Road sign in Belorussia (next to historic church)

Print & Play Traffic Signs

www.doodlesandjots.com

SYMBOLISATION

Generalisation:
which / how many features we display..

Symbolisation:
how to display them?

General Goal:

"easy and effective communication"

– based on design principles and common sense as much as rules

Symbols: Visual Design Variables

Shape: the detail or outline of a point symbol

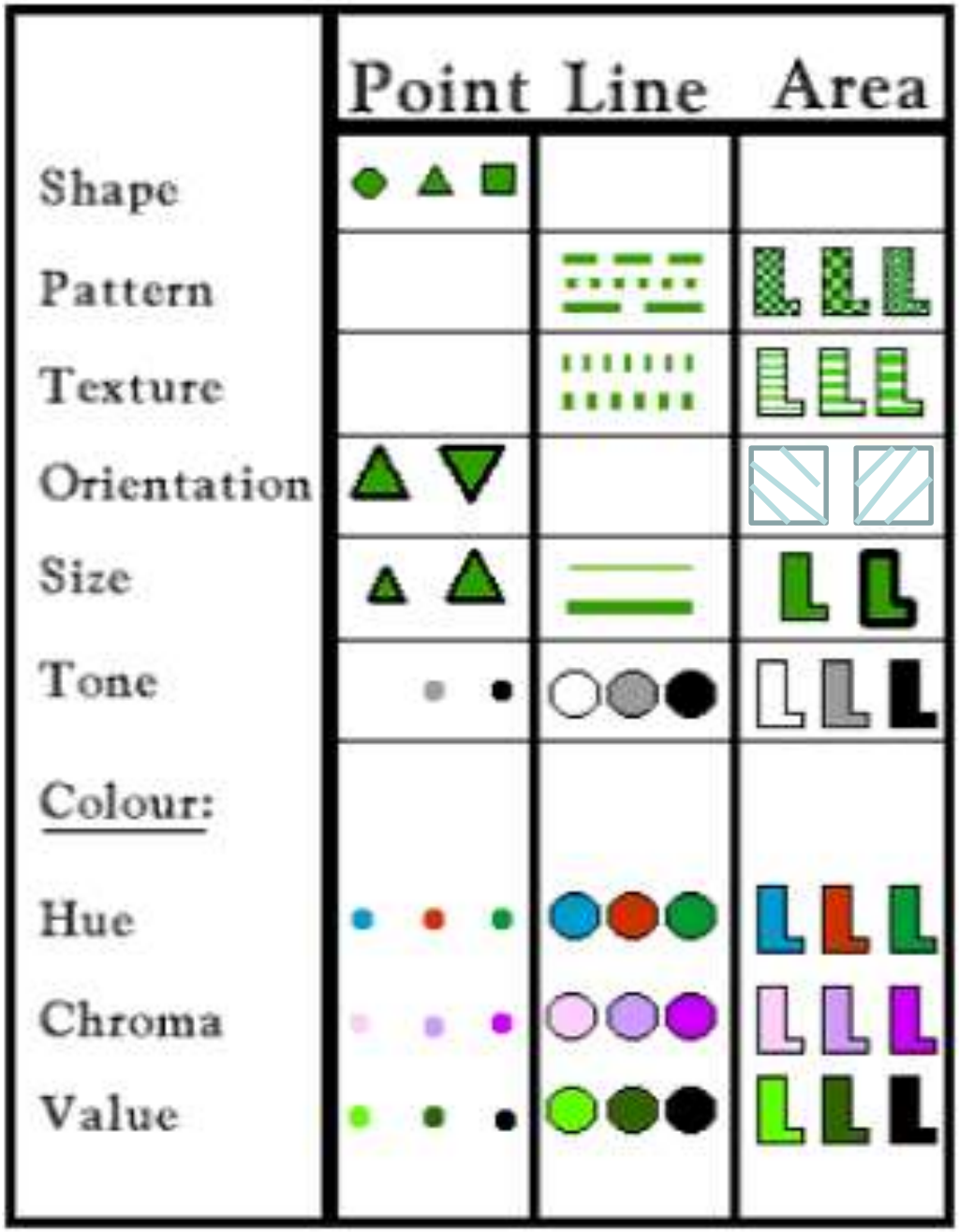
Pattern: regular repetition of shapes

Texture: *variation of tones or lines*

Orientation: *direction of symbol element*

Size: size of a point, width of a line

Tone: shades of gray (% black)



Weak variable

Very weak

Strongest variable

Visual Design Variables

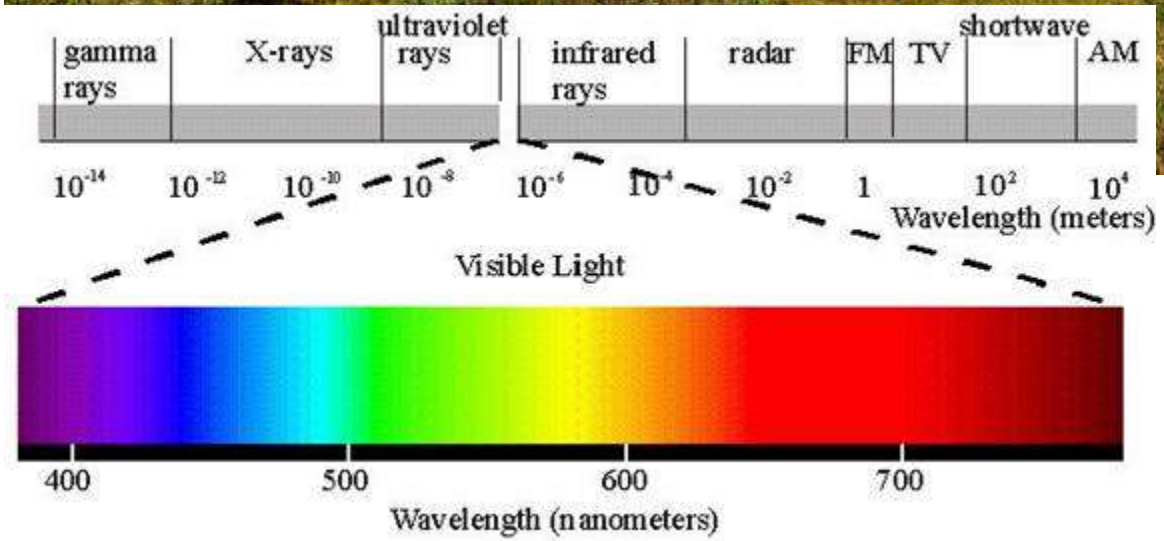
Colour: Has three 'dimensions'

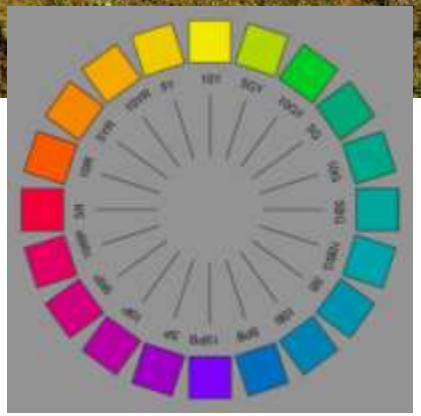
hue (wavelength): "the visual sensations from different wavelengths of light " e.g. red, blue

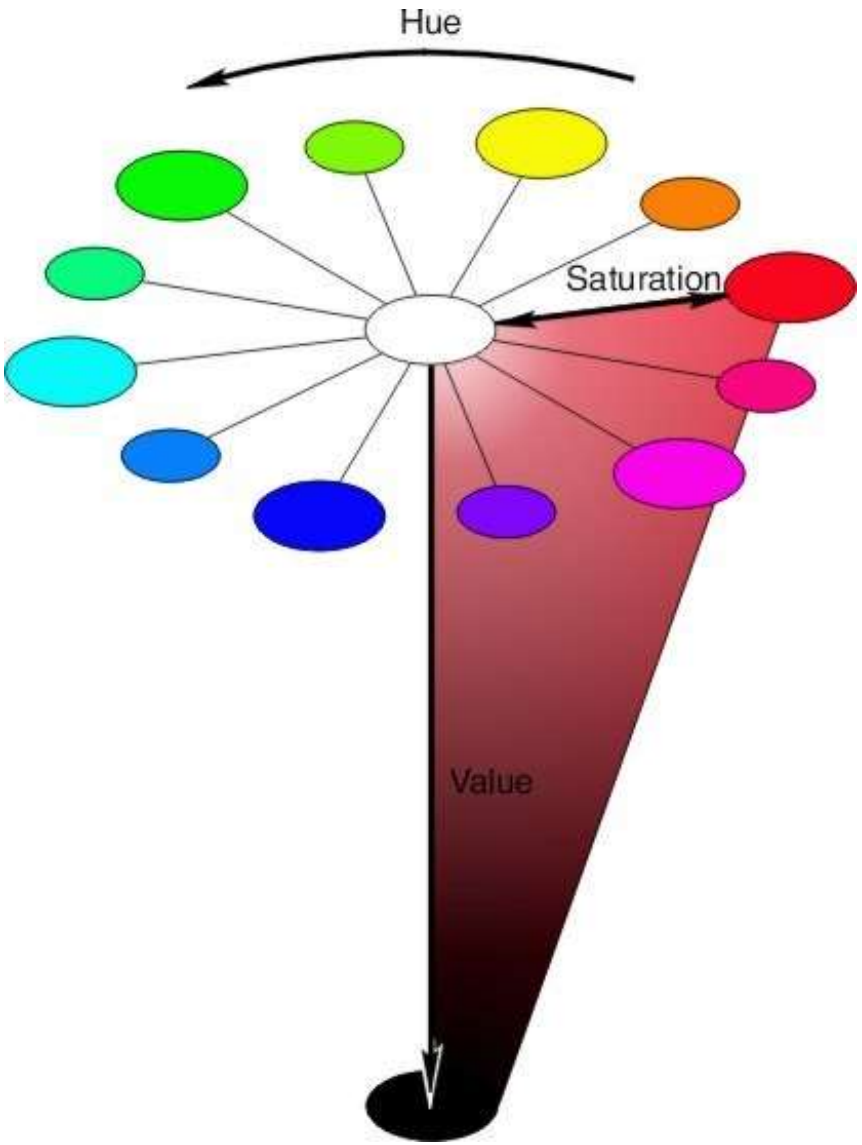
chroma (saturation): saturation or intensity = tints, e.g. pale v solid blue

value (intensity): purity or lightness = shades, e.g. blue v blue/black

The 'electro-magnetic' colour spectrum
the longest wavelengths of light (red) are the least refracted







hue - basic colour we see, eg 12 step wheel

Chroma - the quality of a color's purity, intensity or saturation.

value – relative lightness or darkness. Can be hard to perceive variations in value

http://www.colorspire.com/rgb-color-wheel

Design criteria: 1. 'Association'

Symbols should be 'associated' with their features, physically or by function

Vegetation — green

Contours — brown
(except on ice …)

Battlefield

Winter sports

Camping

Railway line

Shape: Iconic and abstract point symbols

choice may depend on map purpose and space available

'Iconic' (pictorial)

'Abstract'

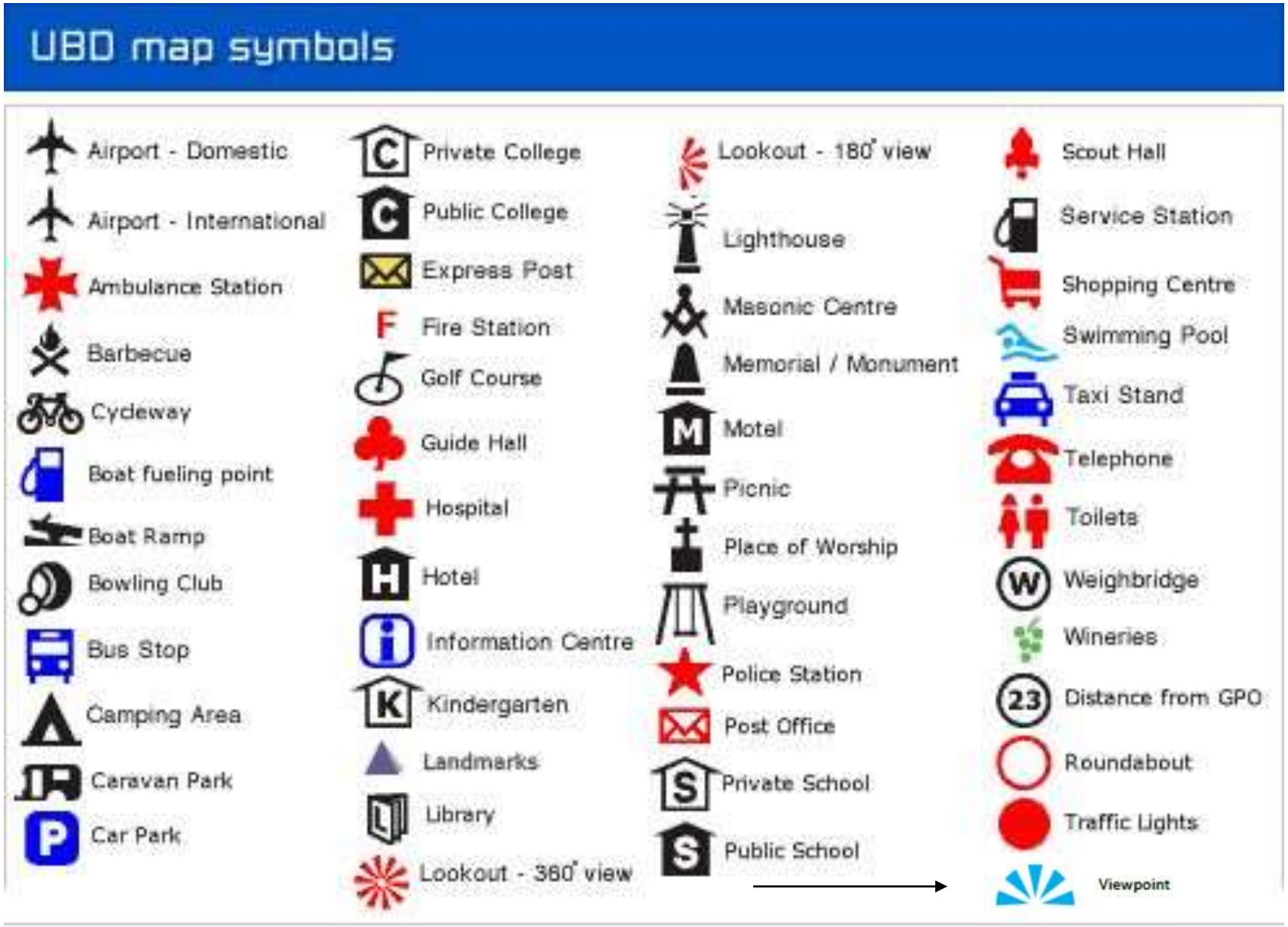
Letters are not normally used except for:

H Hospital

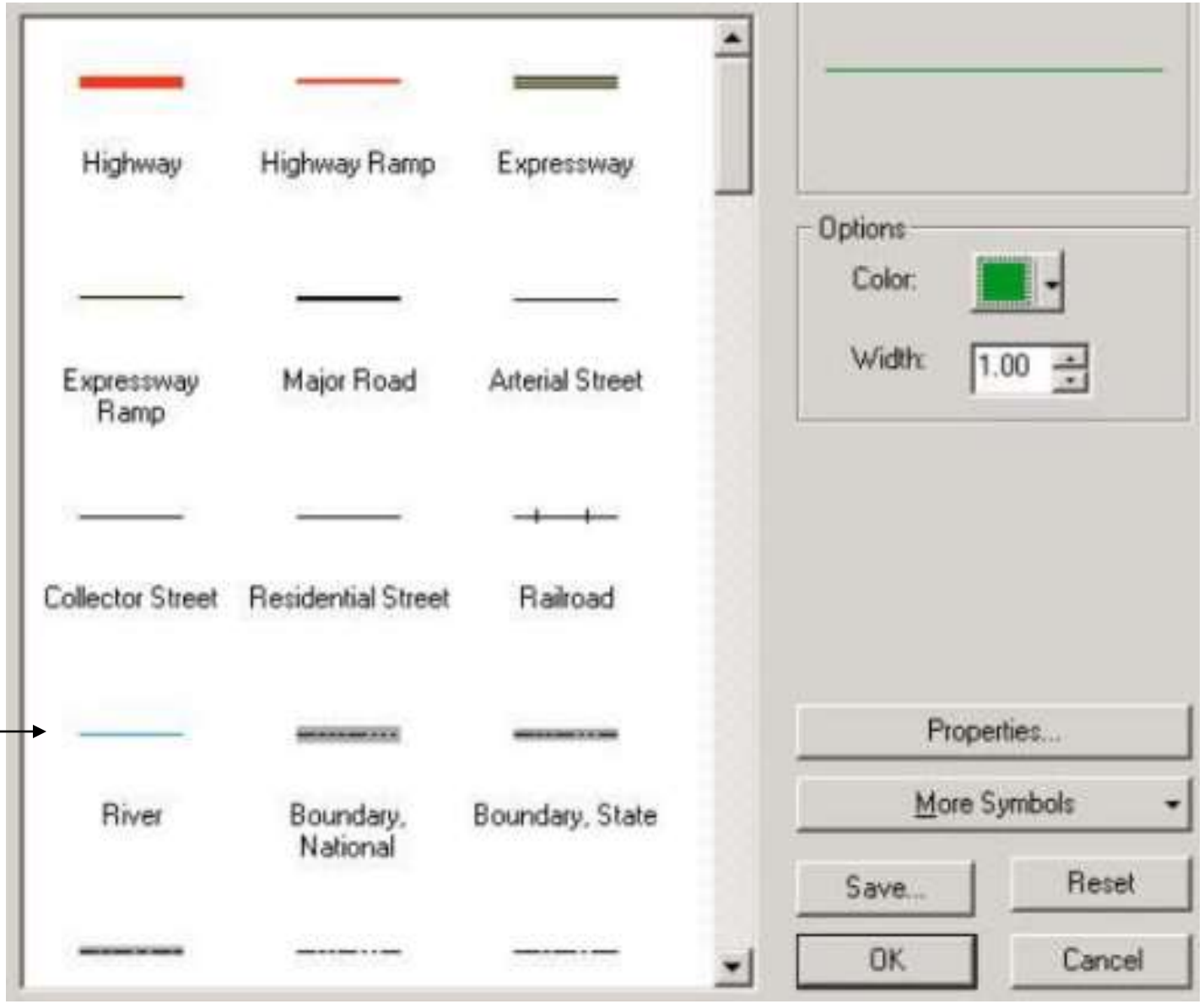
P Parking

i Information (why the 'lower case' 'i' ?) or **?**

Point symbols



Association - Lines



Too big for a stream →

Association - Lines

- **'permanent' physical** features are shown as solid.

  e.g. rivers, roads

- Less certain features are shown in **broken** lines.

e.g. intermittent streams, trails

- Administrative boundaries use a **dot-dash** pattern

Areas (polygons) – output design

Fill – colour, pattern

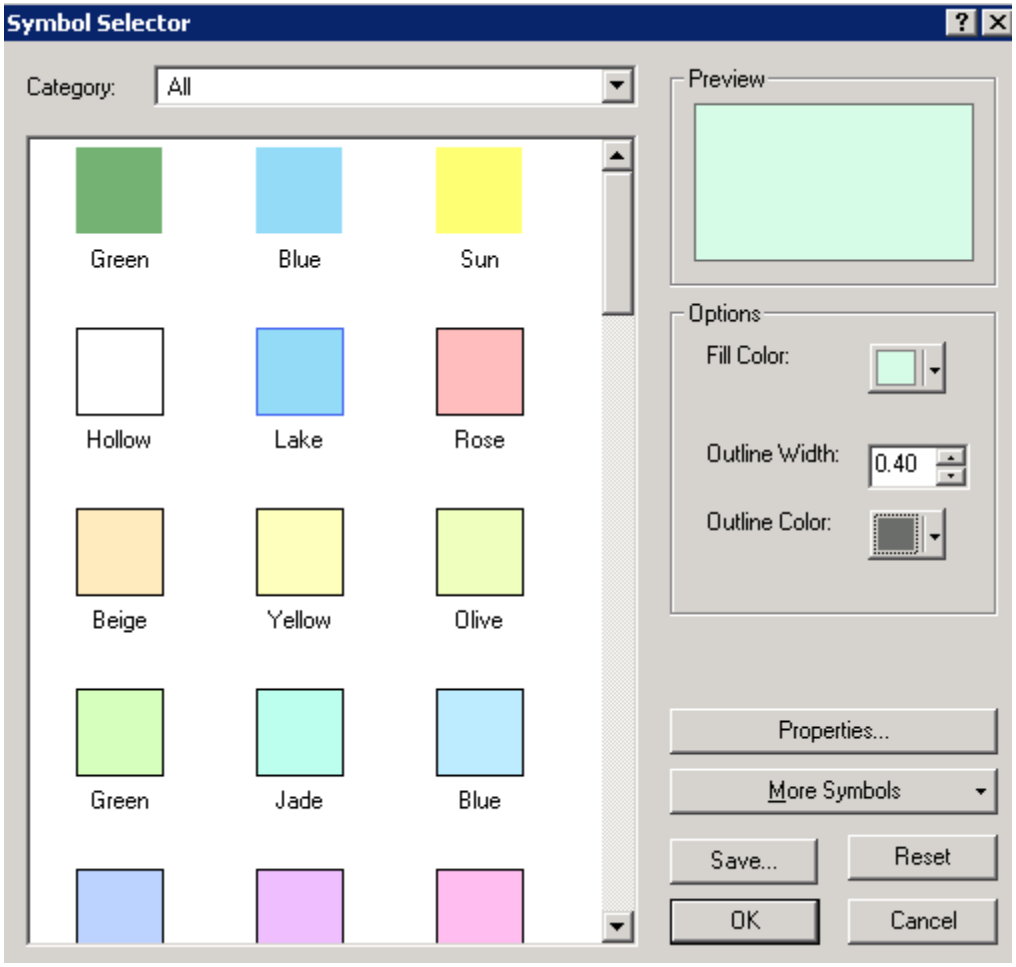
Colours should be associative

Avoid really solid colours

(except for small areas)

Outline ? – colour, width

- No polygon outline for uncertain boundaries



Areas – patterns (not so much)

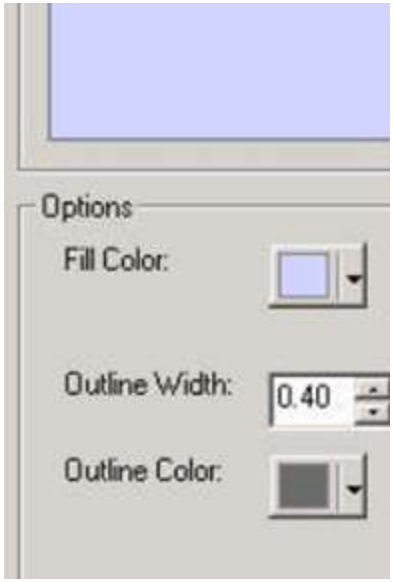
- Visual contrast
- Simple patterns if used
- Patterns may conflict with points
- for small polygons – use colours

Avoid ugly tie stripes !

Don't buy into defaults

Polygons / areas

Use of fill v outline v both depends on:
meaning / significance of area edge



Rivers and lakes: outline (+ colour fill)

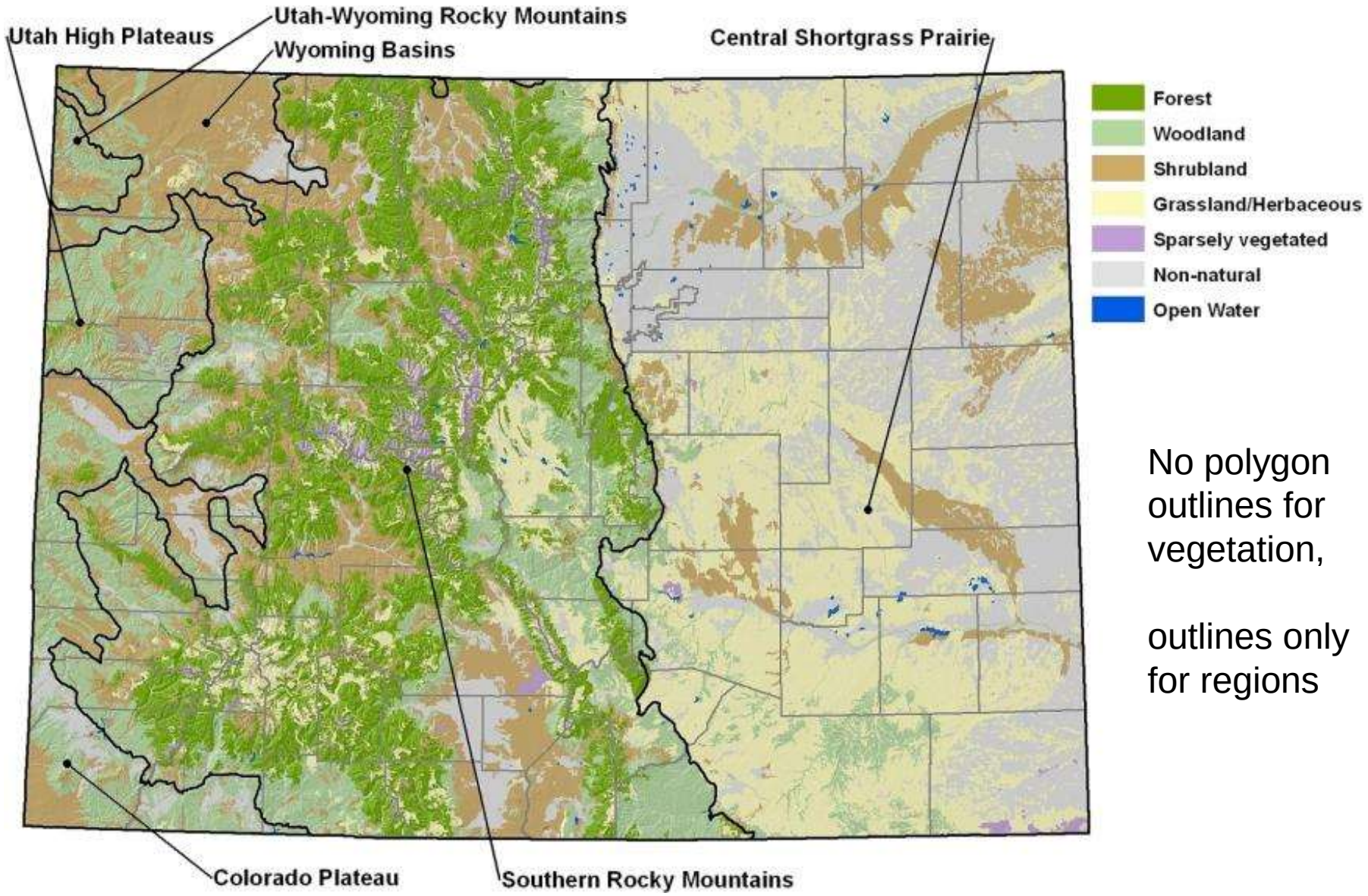
Park boundary: outline / no fill ?

Forest /vegetation: fill only (no outline)

Size: small area - fill (+outline)

large area - outline only

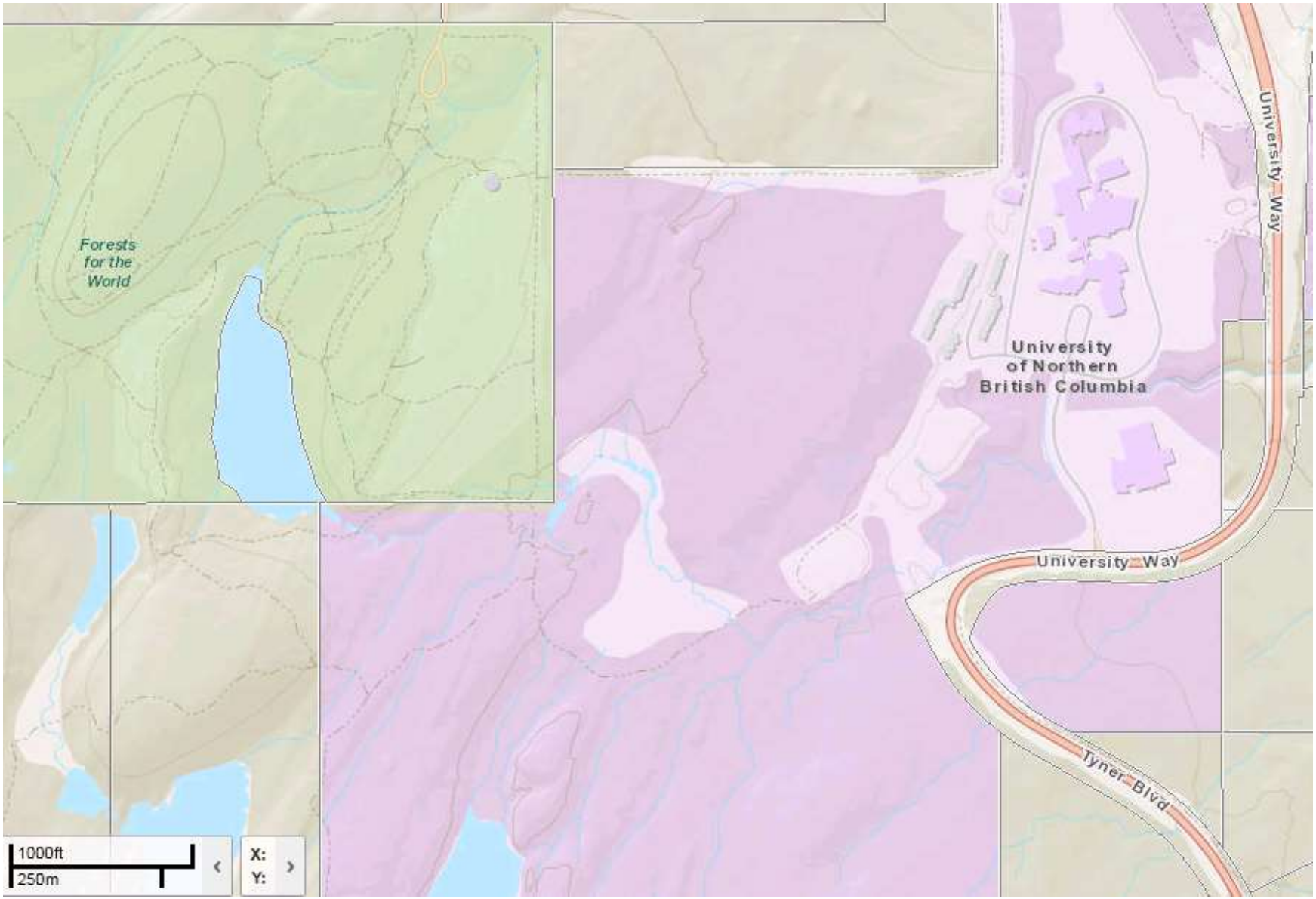
Example 1



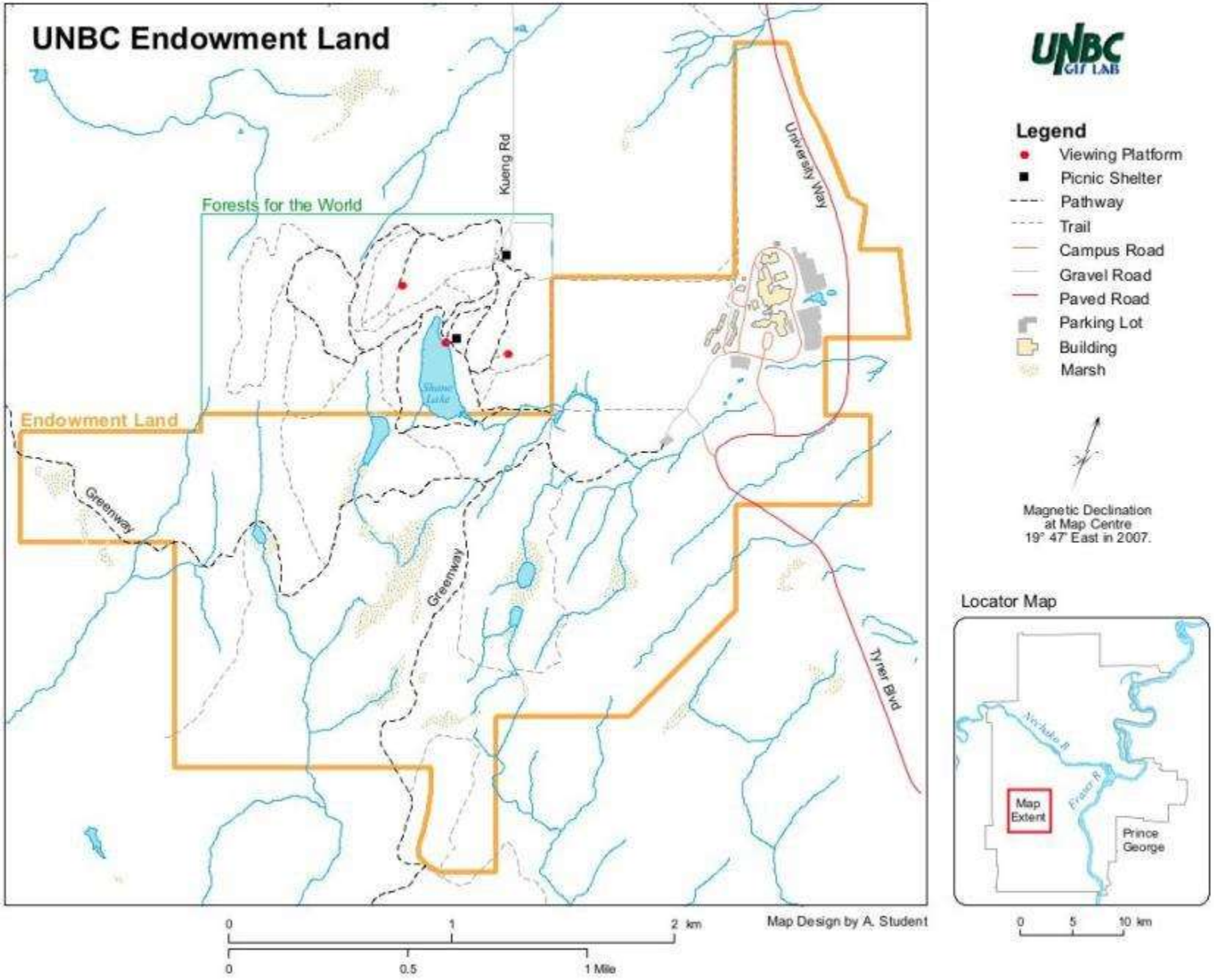
No polygon outlines for vegetation,

outlines only for regions

Example 2: PGmap – use of area transparency – but outline only might be better



Example 3: - good line width contrast <u>but streams still too thick</u>



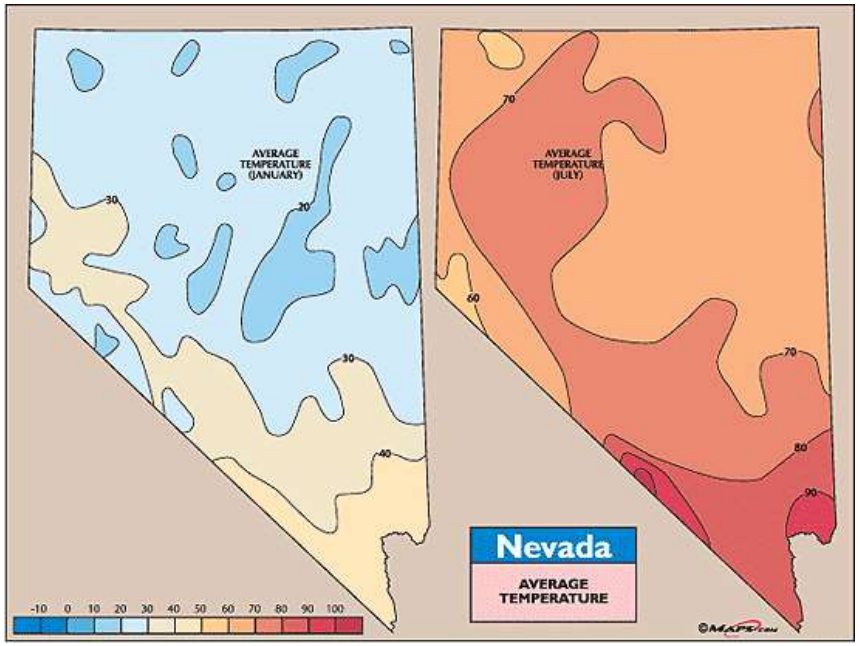
Colour associations: physical and psychological

Yellow – sun, bright (cheery..) ;

Blue – water, calm, cool etc..

Red – heat, danger, blood ?

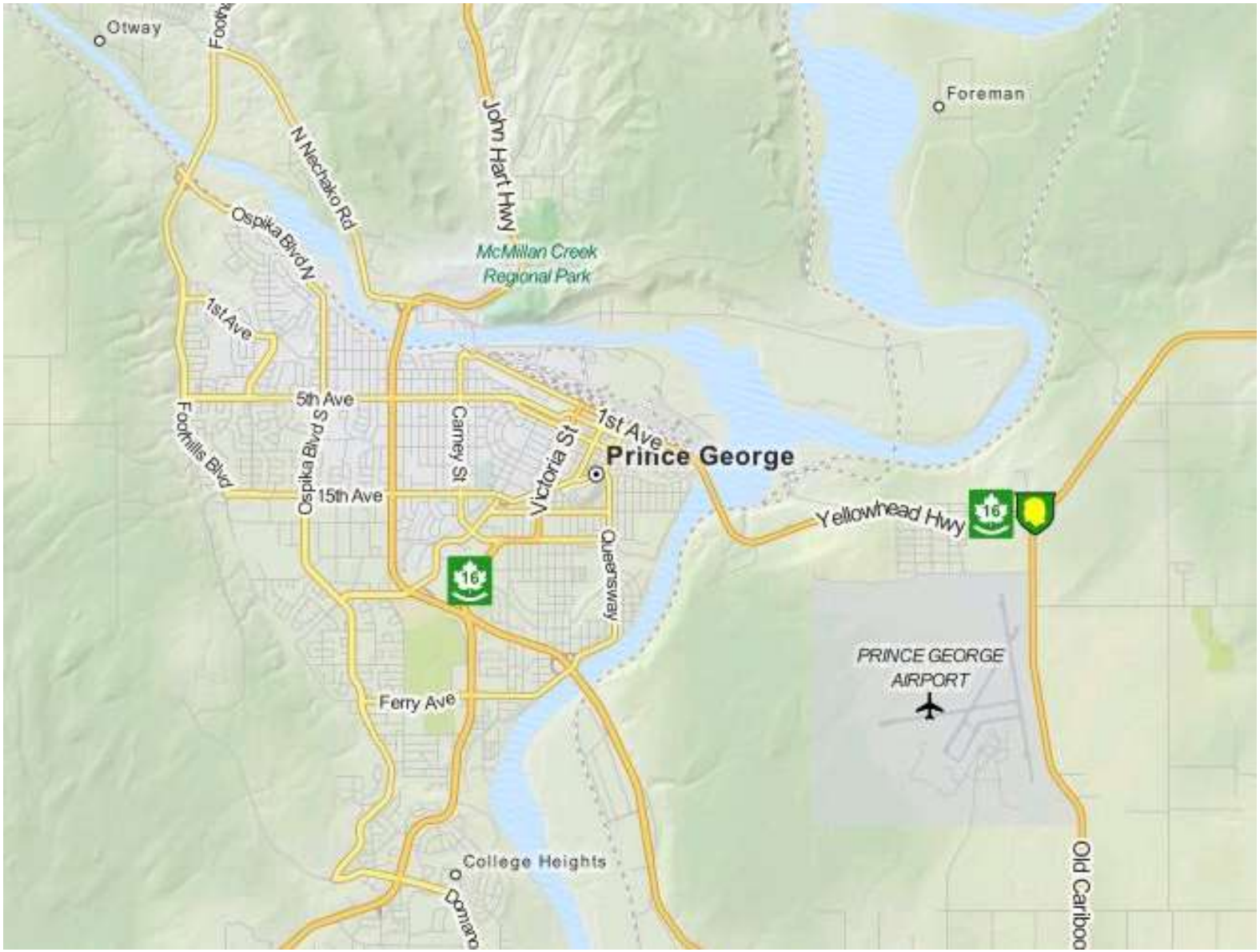
Green – vegetation, parks, recycling ?



http://visual.ly/meaning-colour-marketing

Association – size

larger / more important features e.g. road width



Conventional symbols –

e.g. topographic mapping

based on association principles

Canada NTS conventions

Green – forest vegetation

Red – main roads

Orange - minor roads

Black – buildings

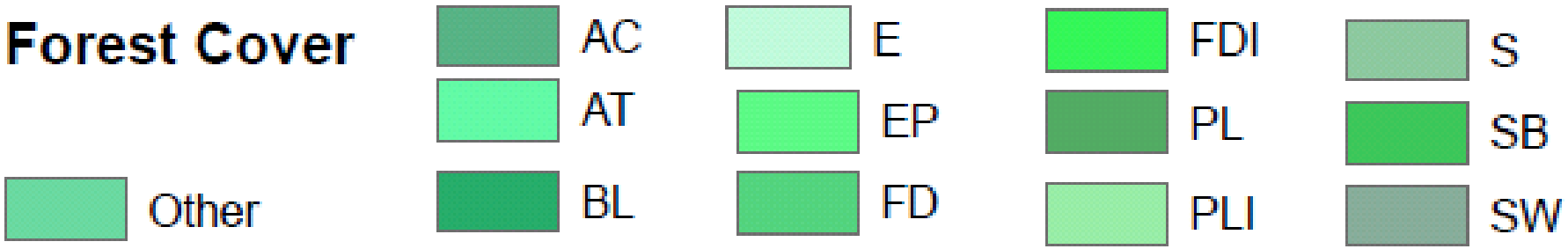
Urban – pink

most conventions are based on association e.g. blue for water, while others are less obvious, e.g. pink / orange for urban.

Association taken too far - ensure good contrast

Example: Unsuccessful forest classification (primary species)

colours: too many similar tints/shades of the same hue



2. Qualitative versus quantitative
- 'data association'

Qualitative: [nominal / categorical]

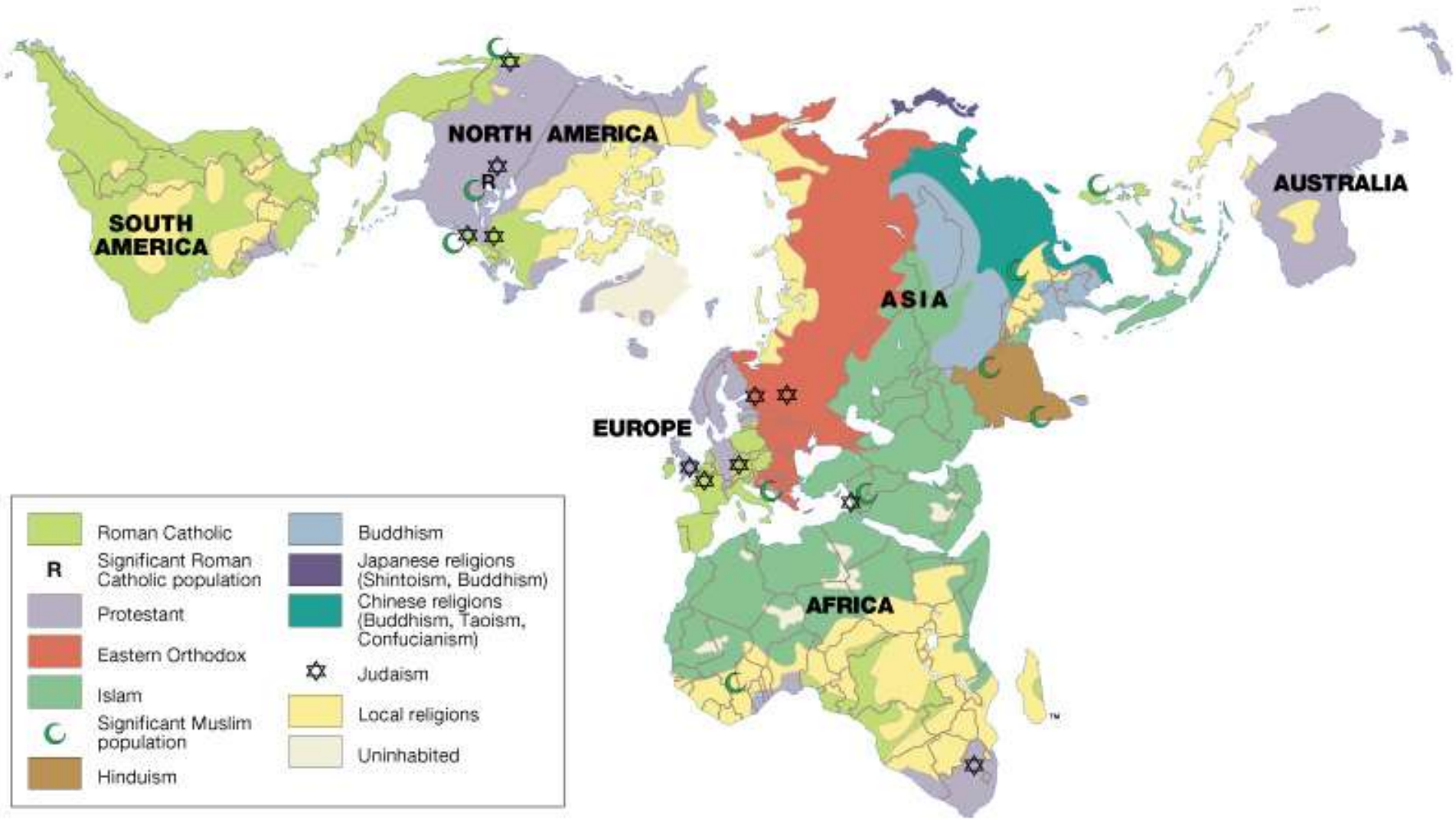
HUE *, shape, pattern e.g. soil types, schools versus churches

** see upcoming slides*

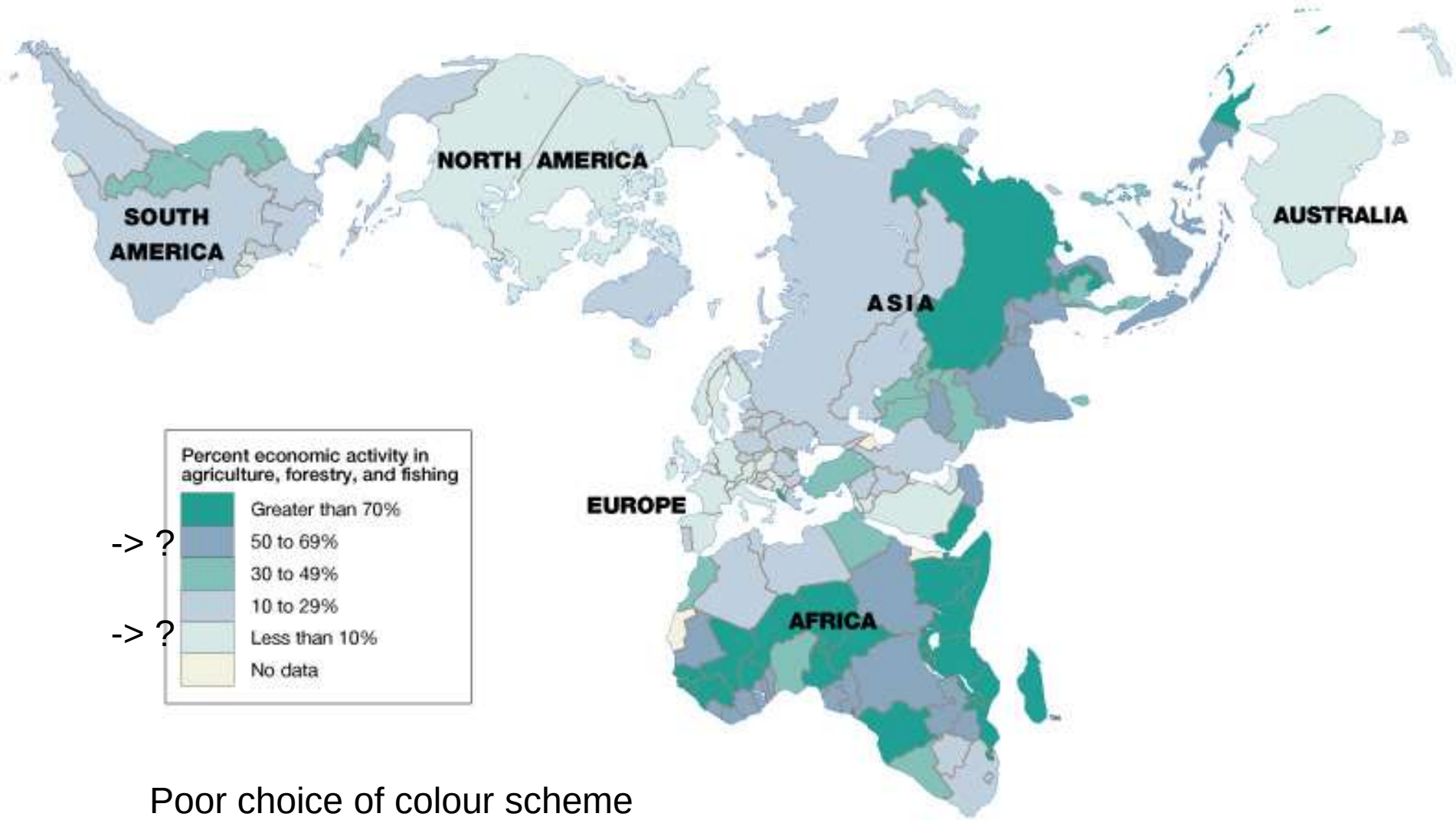
Quantitative: [interval / ordinal]

SIZE, tone, chroma, value e.g. population densities, city sizes

Qualitative (nominal/categorical) data

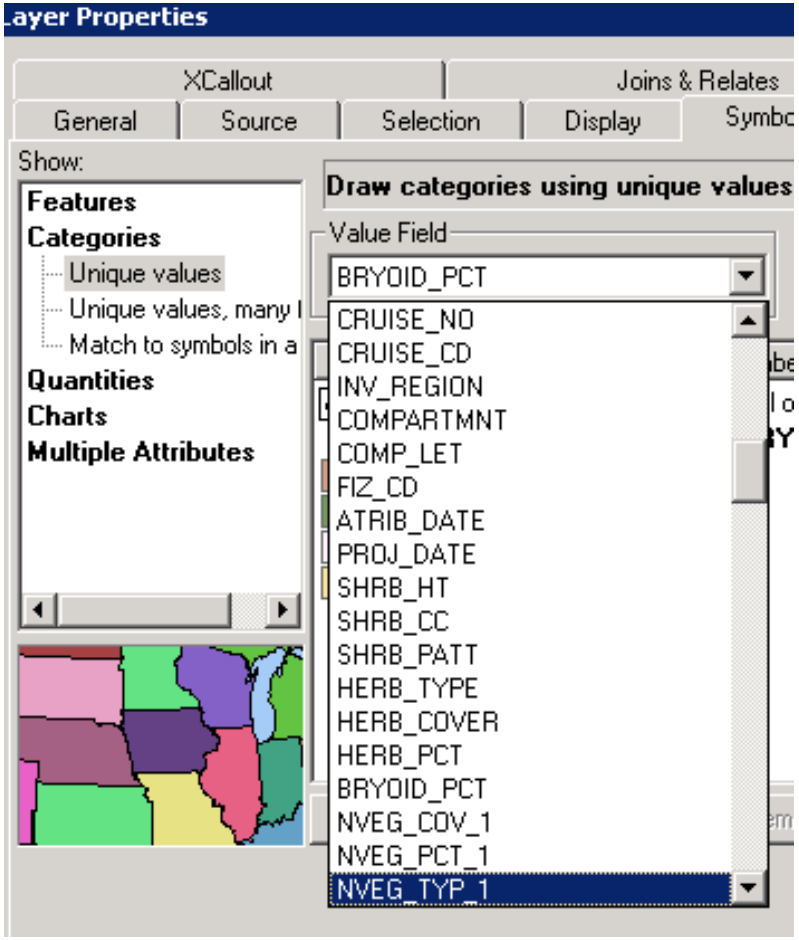


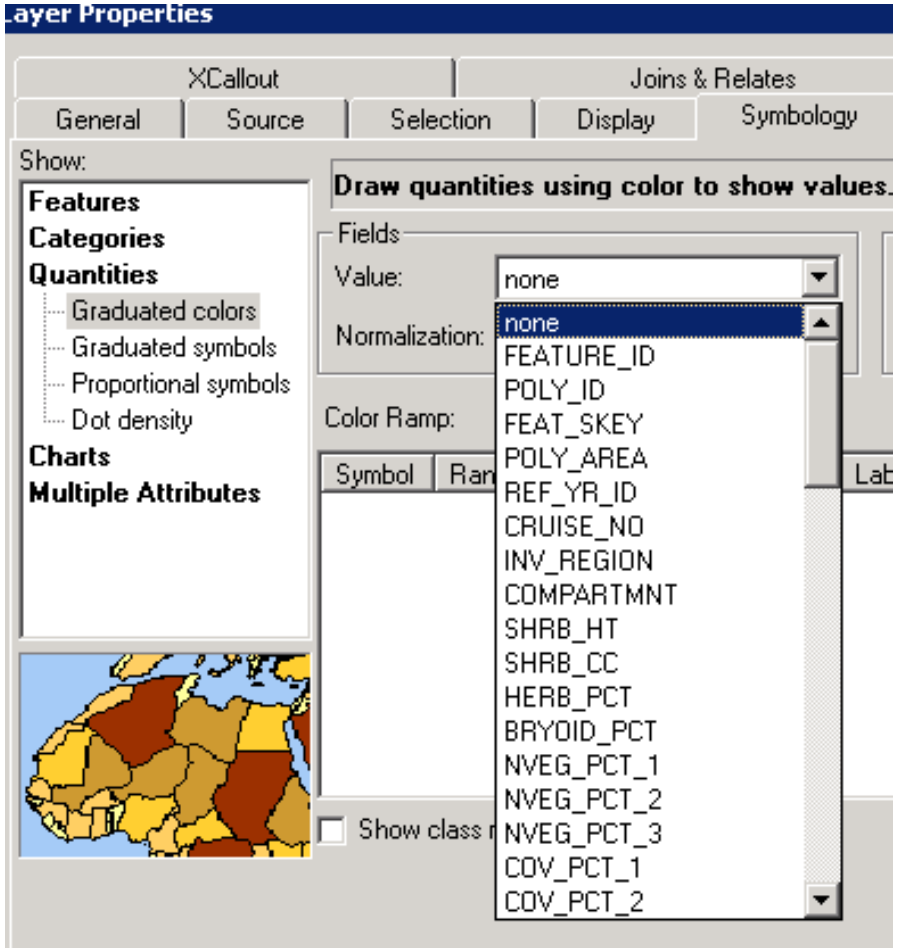
Quantitative (interval) data



Poor choice of colour scheme

ArcGIS – categories v quantities menus



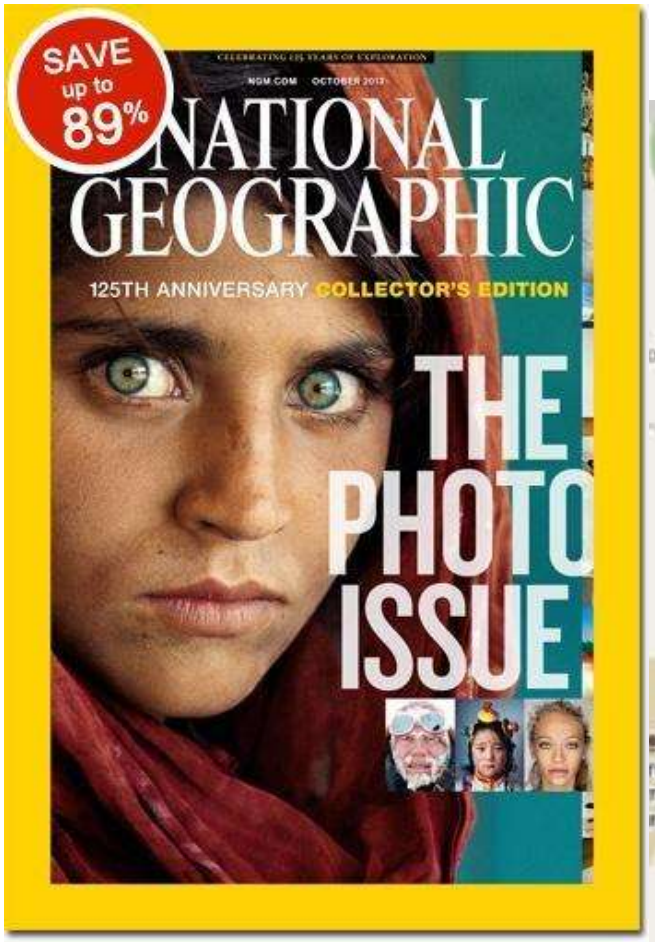


•RED is reserved for importance due to its visual impact
- as it has the longest wavelength and 'advances' (blue retreats)

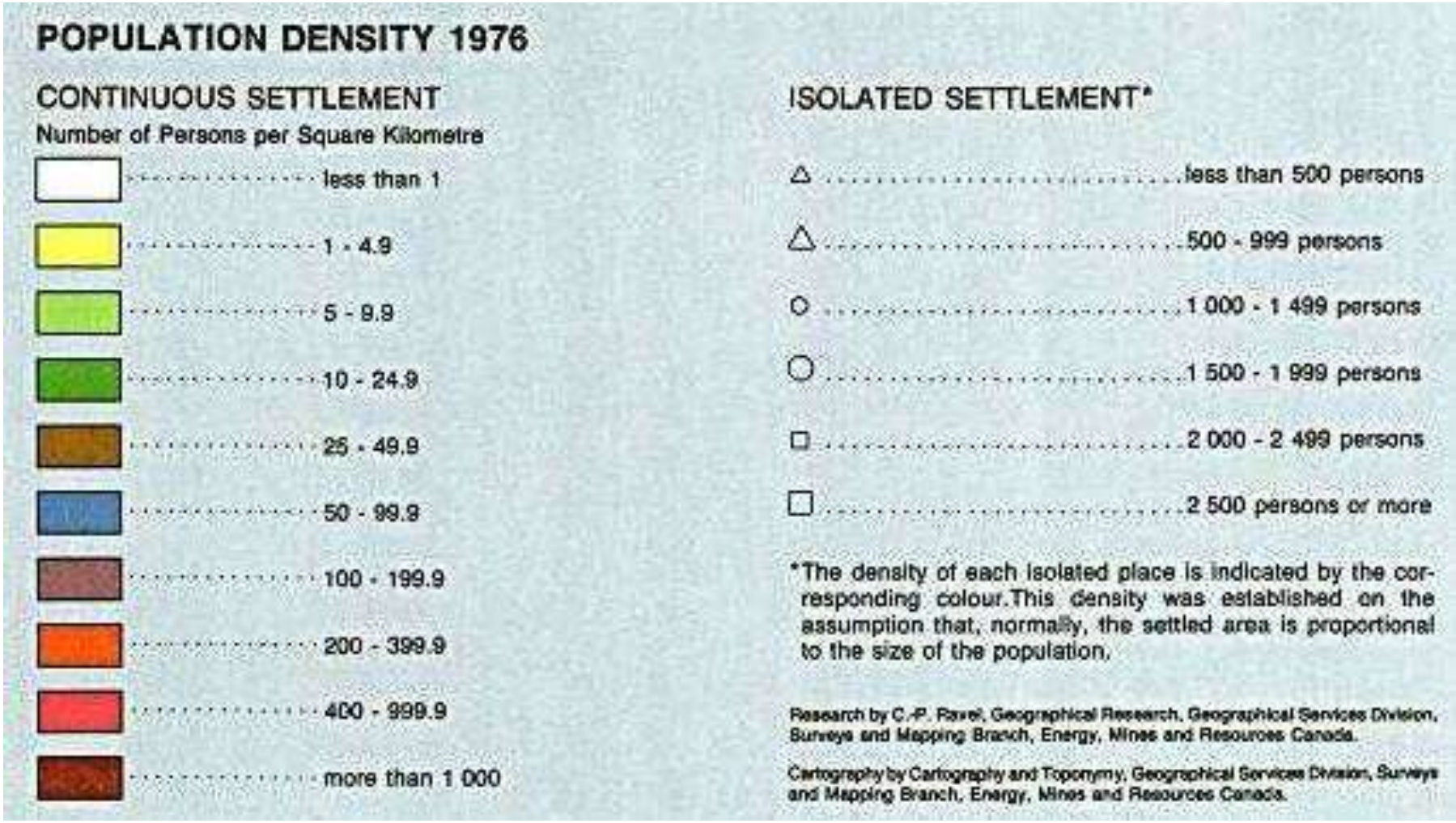
** Red – implies importance: / 'danger' (roads)

Universal STOP sign

Yellow is next to red in the colour spectrum



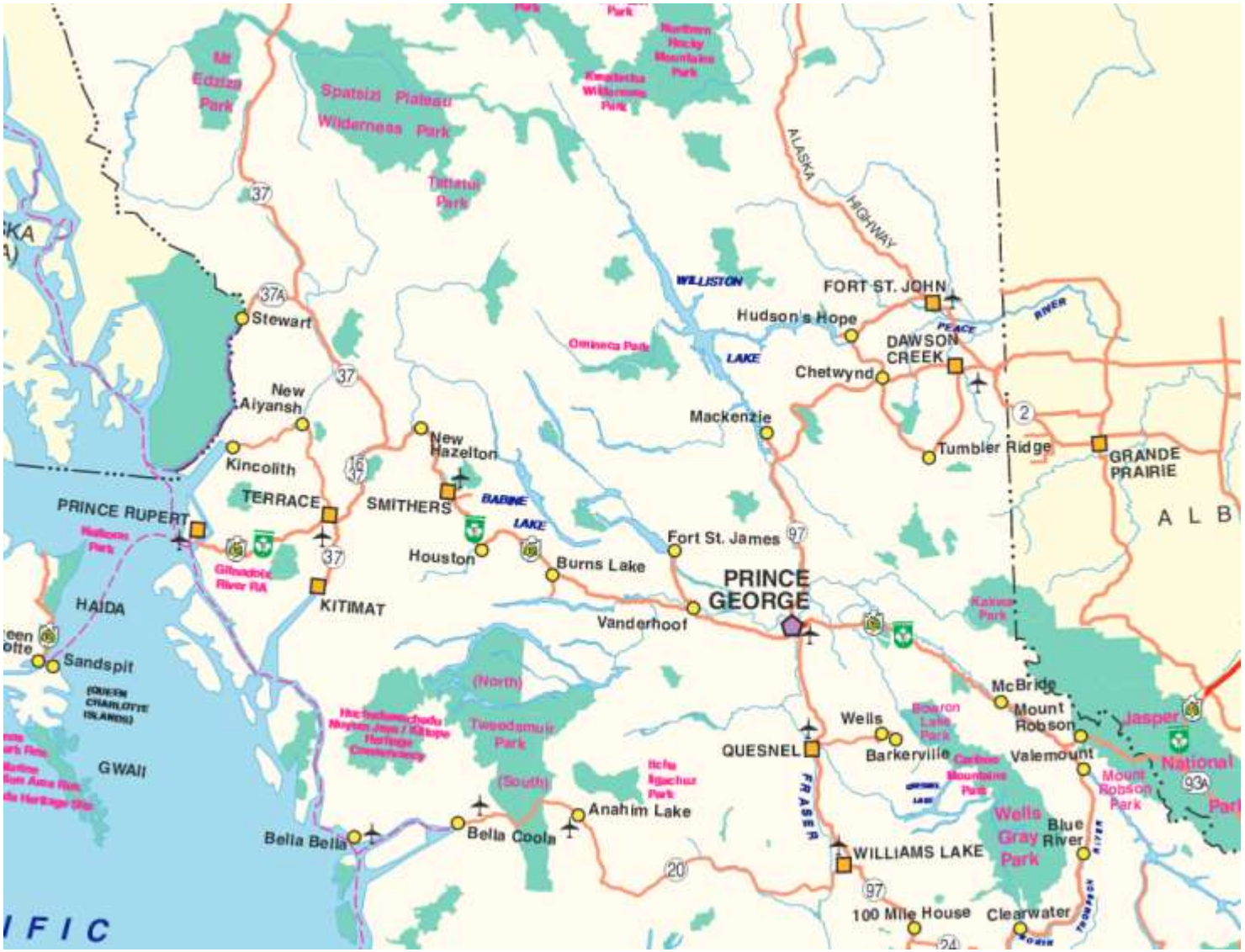
Poor use of colours, size and shape



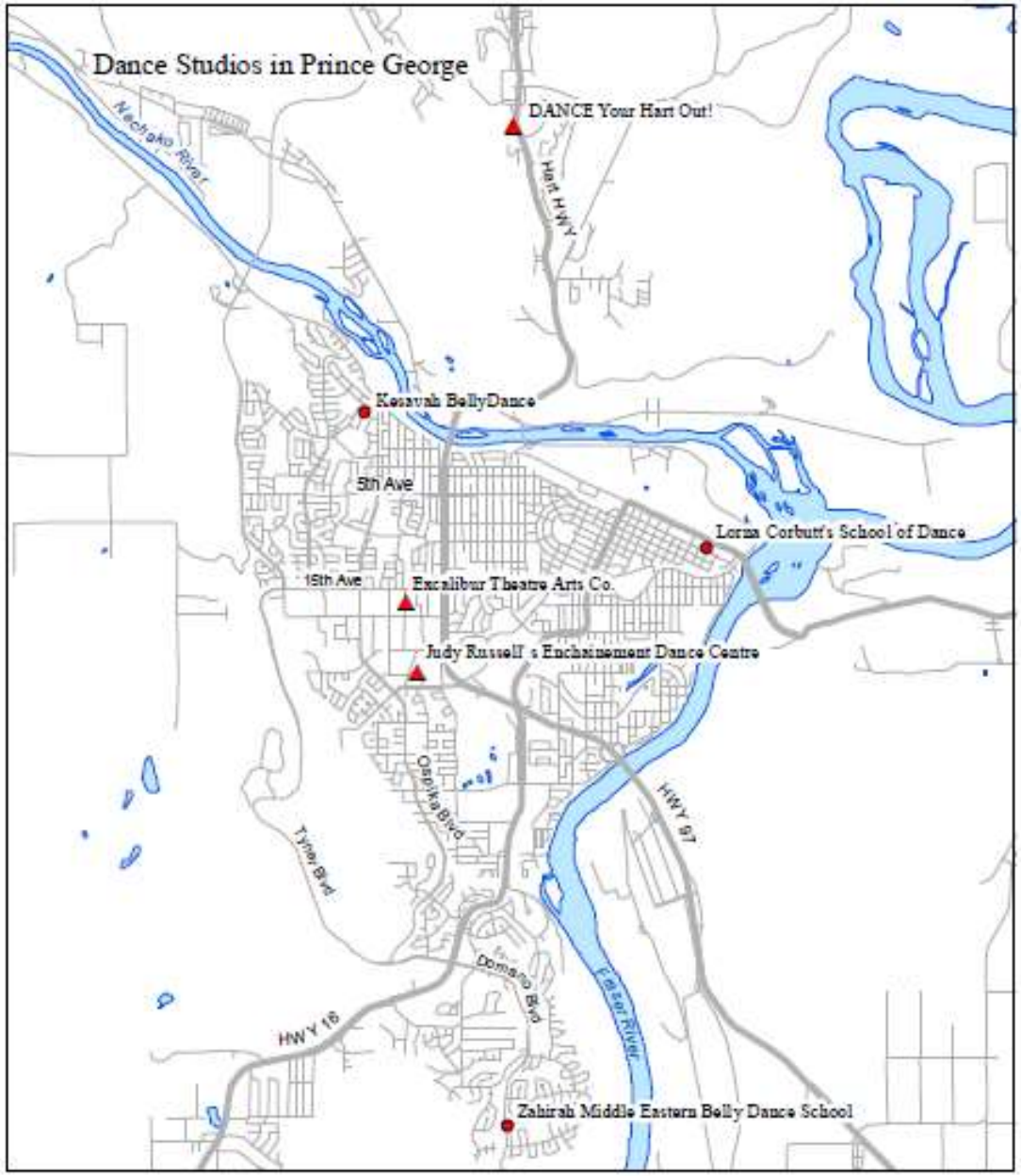
Shame ! Atlas of Canada

3a. Other factors: map purpose

e.g. parks / road map – what features are more important in each case …



3b. Other factors: cost and media



Colour costs v Monochrome:

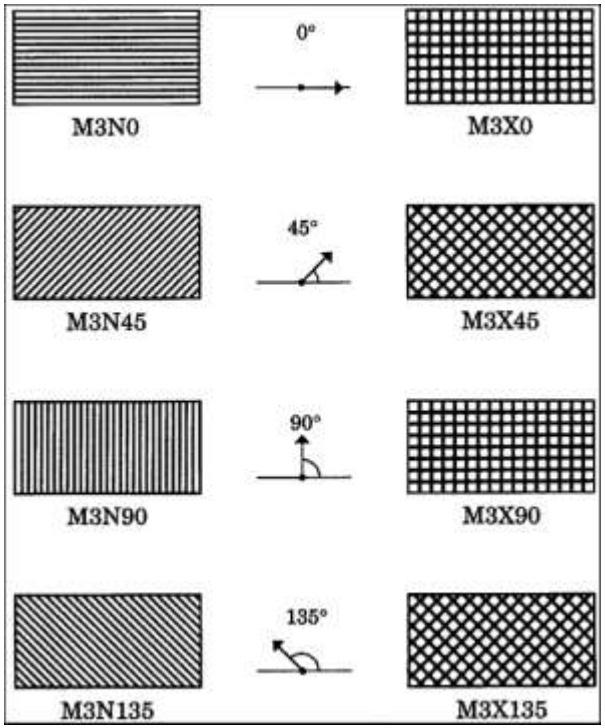
- In this case, colour could be avoided if not needed

- online no cost
- monochrome 1x
- photocopy 10x
- publication 1000x ?

- Don't always use colour, <u>just</u> because you can …
but in 2022, you often can …

Patterns - areas

Historic use:
Impact on legibility



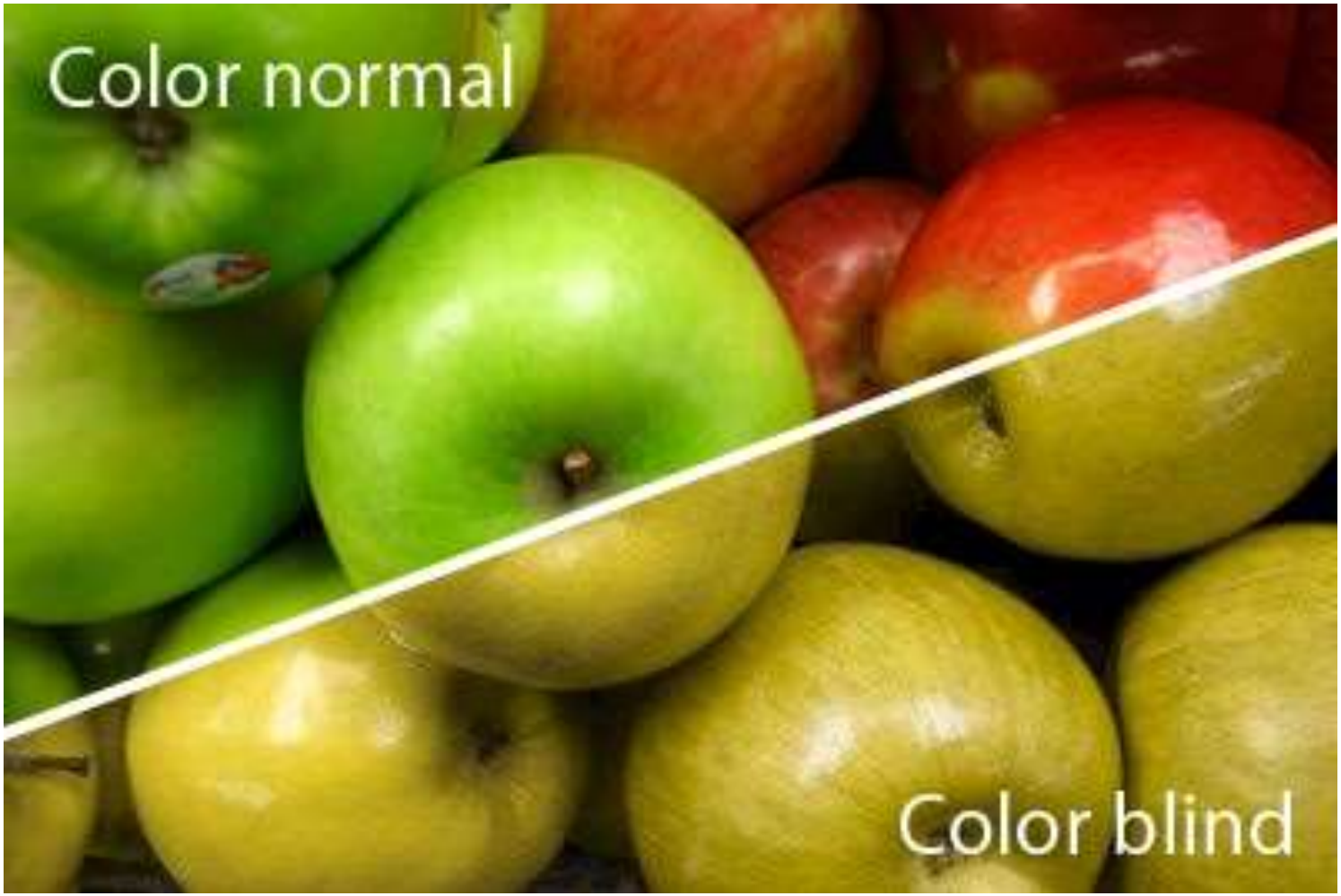
Line patterns in SAS/Graph
- Older version !

General impact of digital media on mapping

- **Increased use of colour**
- **Decreased use of patterns and textures**

More on colour ….

- colour blindness. 7% of men and 1% of women



Summary on symbol design

Symbols – design variables:

Qualitative	*Quantitative*
shape, pattern,	size, tone
colour - hue (except red)	colour – chroma / value

Symbols – use of design variables:

1. *Association*: form, size, colour, convention
2. Qualitative or quantitative data
3. Output purpose, cost and media

Much of this is common sense – design enables communication