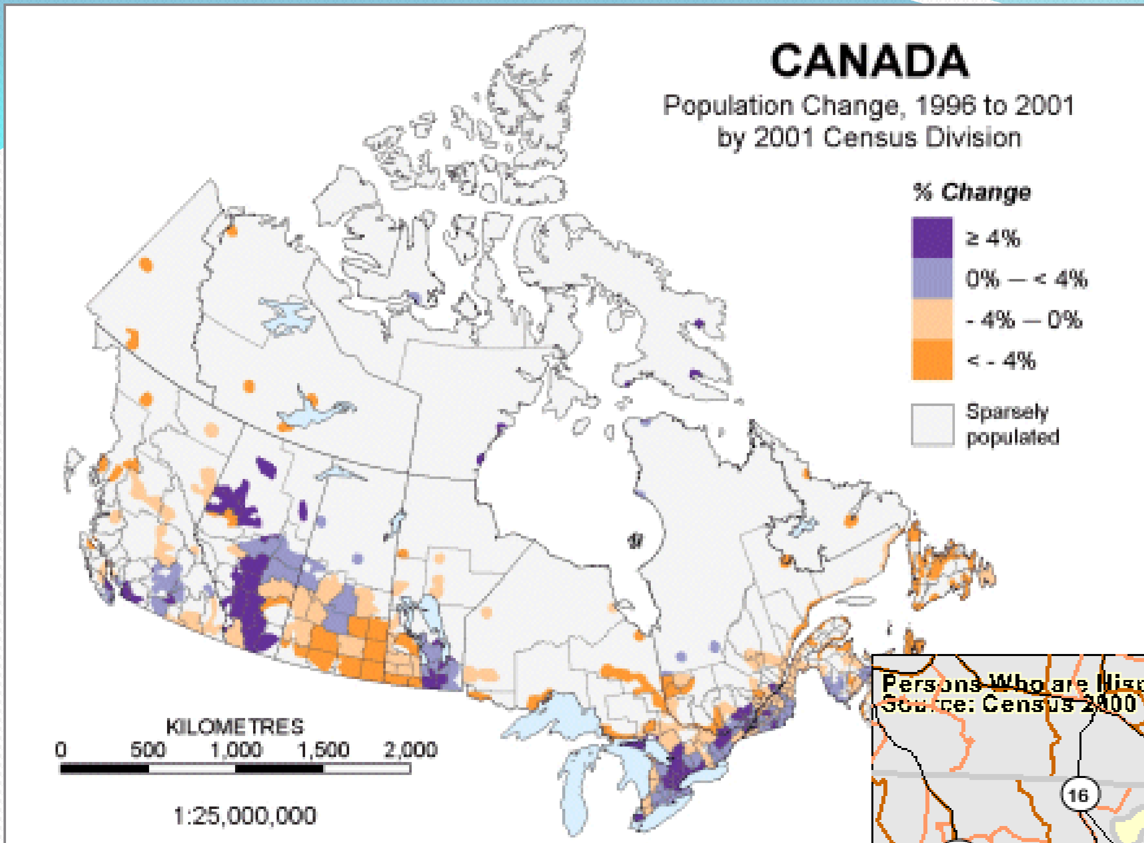
Topographic and thematic Maps

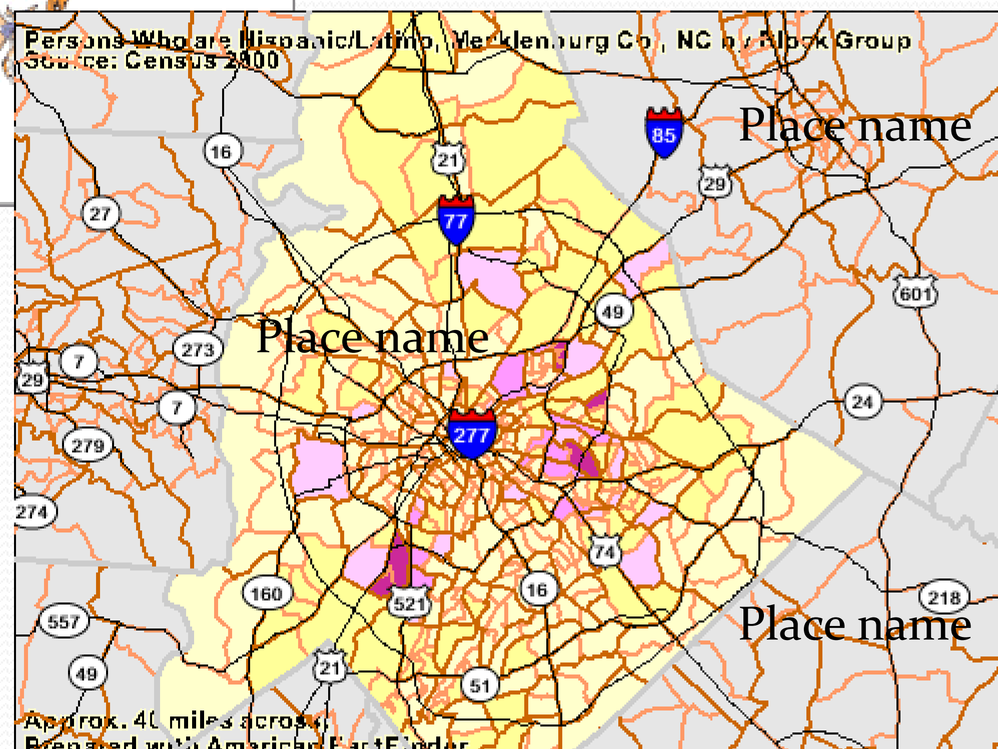
- In the digital environment what is thematic and what is topographic map depends

Topographic and thematic Maps

- Could have a topographical map with overlay of rivers, hydrography, settlement, geographical names roads etc
- But with the highlighting of a particular theme or layer we would obtain a thematic map



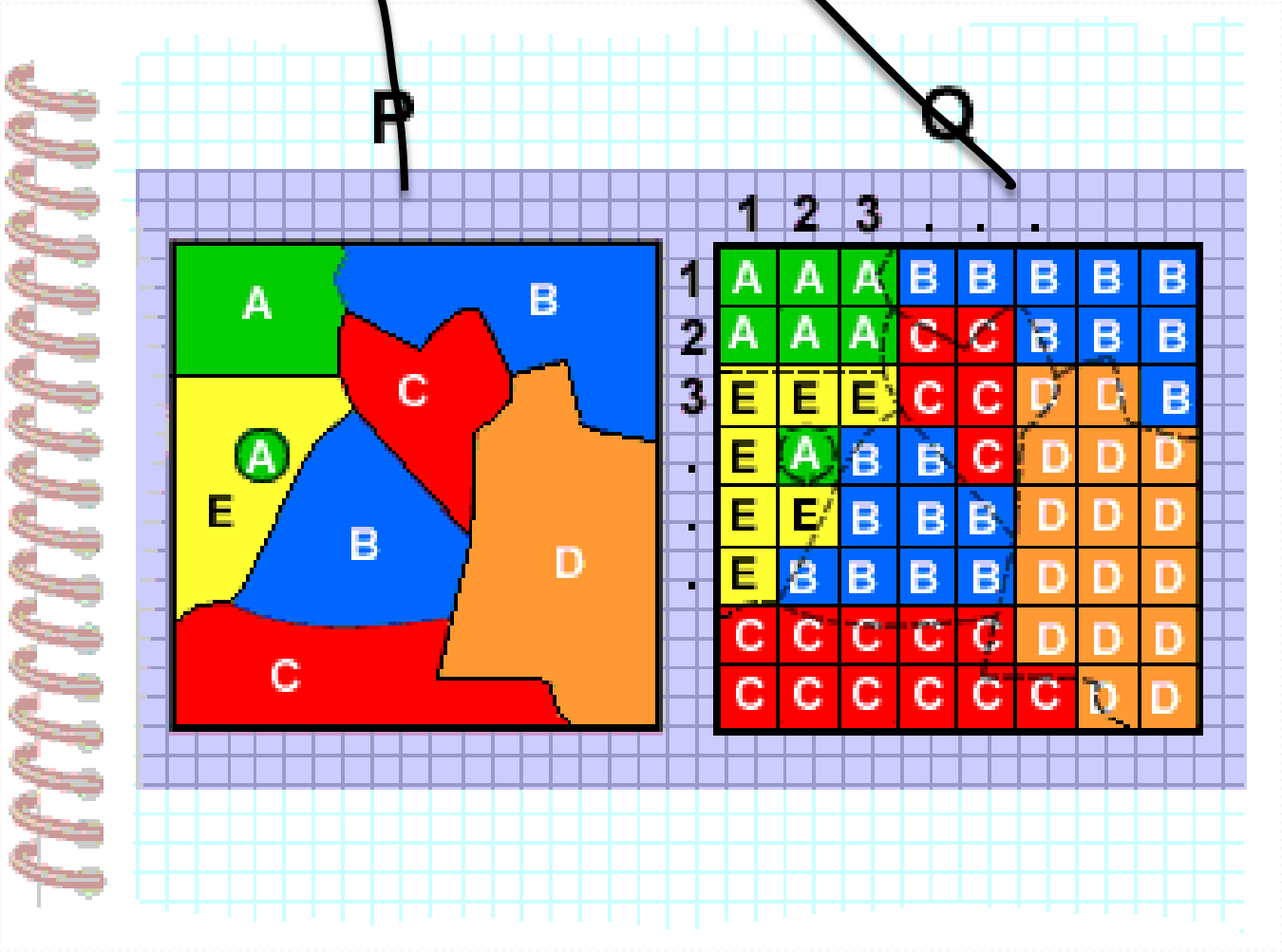

CANADA
Population Change, 1996 to 2001
by 2001 Census Division
% Change
≥ 4%
0% — < 4%
- 4% — 0%
< - 4%
Sparsely populated
KILOMETRES
0 500 1,000 1,500 2,000
1:25,000,000


Place name
Place name
Place name
85
21
16
29
27
77
601
49
273
7
29
7
24
277
279
274
74
218
160
16
521
557
21
49
51

Raster and Vector Maps- Digital Environment

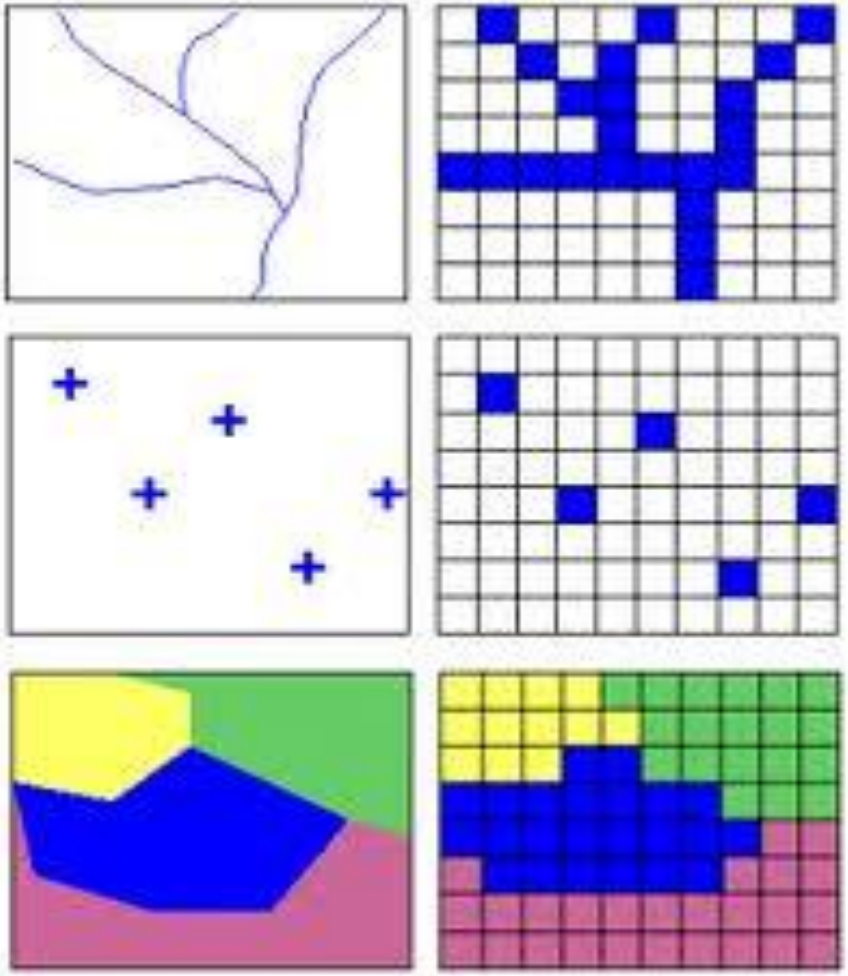
- Maps are represented in a spatial database as raster or vector
- Digital data model is a set of guidelines for the representation of the logical organisation of the data in a database
- The difference between Cartography and GIS lies in the data model
- Basic spatial data models are raster and vector

Raster map
Vector Map

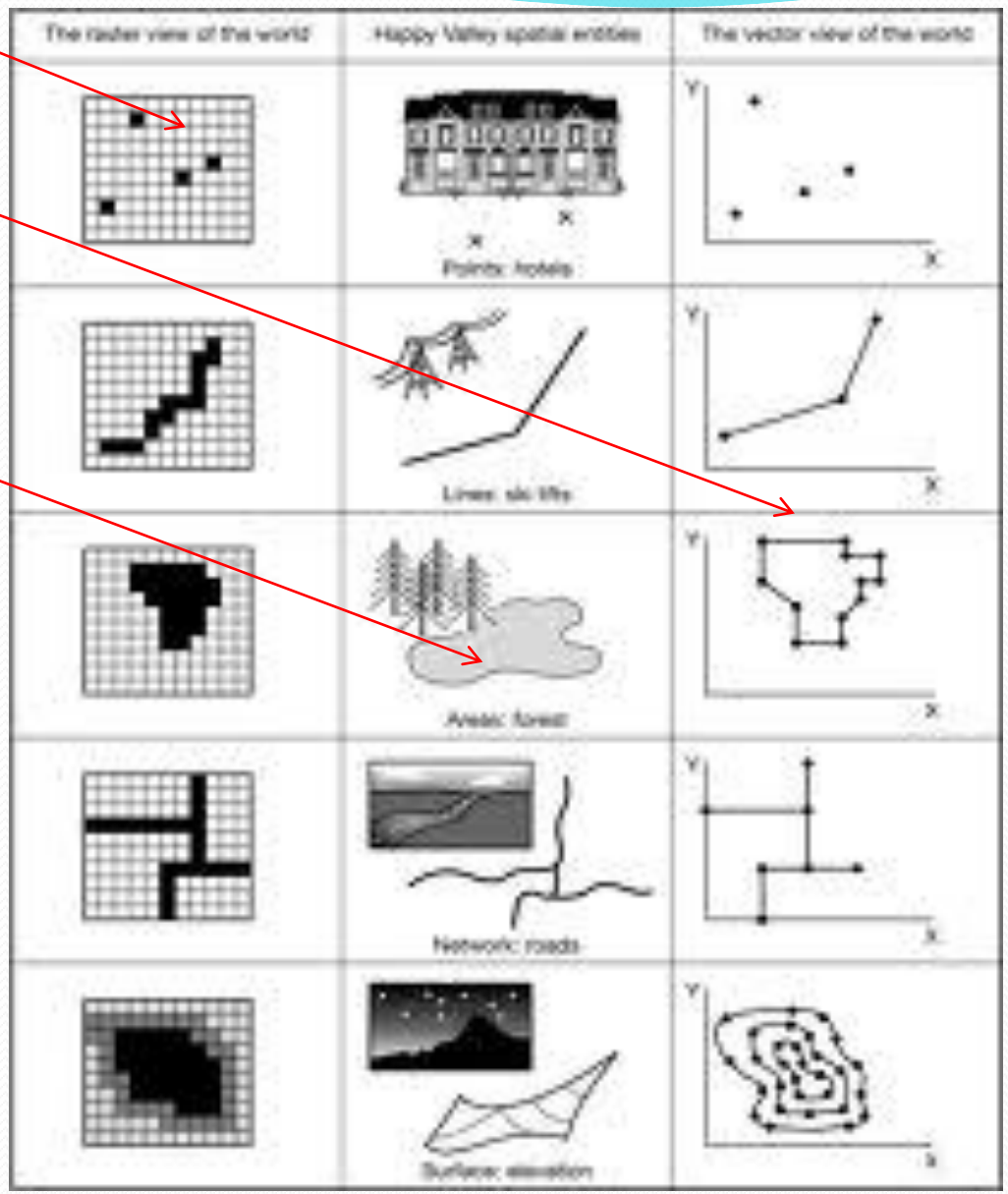


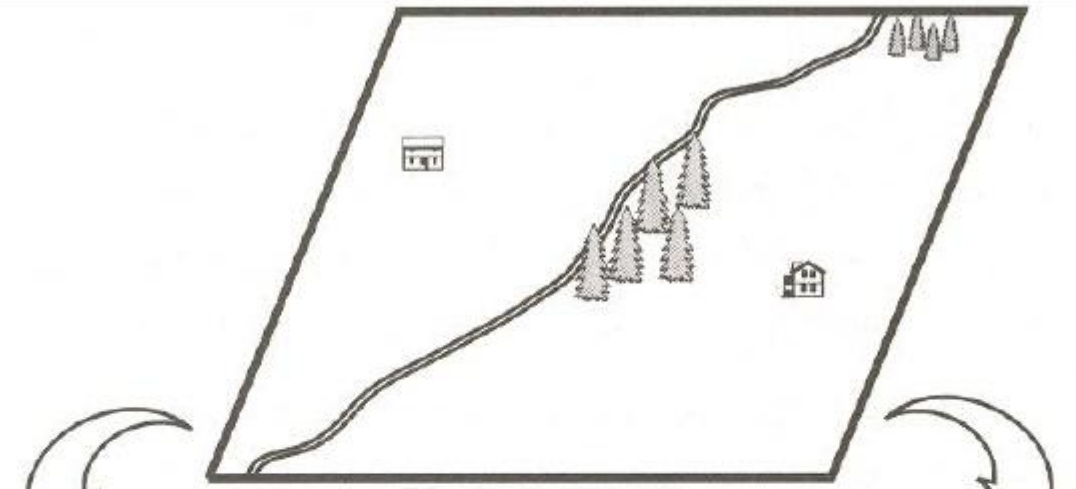
Raster Models
Vector Models

- Represenation of a real world phenomenon

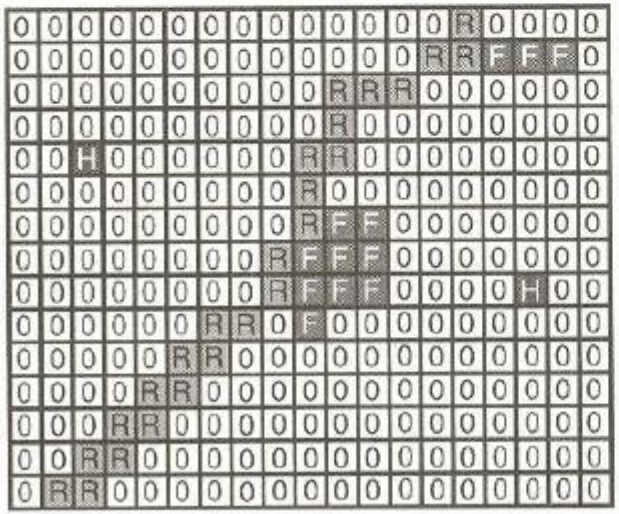


Raster Model
Vector Model
Real World

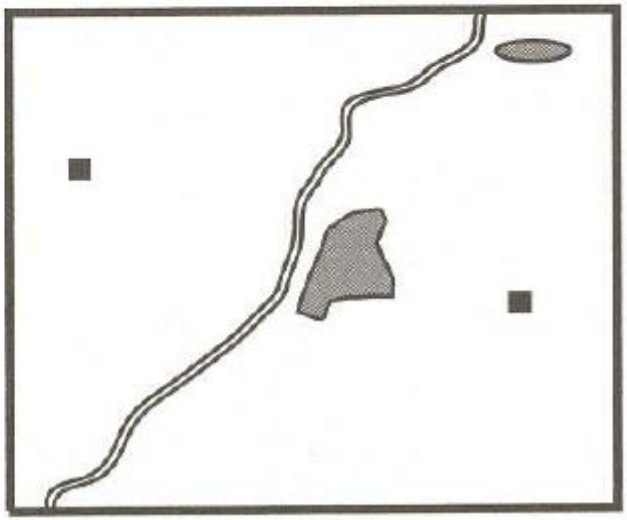




REAL WORLD



Raster grid



Vector

Raster Model- advantages/disadvantages

Simple- math modelling/ analysis	**Linear features hard to represent- depends on resolution, Network linkages?**
Overlays ops easy	Topological relationships
Spatial variability- high	Processing large amounts of attribute data cumbersome
Required- Enhance digital images	High quality carto. Needs not met
Raster output devices	Large storage capacities

Vector Model
Advantages and Disadvantages

Compact structure	Complex data structure compared to raster
Topology efficiently encoded	Overlay operations difficult to implement
Small storage capacities	Manipulation and enhancement of digital images not be effectively done
Easy processing of large amounts of data- its compact so!	High spatial variability not represented simply
Conform to high carto needs