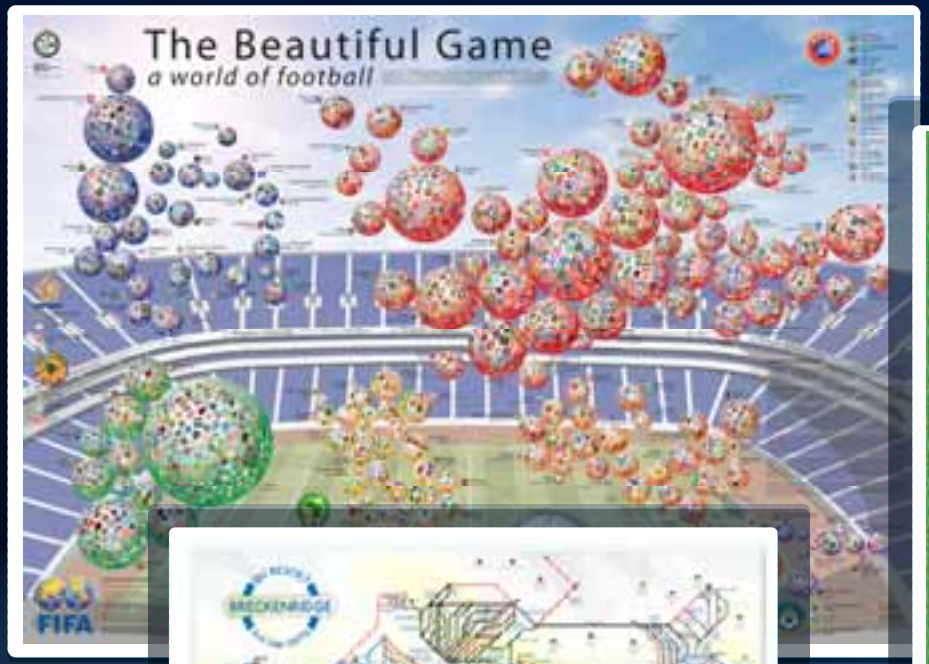
Esri International User Conference | San Diego, CA
Technical Workshops | Tues July 12th 13:30-14:45

Value your maps!

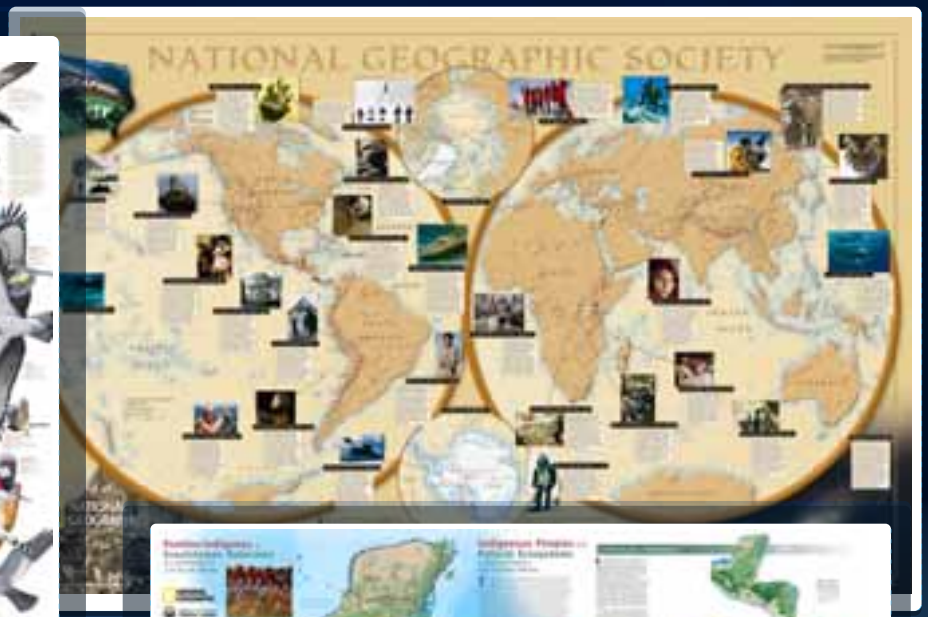
A checklist approach for map evaluation

Kenneth Field, Allen Carroll, Damien Demaj

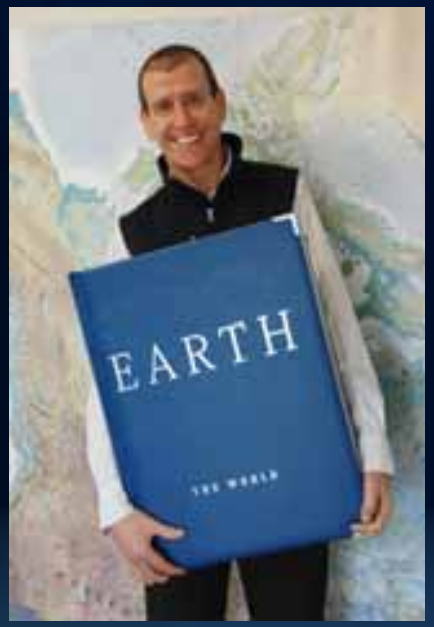
Kenneth Field



Allen Carroll



Damien Demaj



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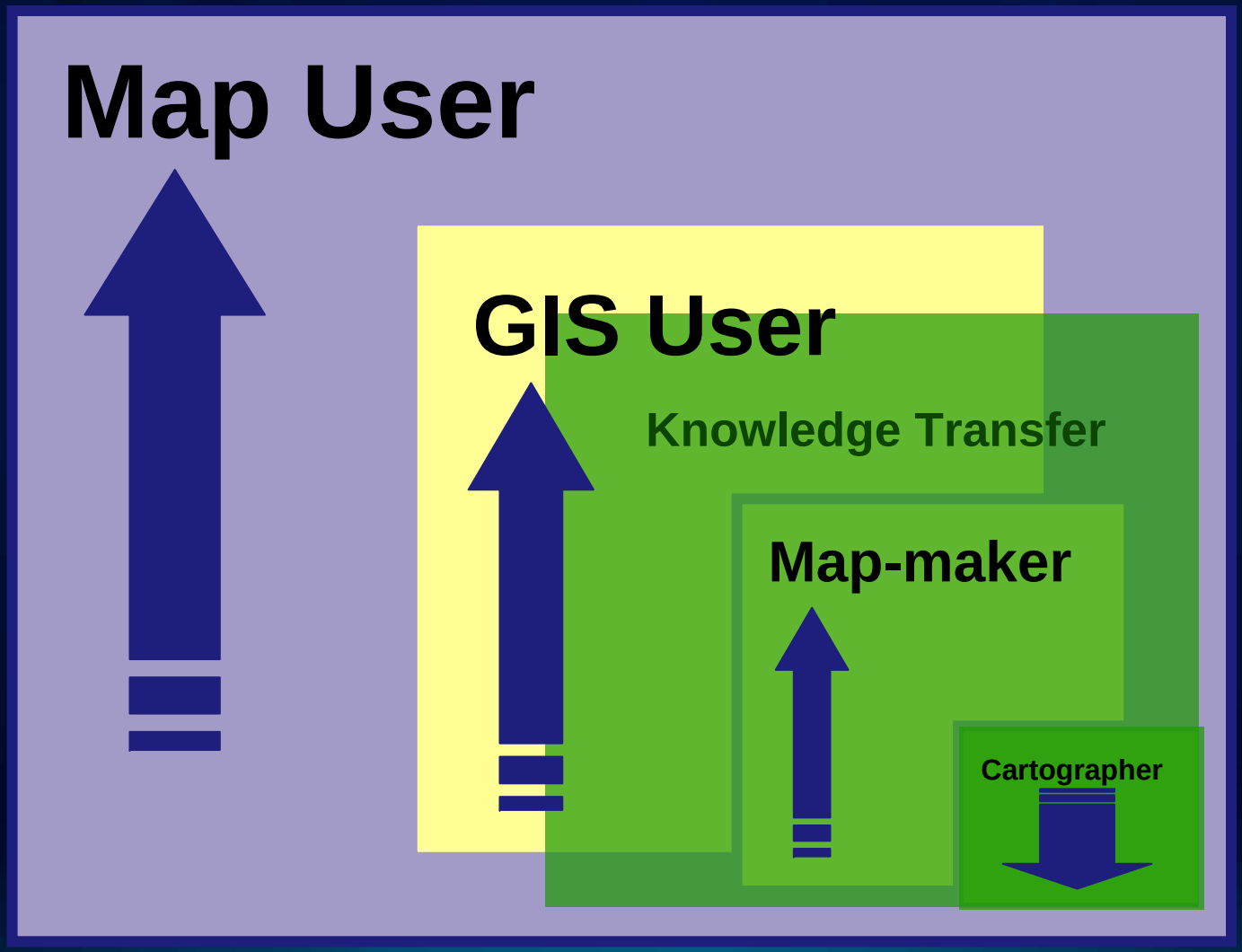
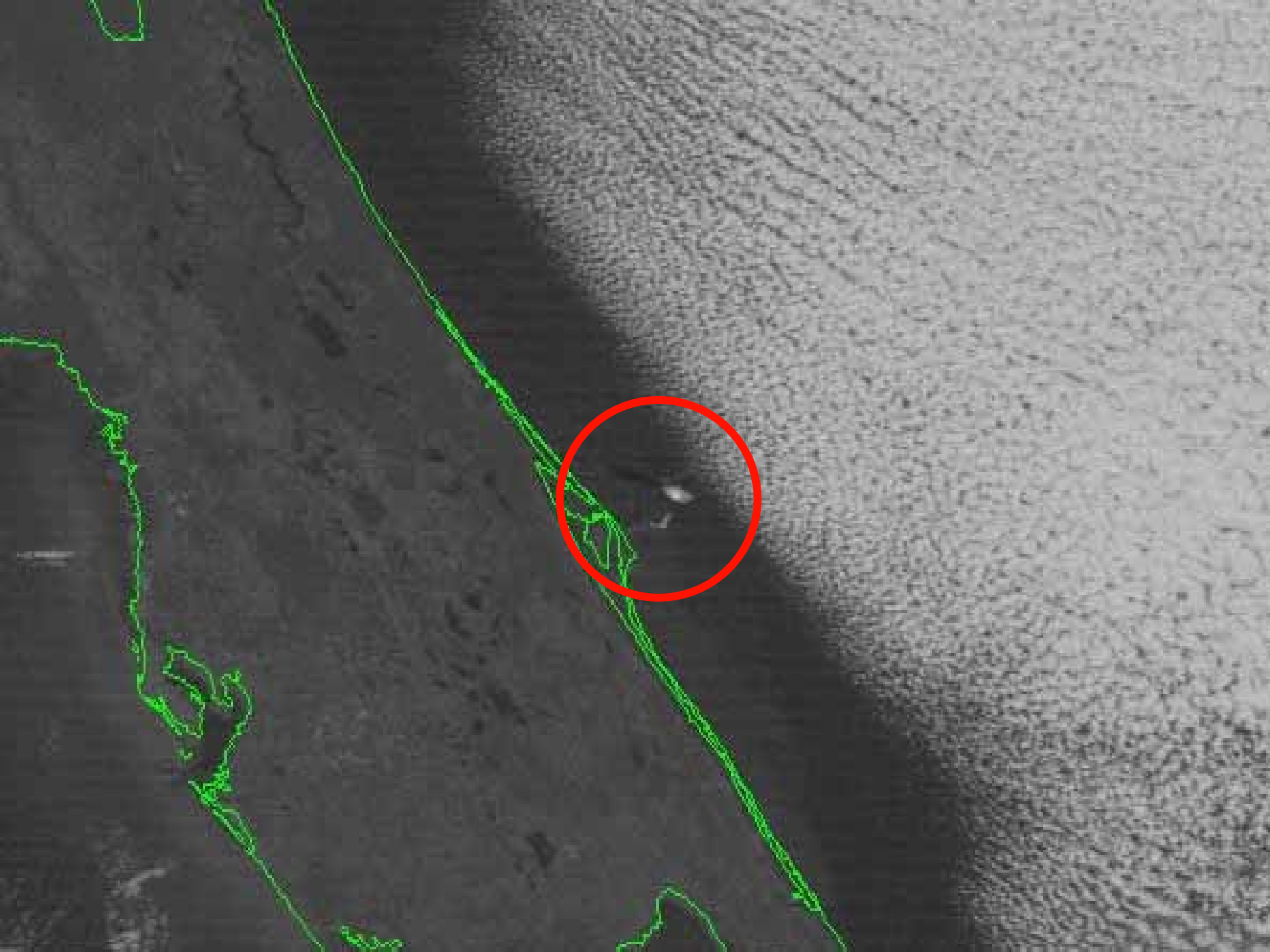
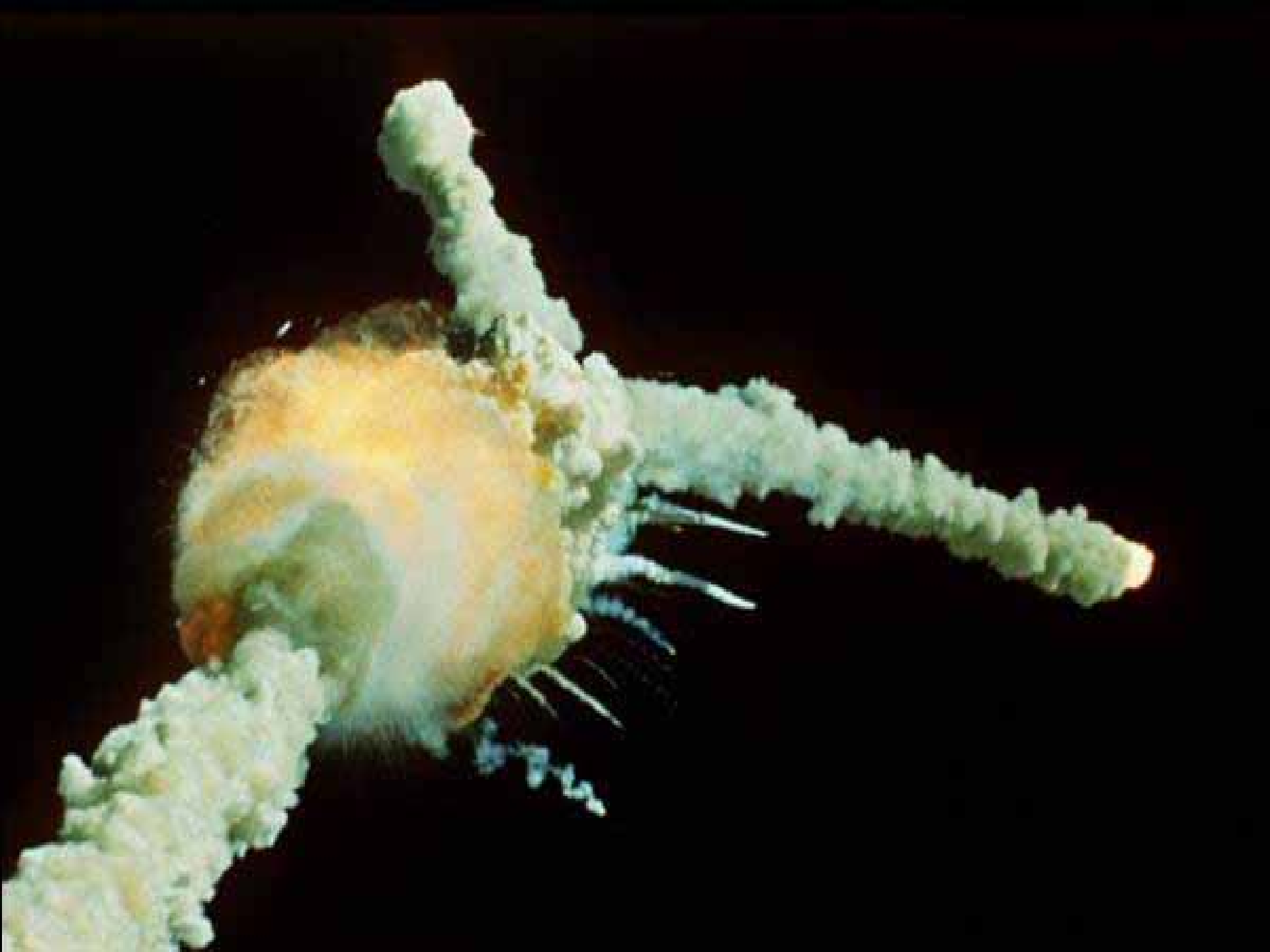
Outline of session

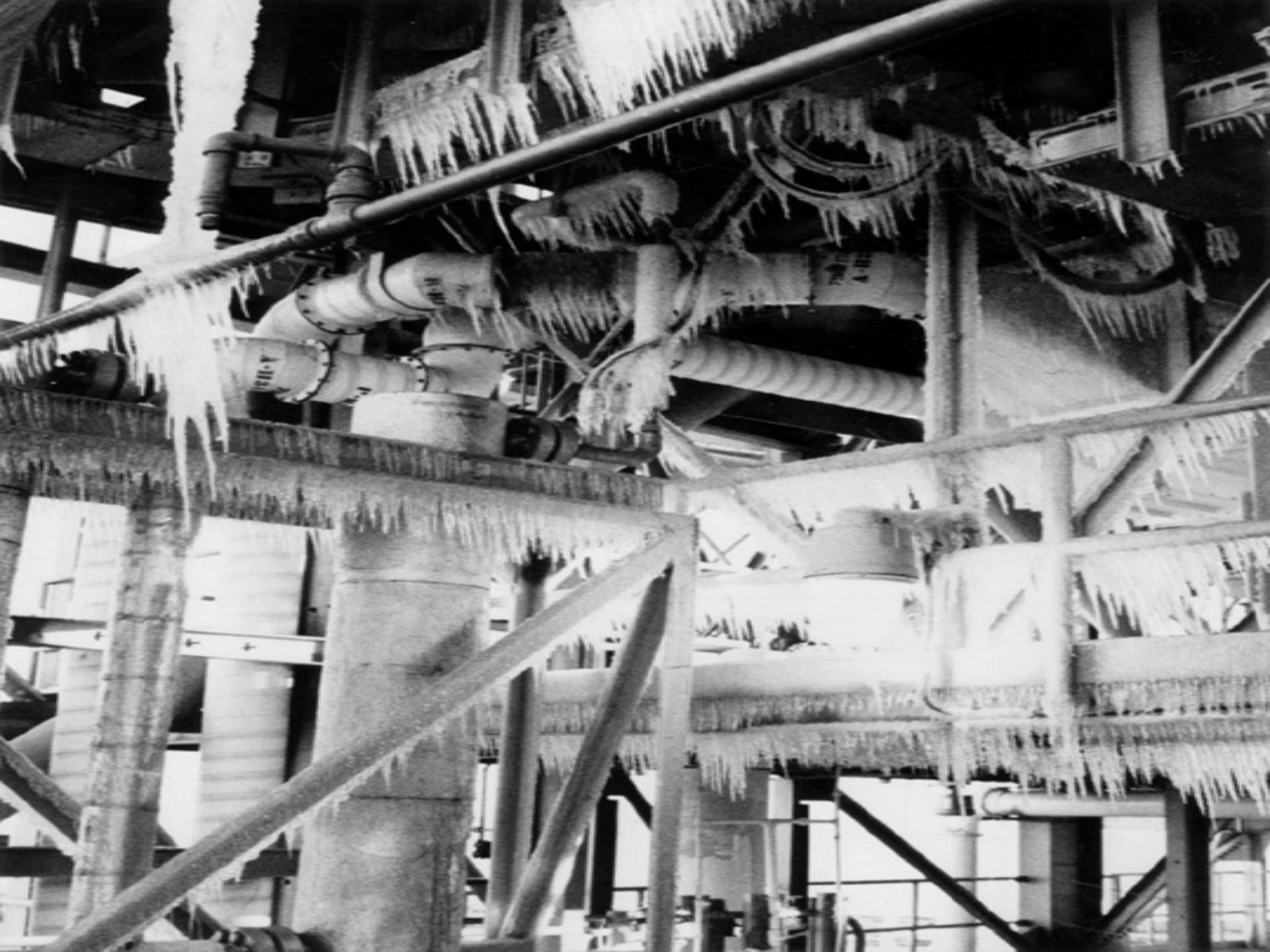
- Why a checklist approach to evaluation?
- Cartographic Requirement
- Cartographic design principles - devil is in the detail
- Putting the pieces together - marginalia and layout
- Synopisis, final checking

Why a checklist approach to evaluation?









Temperature Concern on SRM Joints

27 Jan 1986

Blow By History

SRM-15 Worst Blow-By

- 2 Case Joints (80°), (110°) Arc
- Much Worse Visually Than SR

- Project AM
  To Determi

History of O-Ring Temperatures (Degrees-F)

Motor	Mbt	Amb	O-Ring	Wind
DM-4	68	36	47	10 mph
				10 mph
				10 mph
				10 mph
				10 mph
				10 mph
				10 mph
				25 mph

History of O-Ring Damage on SRM Field Joints

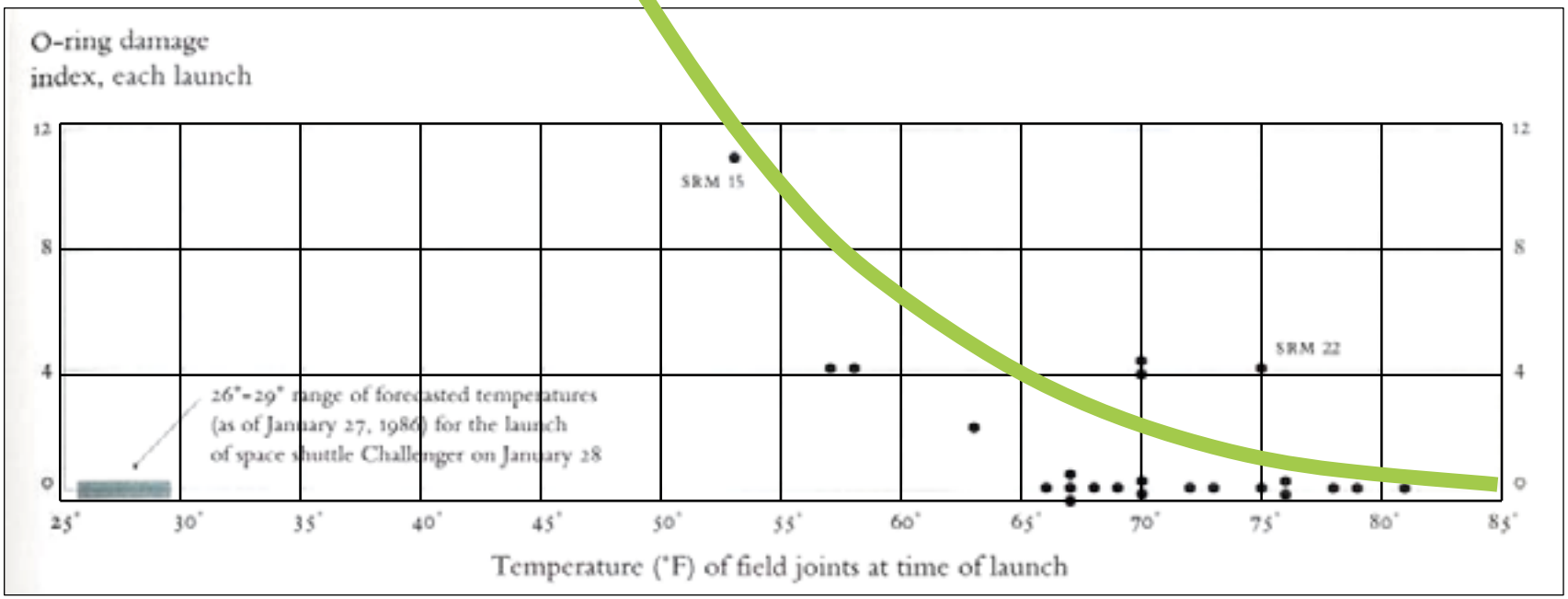
Mbt	SRM No.	Cross Sectional View: Erosion Depth (in.)	Cross Sectional View: Perimeter Affected (deg)	Cross Sectional View: Nominal Dia. (in.)	Top View: Length Of Max Erosion (in.)	Top View: Total Heat Affected Length (in.)	Clocking Location (deg)
61A LH Center Field**	22A	None	None	0.280	None	None	36° -66°
61A LH CENTER FIELD**	22A	NONE	NONE	0.280	NONE	NONE	338°-18°
51C LH Forward Field**	15A	0.010	154.0	0.280	4.25	5.25	153
51C RH Center Field (prim)***	15B	0.038	130.0	0.280	12.50	58.75	354
51C RH Center Field (sec)***	15B	None	45.0	0.280	None	29.50	354
41D RH Forward Field	13B	0.028	110.0	0.280	3.00	None	275
41C LH Aft Field*	11A	None	None	0.280	None	None	--
41B LH Forward Field	10A	0.040	217.0	0.280	3.00	14.50	351
STS-2 RH Aft Field	2B	0.053	116.0	0.280	--	--	90

*Hot gas path detected in putty.
**Soot behind primary O-ring.
***Soot behind primary O-ring, heat

Clocking location of leak check p

OTHER SRM-15 FIELD JOINTS HA
NEAR OR BEYOND THE PRIMARY O

SRM-22 FORWARD FIELD JOINT
AND NO SOOT BLOWBY. OTHER



Edward Tufte, 2005, Visual and statistical thinking

"Making decisions based on evidence requires the appropriate display of that evidence. Good displays of data help reveal knowledge relevant to understanding mechanism, process and dynamics, cause and effect. Displays of data should directly serve the task at hand".

Edward Tufte, 2005, Visual and statistical thinking

Design is crucial to communication in GIS

Large database

Equal Treatment

No inherent design

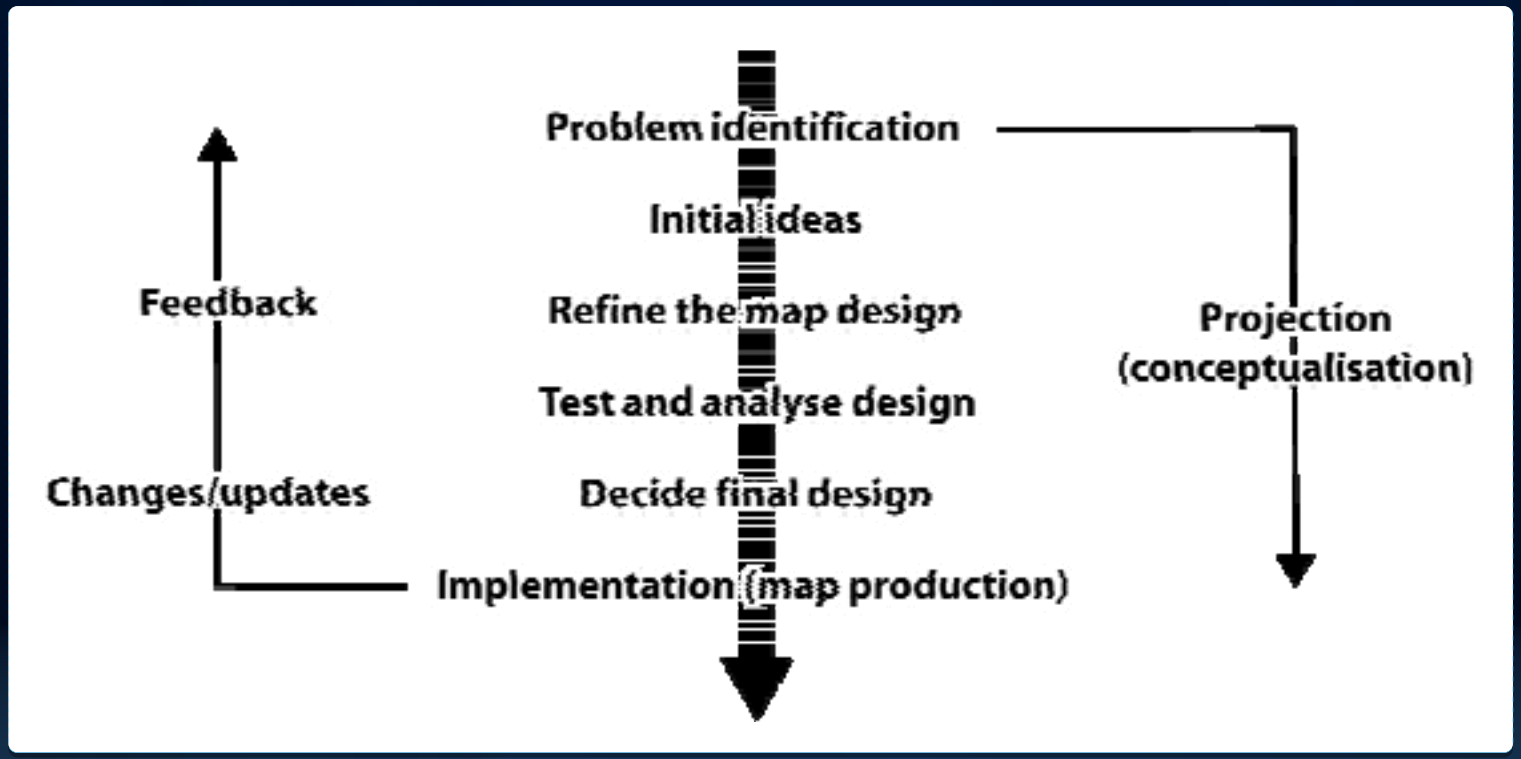
Data Processing

Function

Meaning

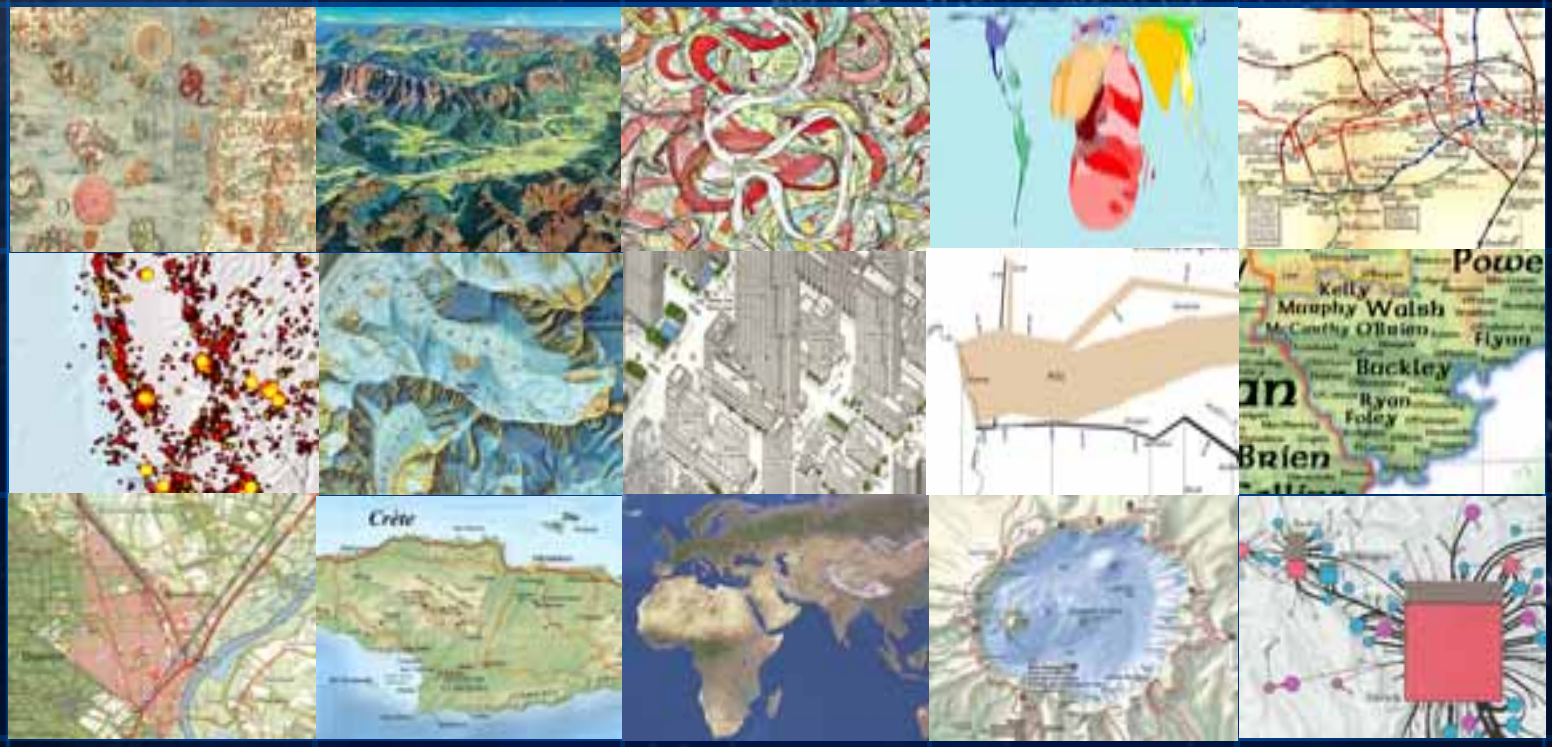
GIS is not a cartographic expert system...it provides the novice map maker with defaults to ‘design’ maps such as page templates and pre-designed symbols but they may not be suitable!

Evaluation as part of the design process



Cartographic requirement

What’s the story?



Cartographic requirement

Written/spoken word: SERIAL

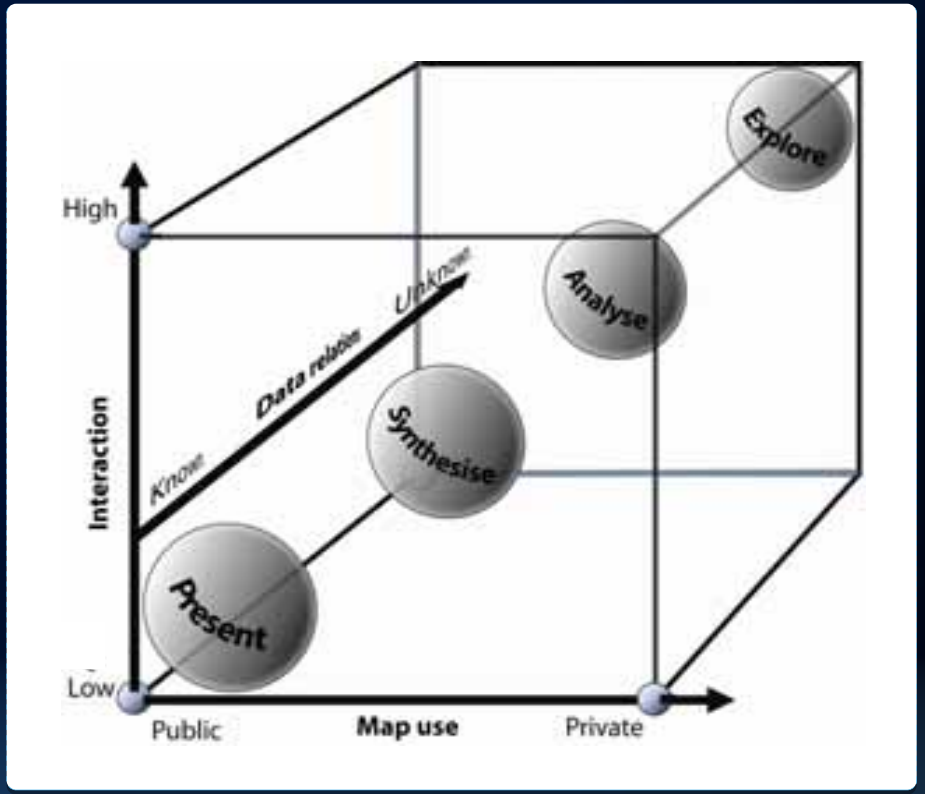
Graphics: PARALLEL

Cartographic requirement

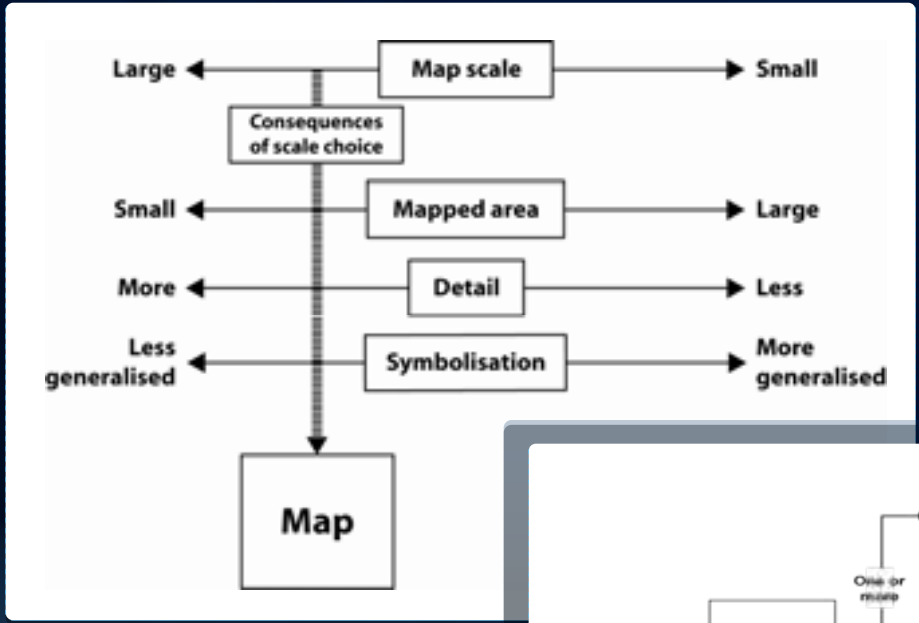
- Pleasing composition – gets our attention
- Makes an immediate and lasting harmonious impression
- Enhances clarity
- Acquires and retains attention
- Instills confidence

Cartographic requirement

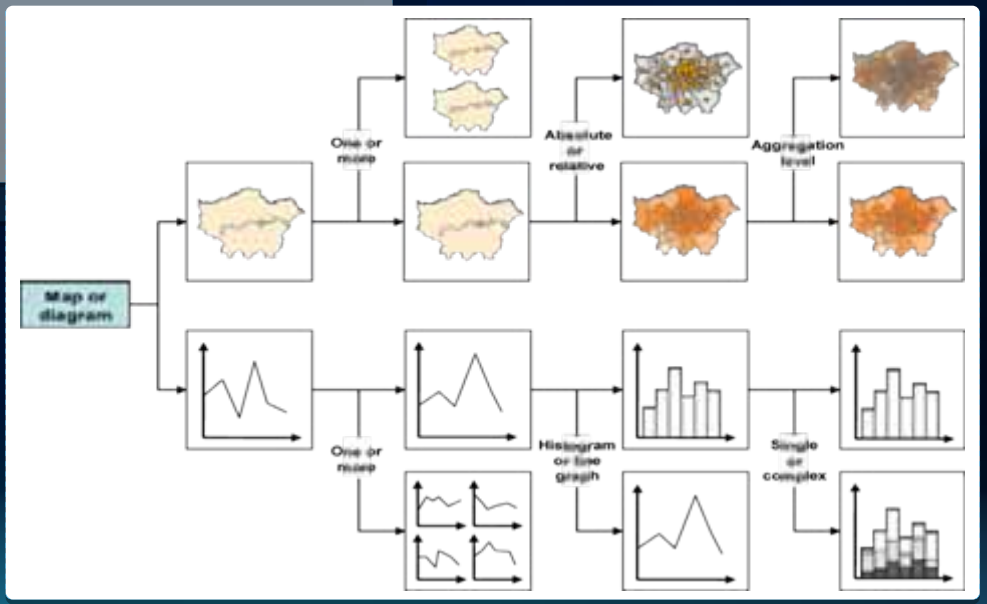
- Record data
- Store data
- Display information
- Data recovery
- Analysis of spatial patterns
- Understand processes
- Convincing
- Persuading
- Propagandist



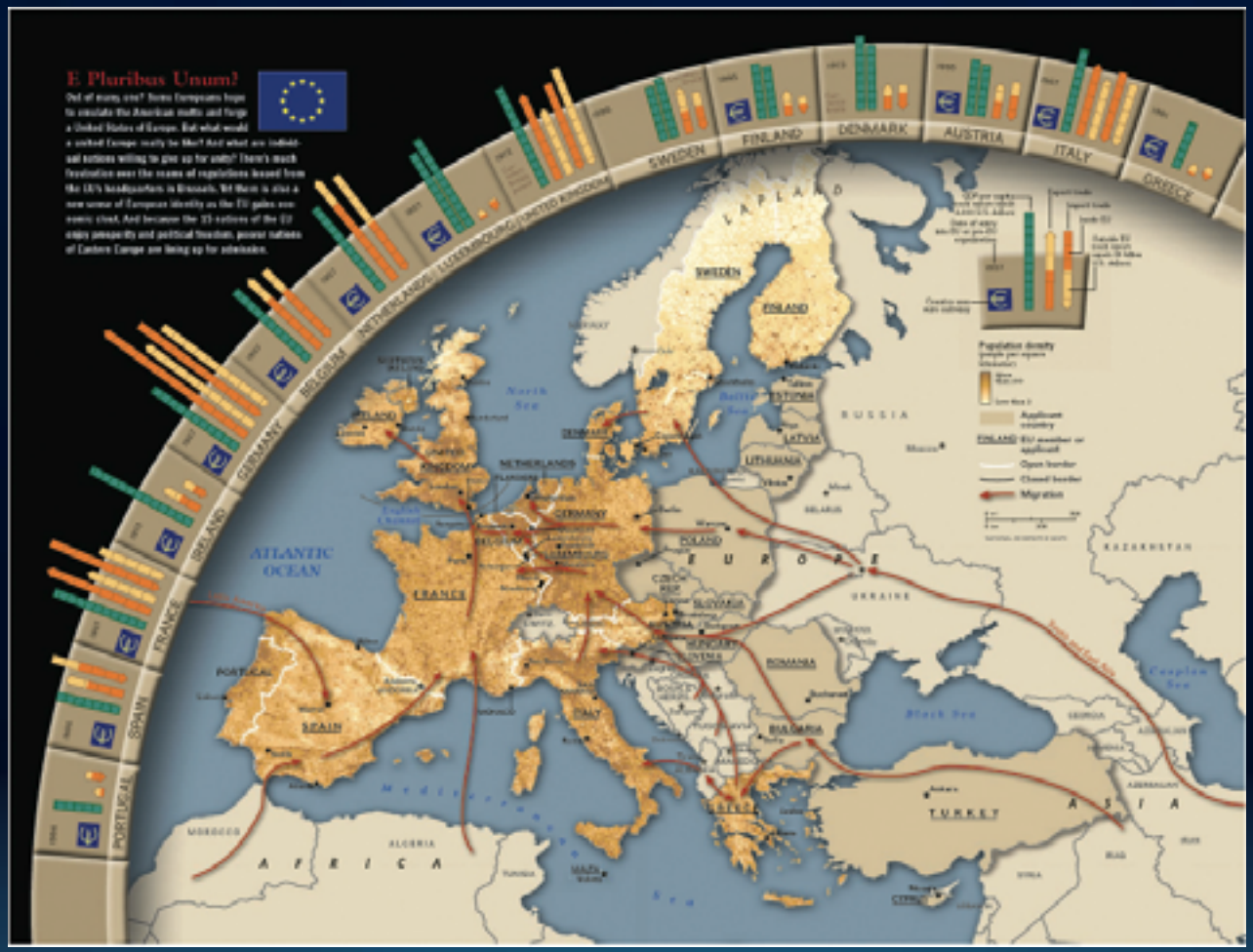
Cartographic requirement



- Audience
- Media resolution
- Viewing distance
- Output medium



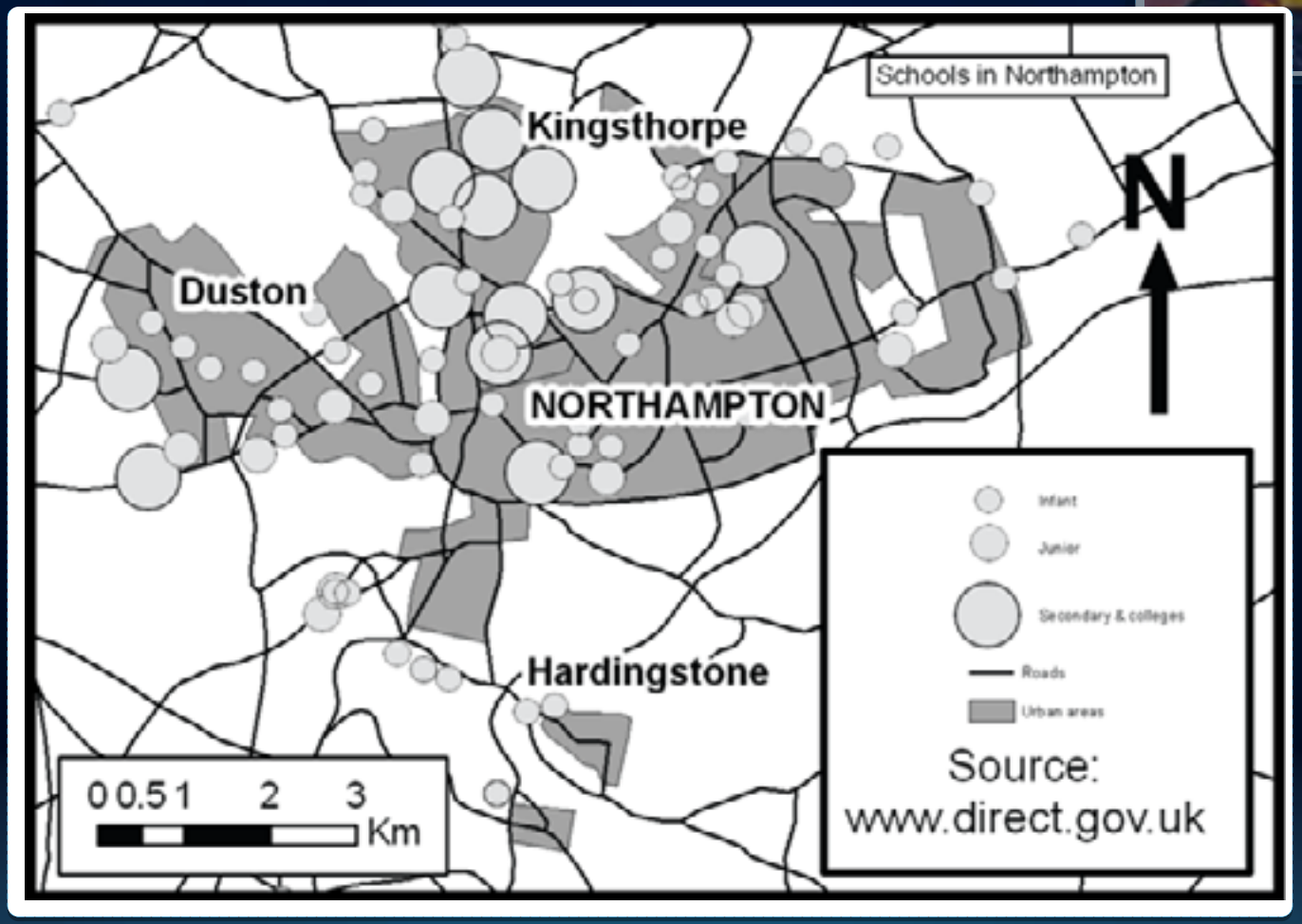
Cartographic requirement



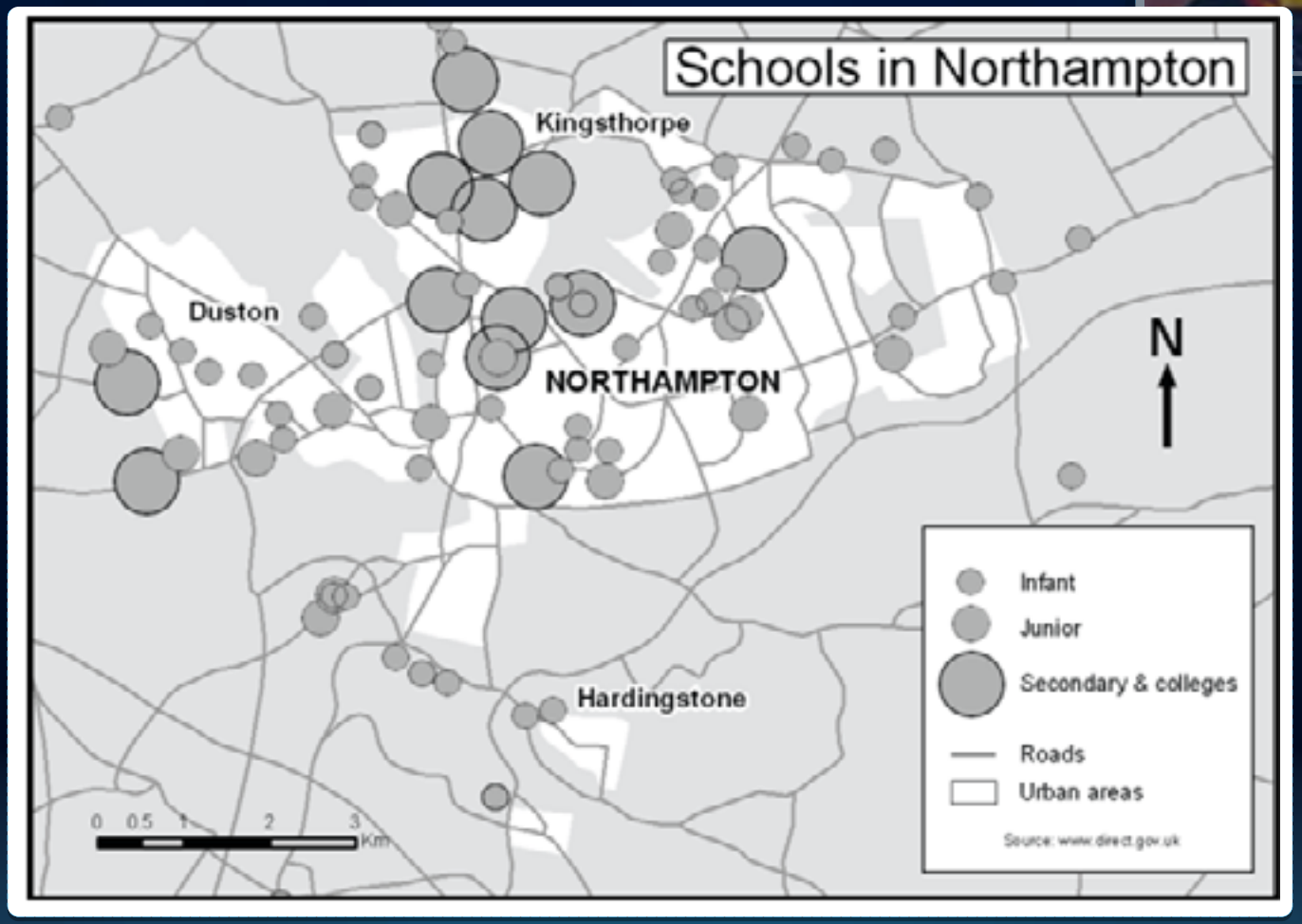
Demo: requirement

Cartographic design principles

Visual hierarchy

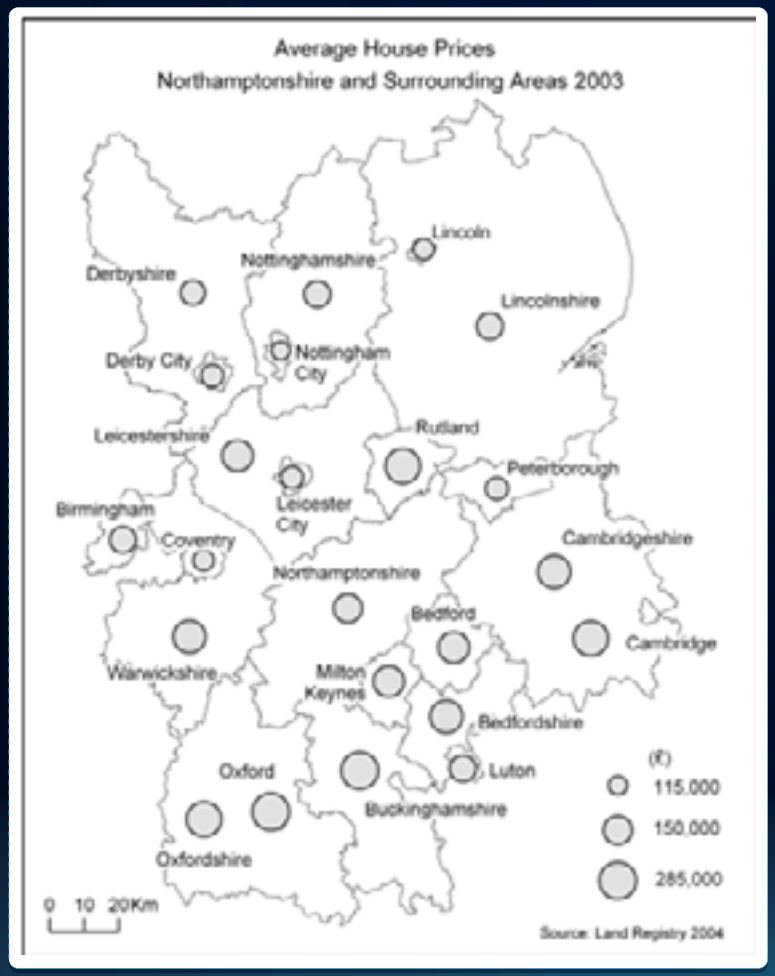


Visual hierarchy



Demo: visual hierarchy

Visual contrast



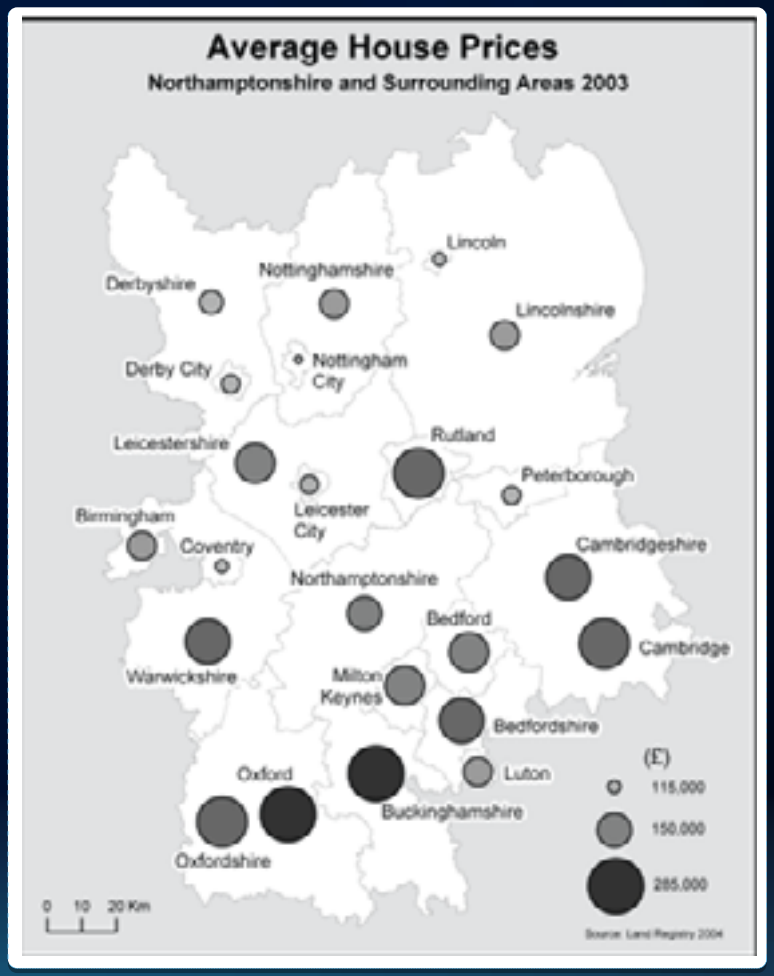
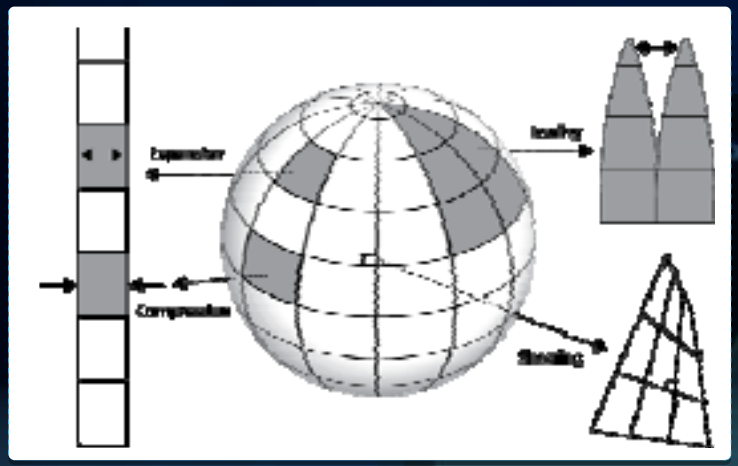


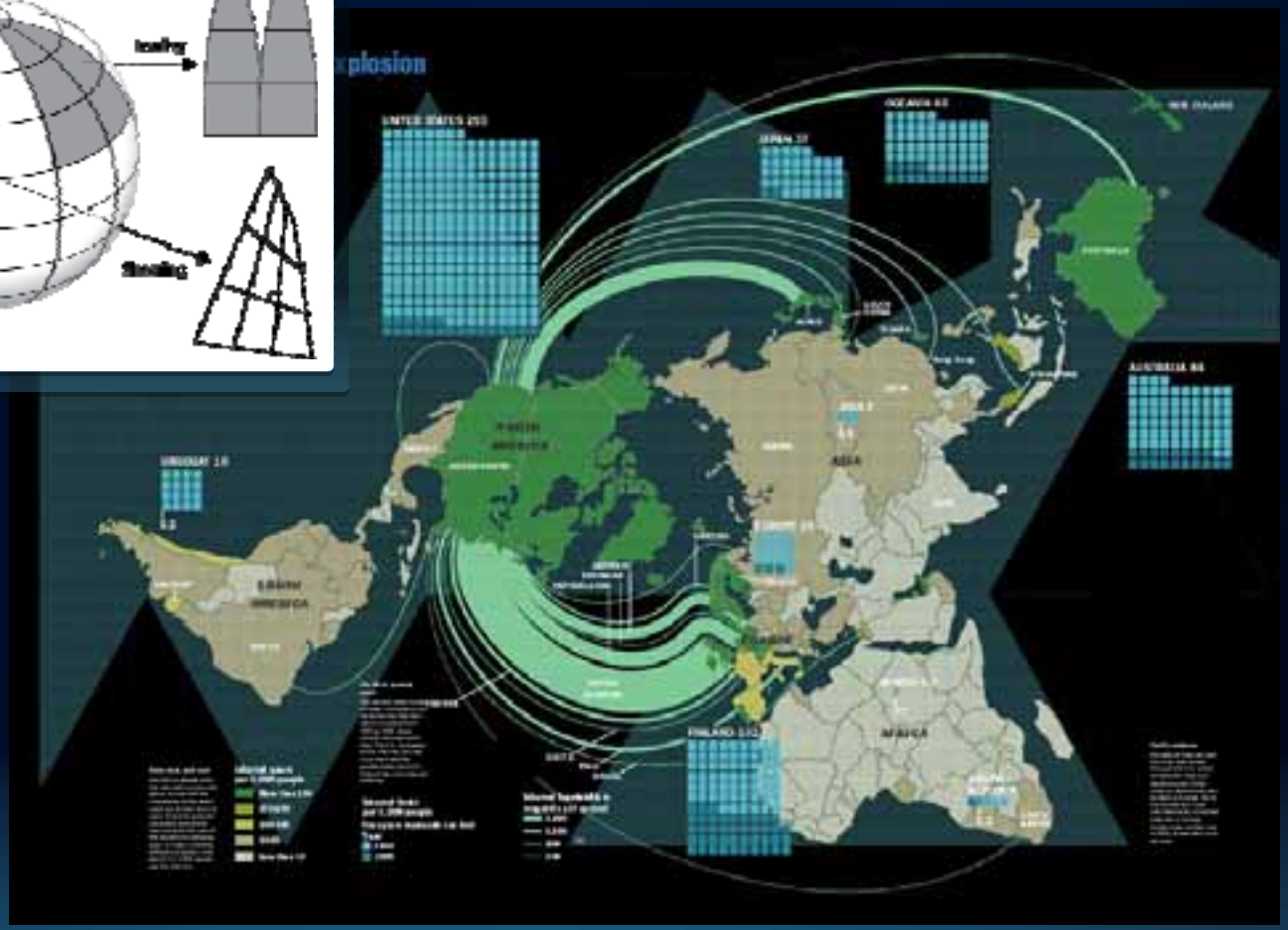
Figure-ground

Demo: figure-ground

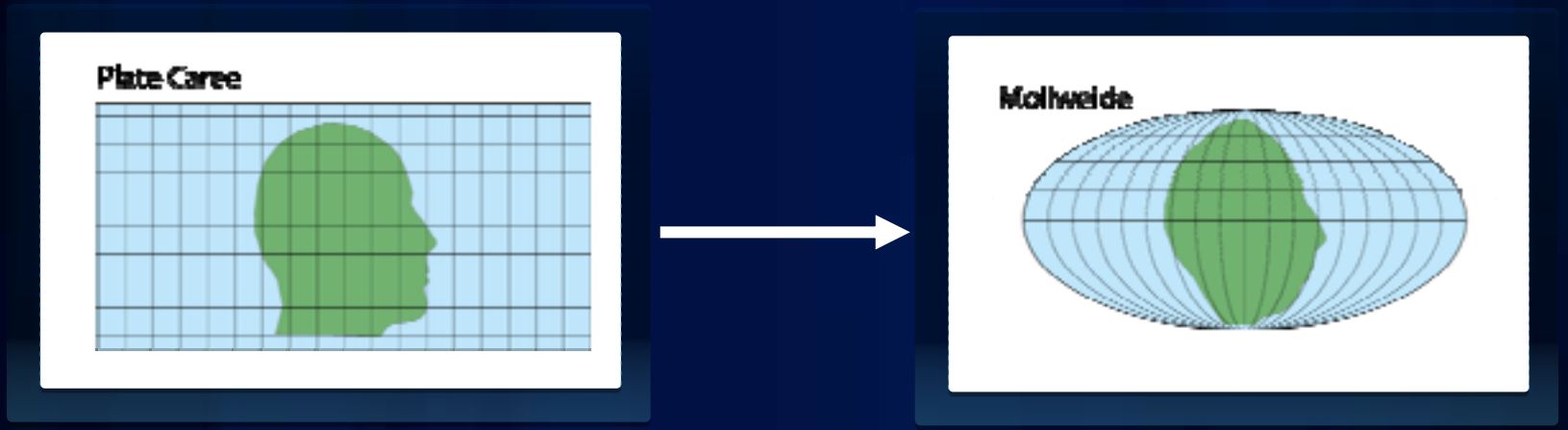
The devil is in the detail

Projections

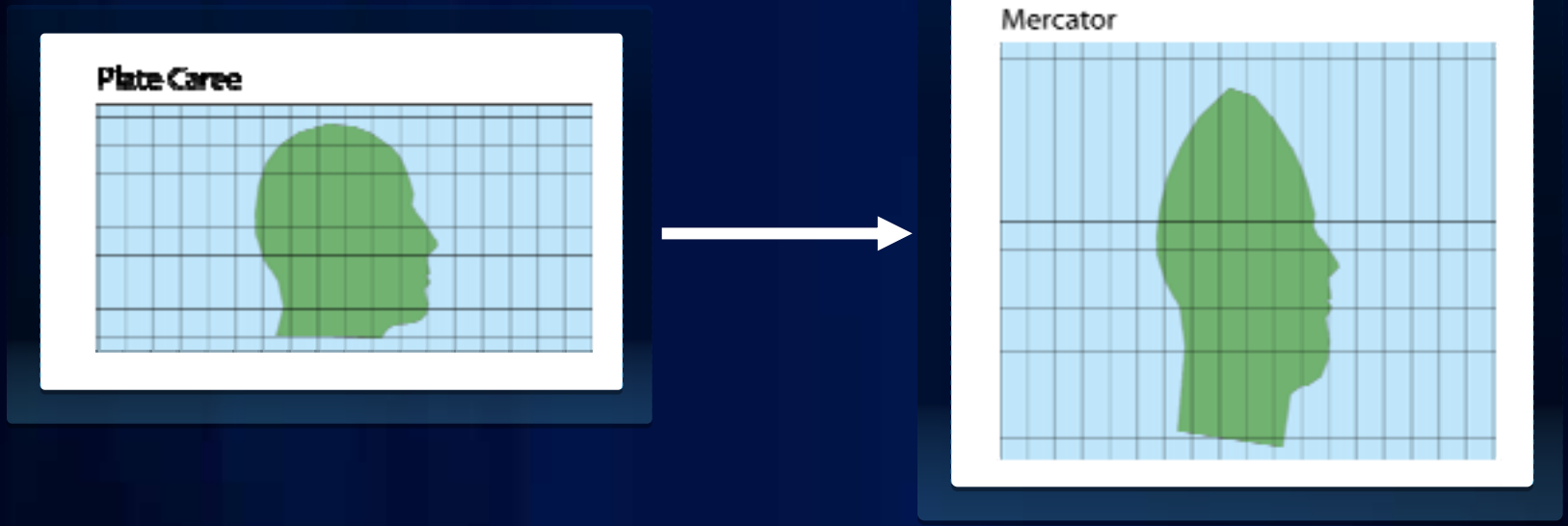




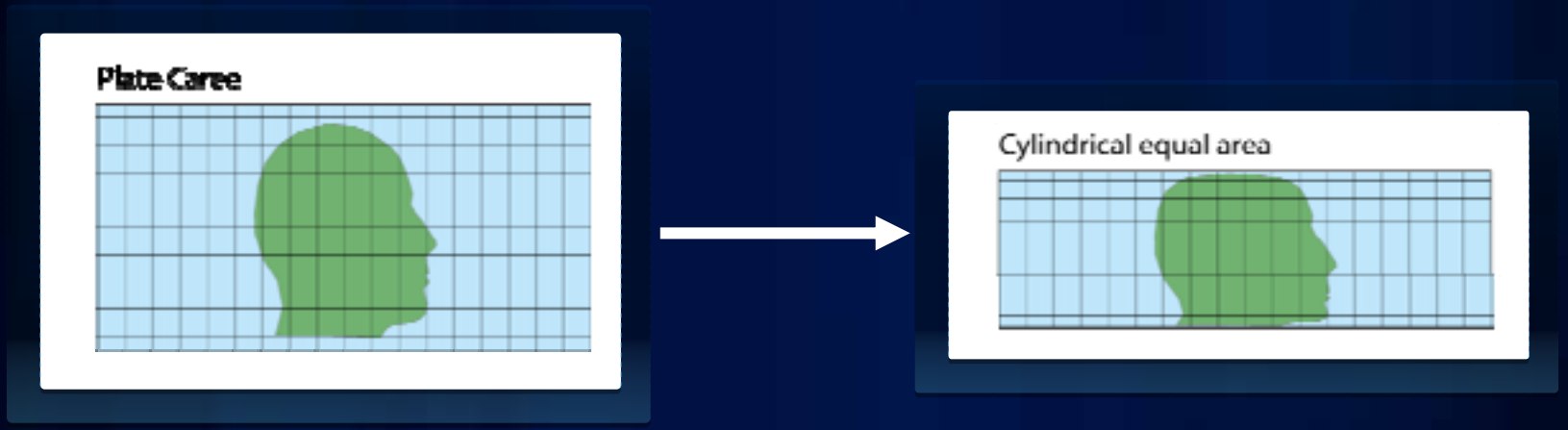
Projections – use your head



Projections – use your head

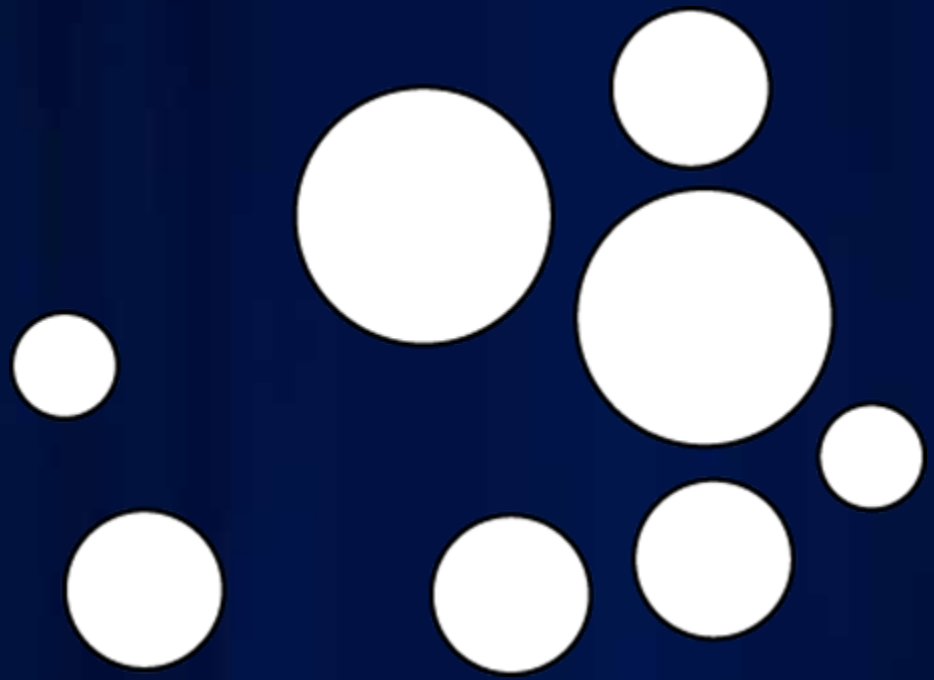


Projections – use your head



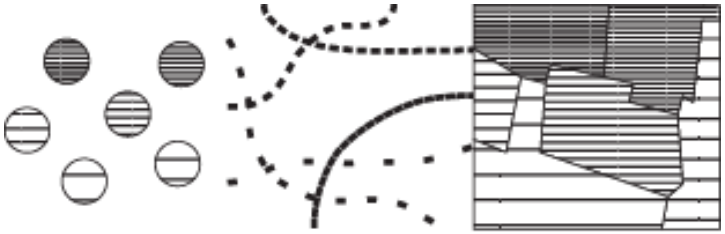
Demo: projection

Symbols

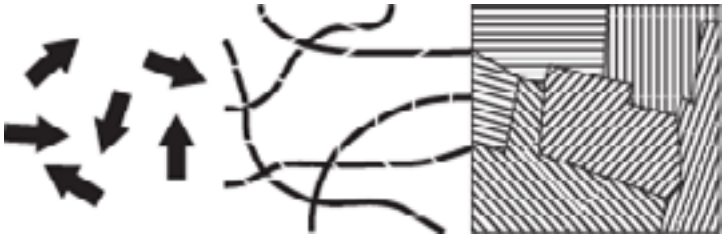


Symbol palette

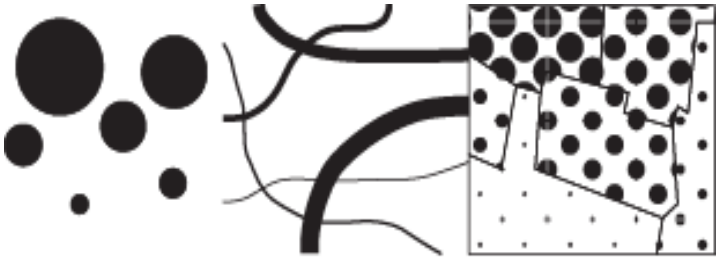
spacing



orientation

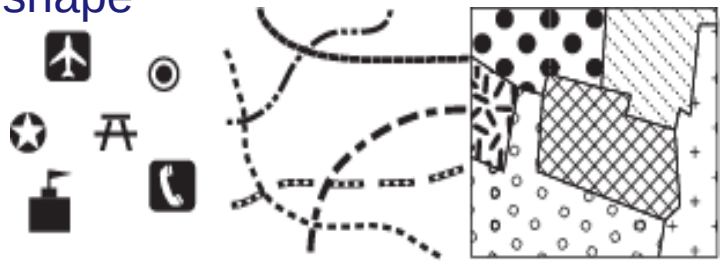


size



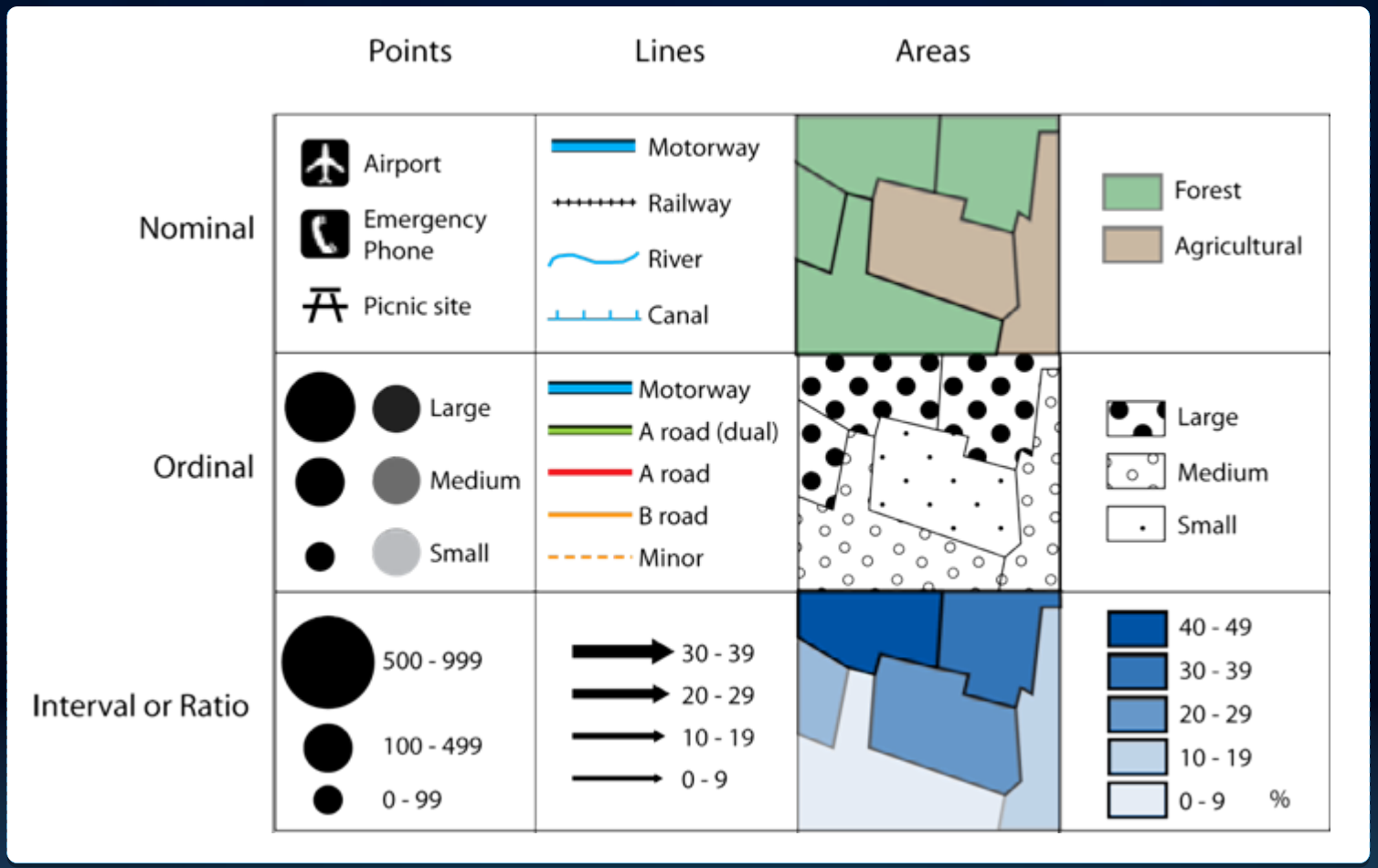
hue

shape



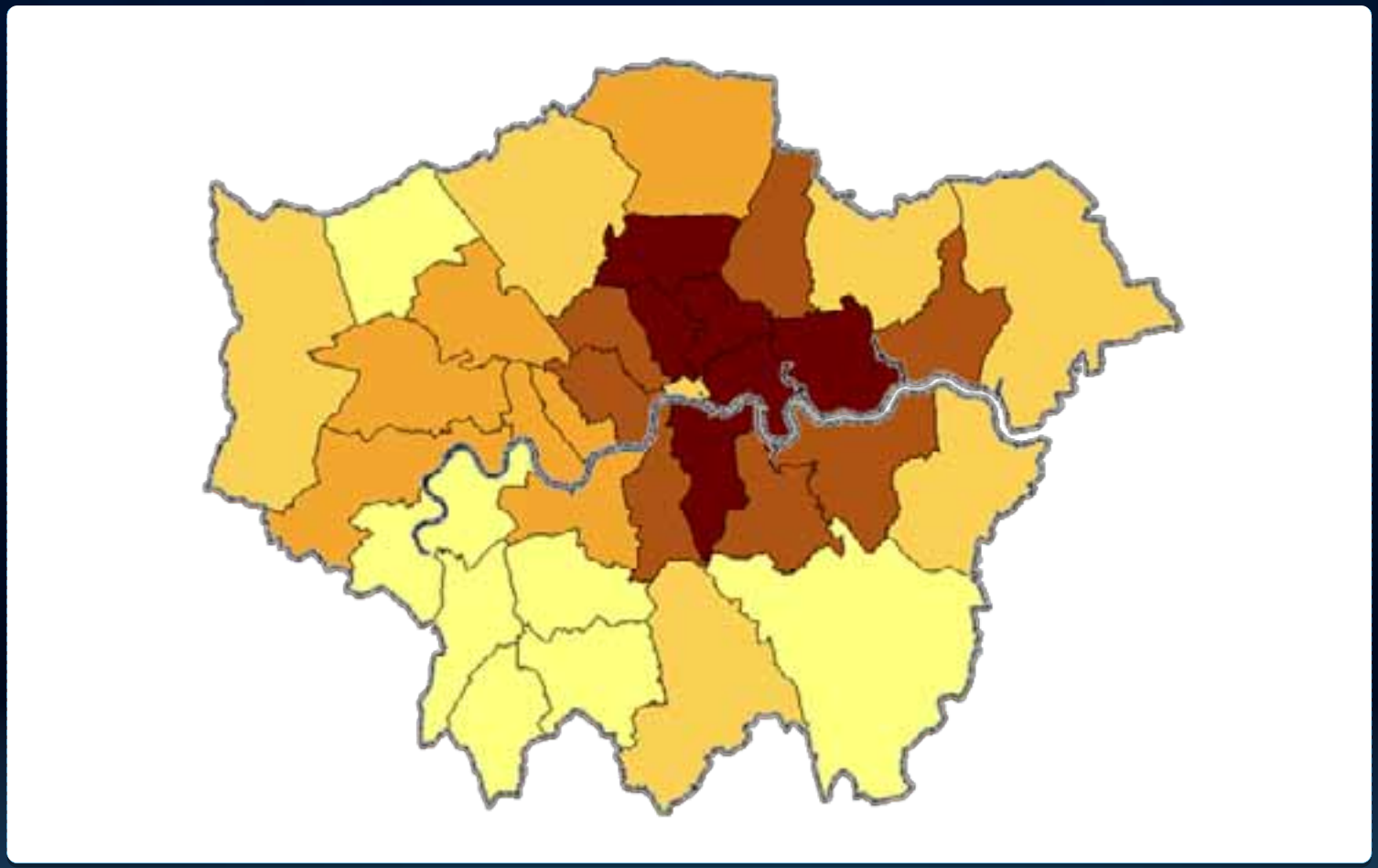
lightness

Symbol meaning



Demo: symbols

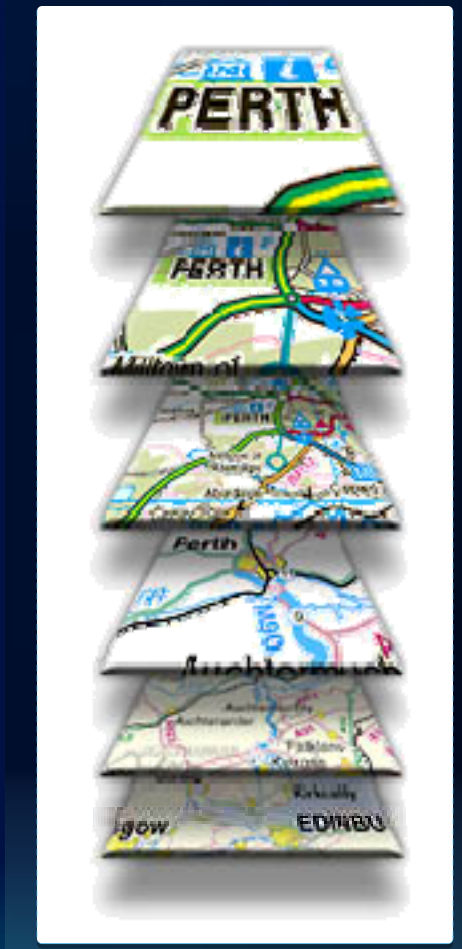
Classifying data



Feature generalization

Processes to transform feature representation for different scales

Large scale



Small scale

Feature generalization

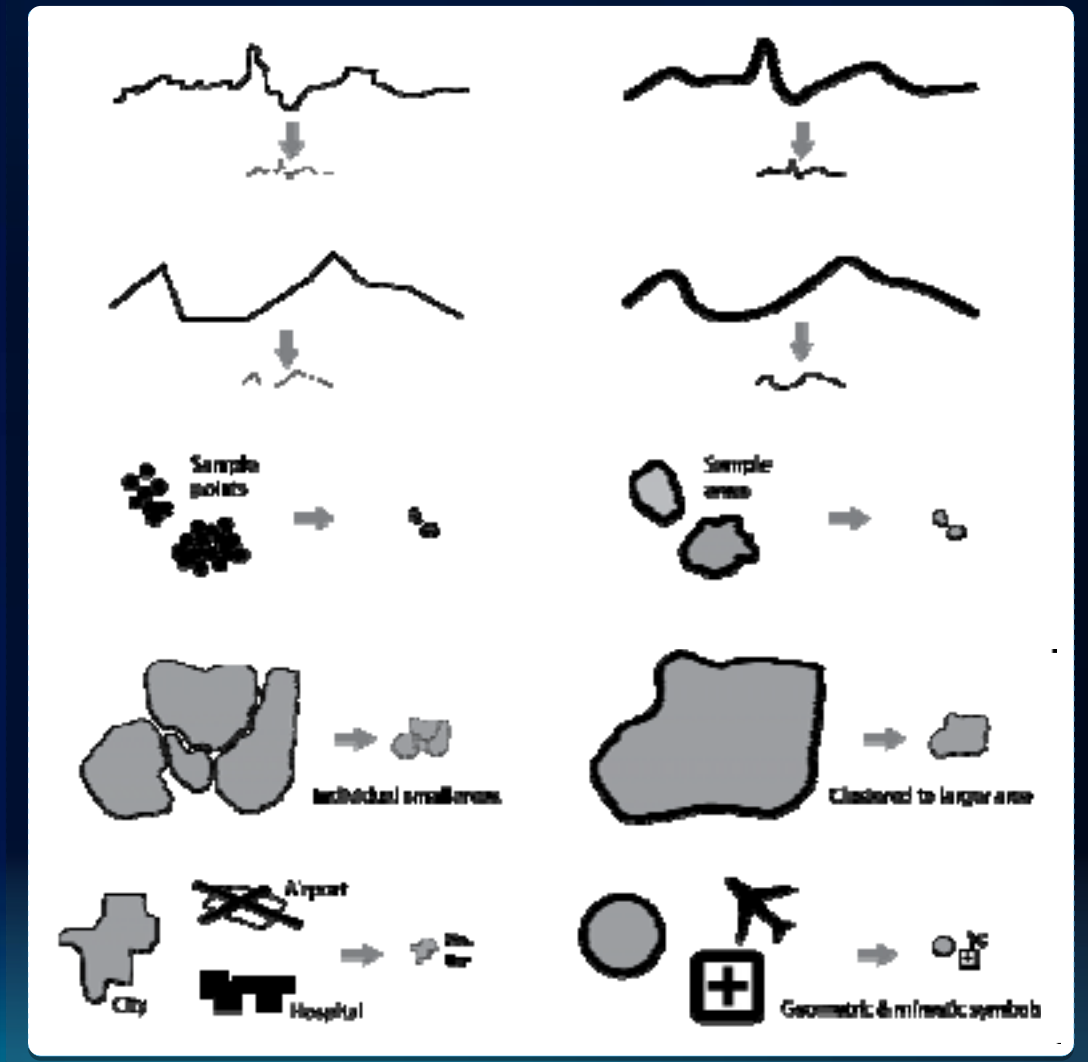
Simplify

Smooth

Aggregate

Amalgamate

Collapse



Feature generalization

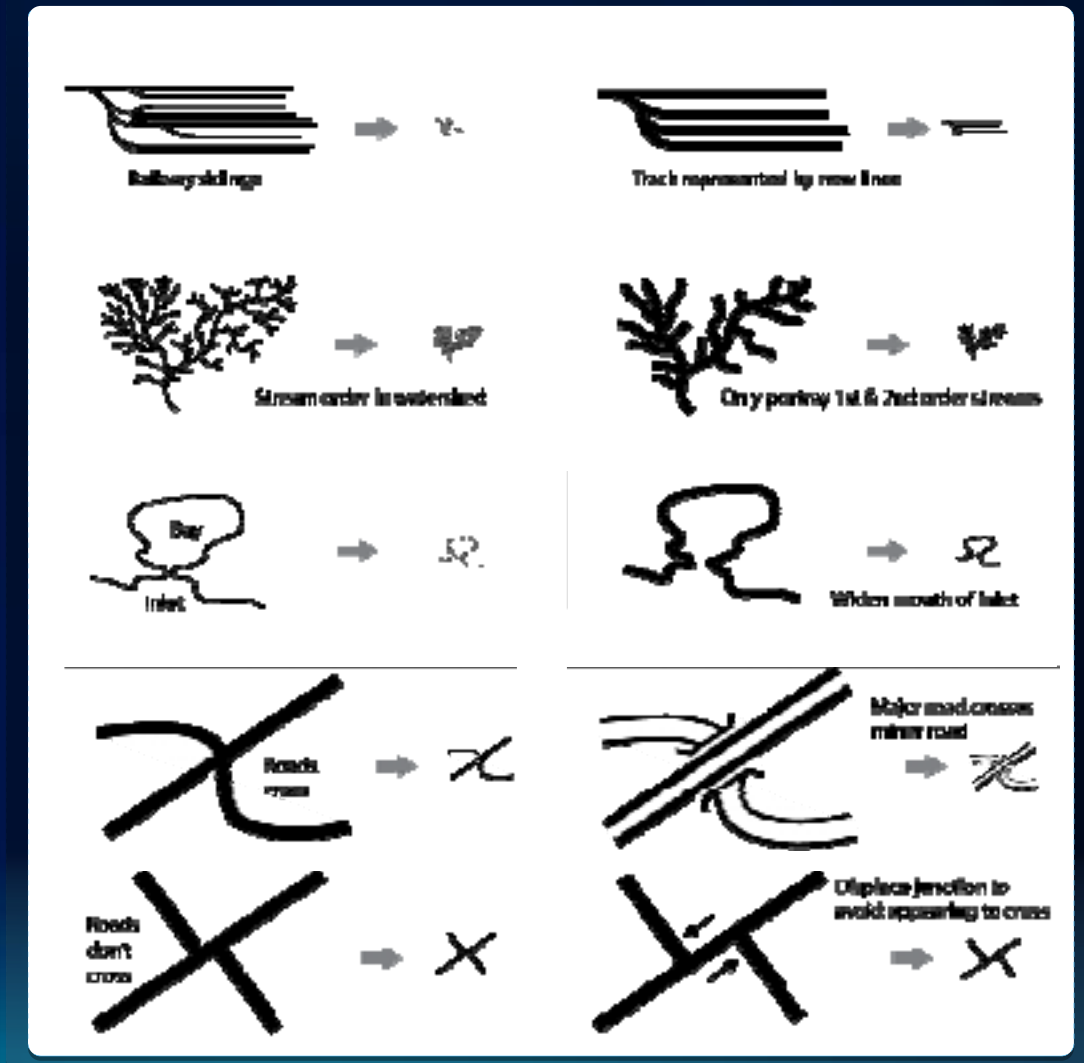
Merge

Refine

Exaggerate

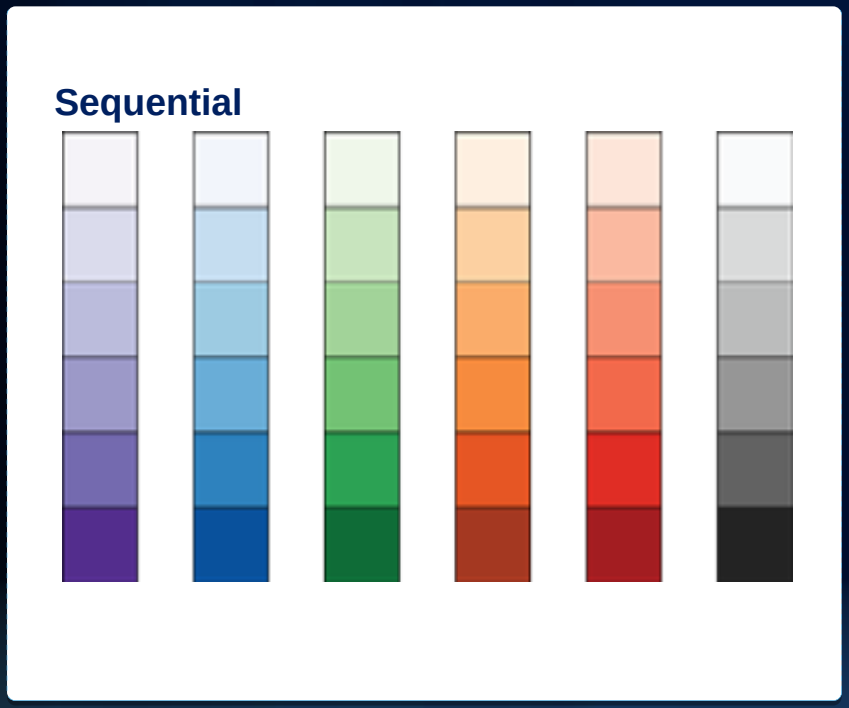
Enhance

Displace



Demo: Feature generalization

Color

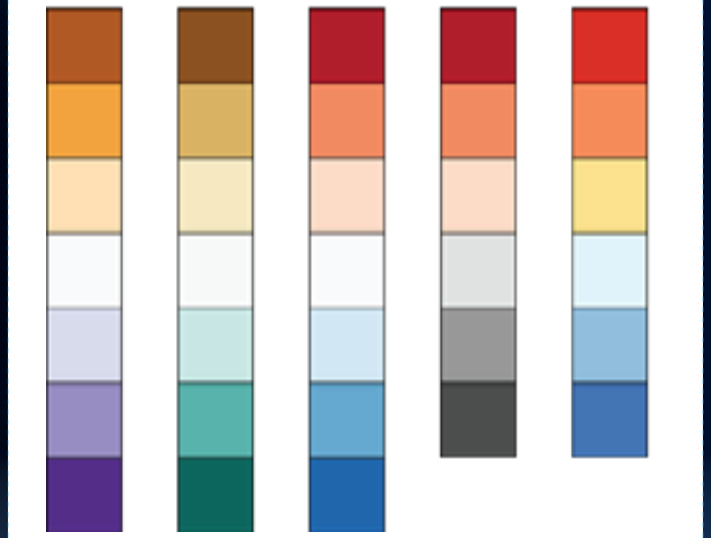


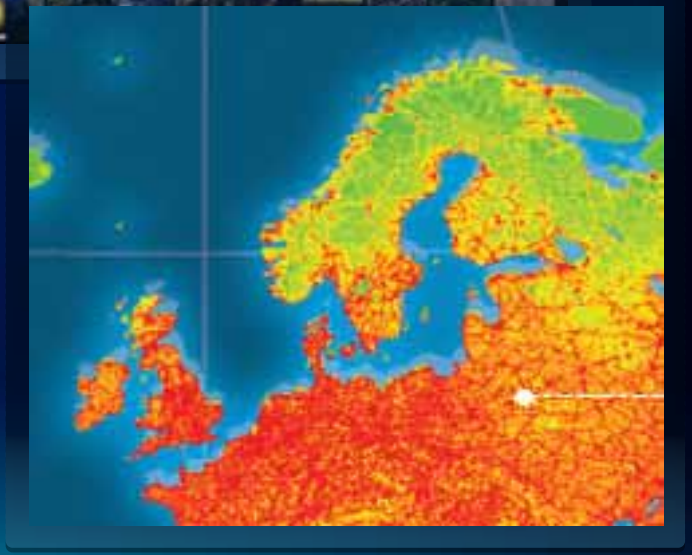
(Example of “Sequential”)

Color

Diverging Critical Class

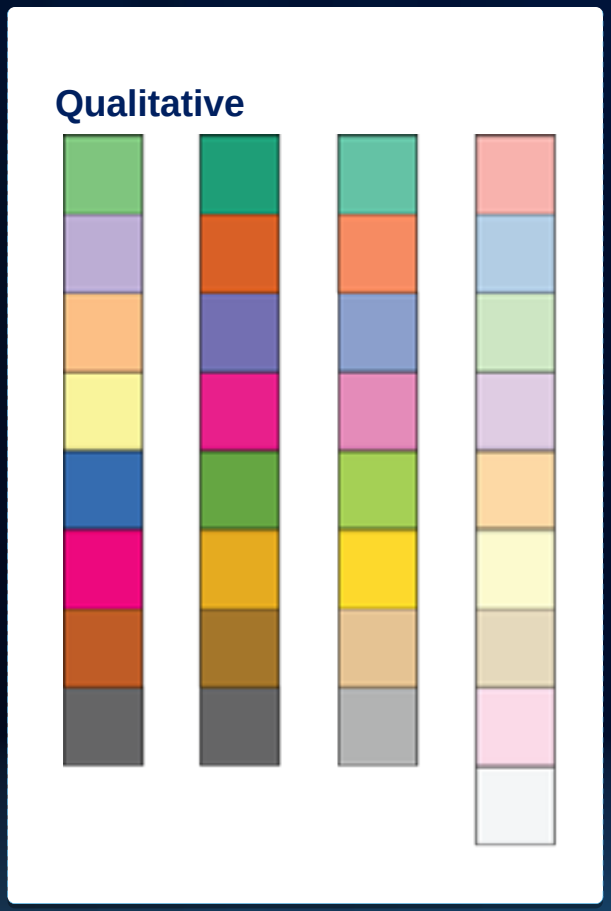
Diverging Critical Break





(Example of “Diverging Critical Class”)

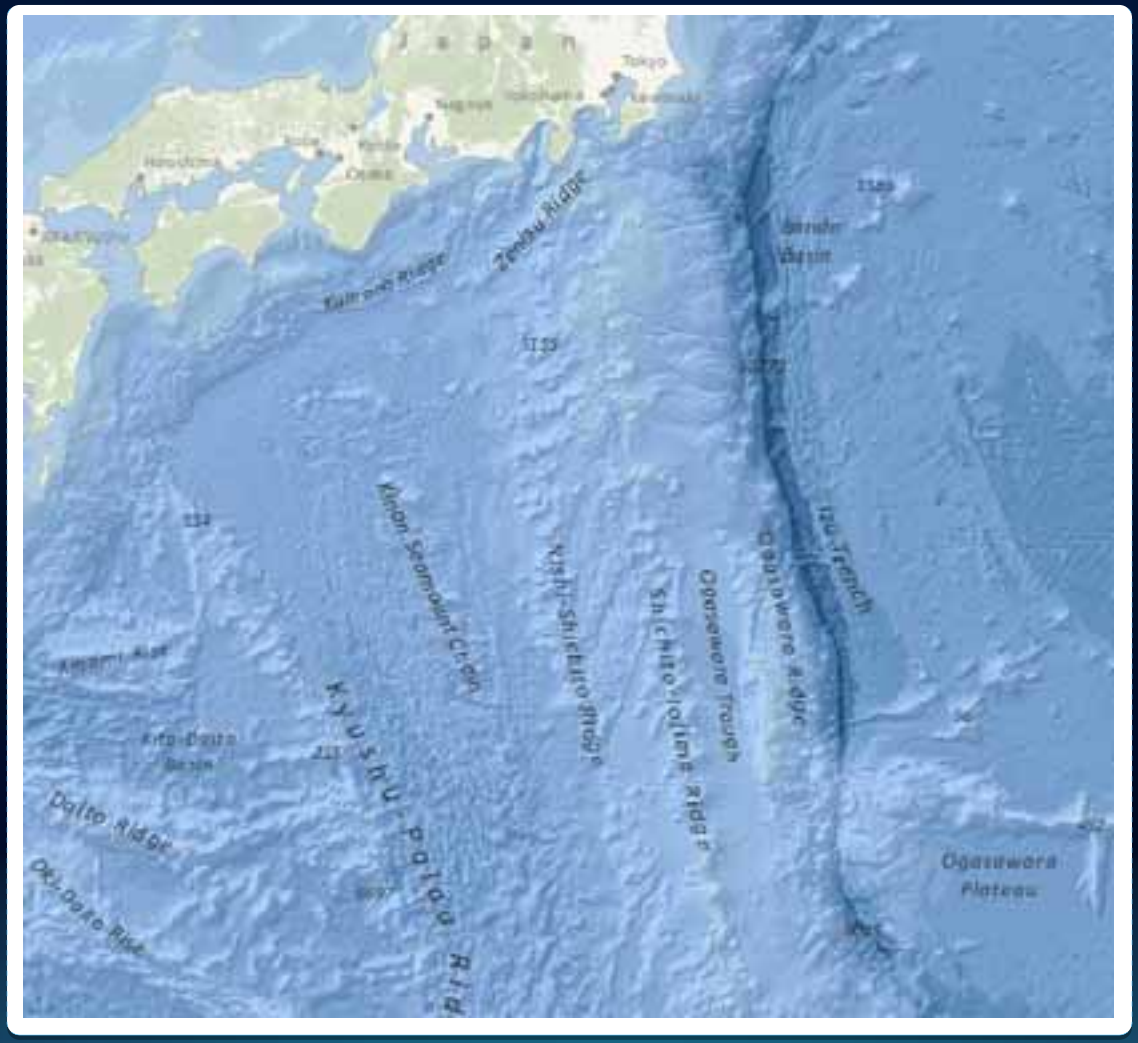
Color



(Example of “Qualitative”)

Shaded relief

Bathymetry

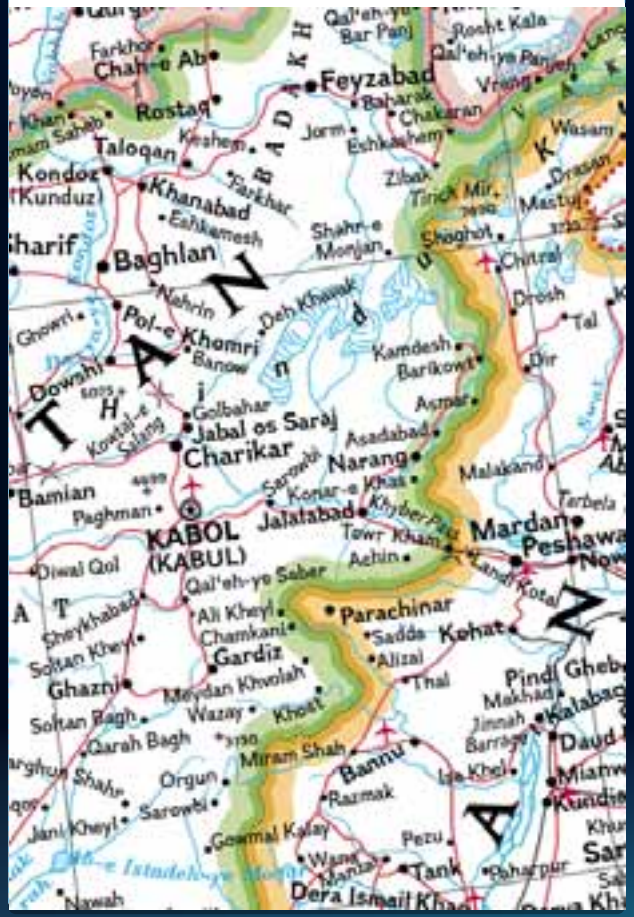


Tokyo
Zenisu Ridge
Kinan Seamount Chain
Kyushu-Palau Rid
Dalto Ridge
Ogasawara Trough
Ogasawara Ridge
Izu Trench
Ogasawara Plateau

Demo: color

Typography

Purpose



Size

5 point 7 point

10 point 12 point

18 point

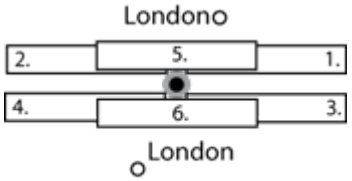
24 point

CITIES

Towns

villages

Position



Conflict

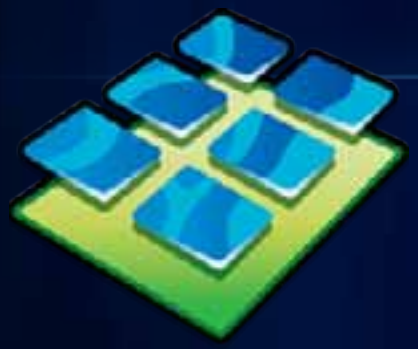
Style

sans serif

serif

Demo: typography

Putting the pieces together



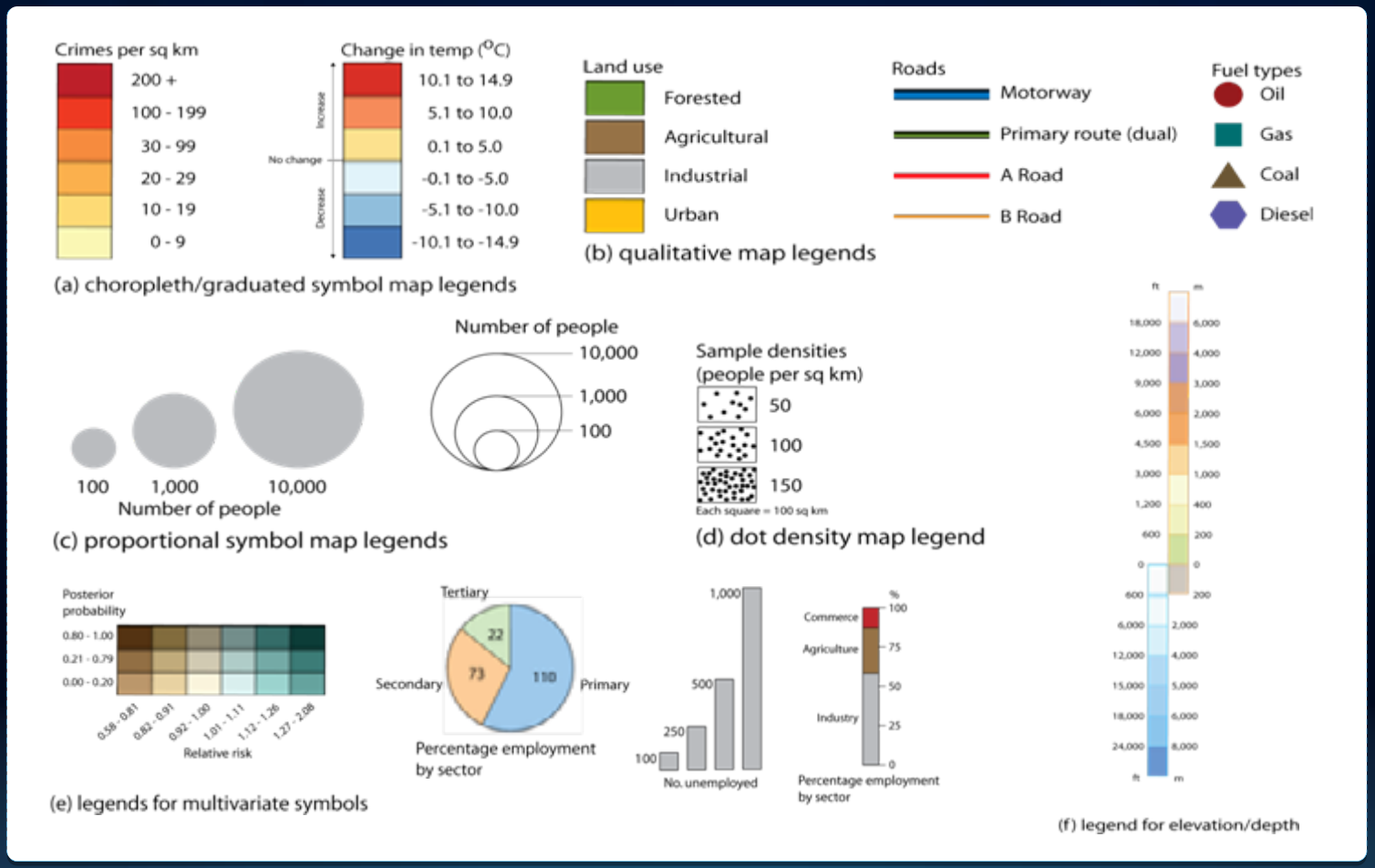
Marginalia

- Main map
- Inset maps (detail/locative)
- Title
- Subtitles
- Legends
- Scale indicators
- Orientation indicators
- Graticule
- Explanatory text
- Source note
- Copyright note
- Neatline

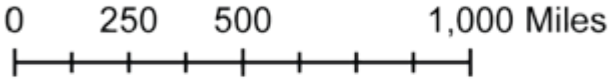
Marginalia: Textual components

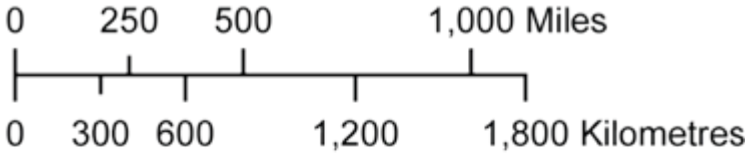
- Title
- Subtitle
- Copyright note
- Source text
- Explanatory text
- Contextual

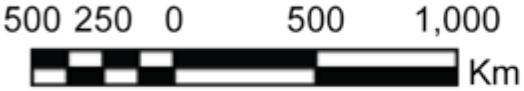
Marginalia: Legends



Marginalia: Scale statements



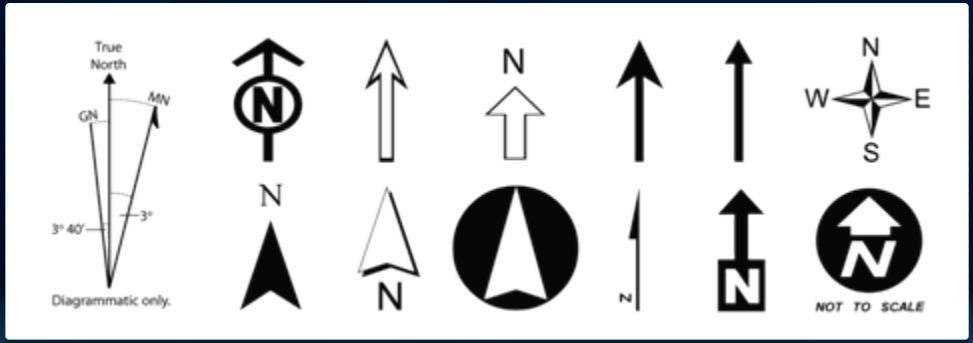


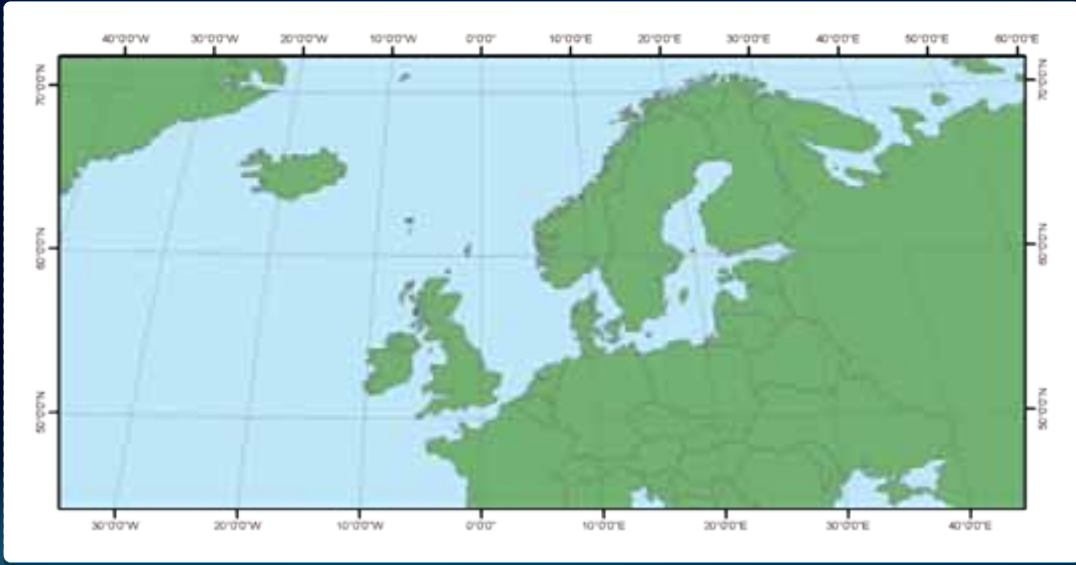


1:35,000,000

1 centimetre equals 350 kilometres

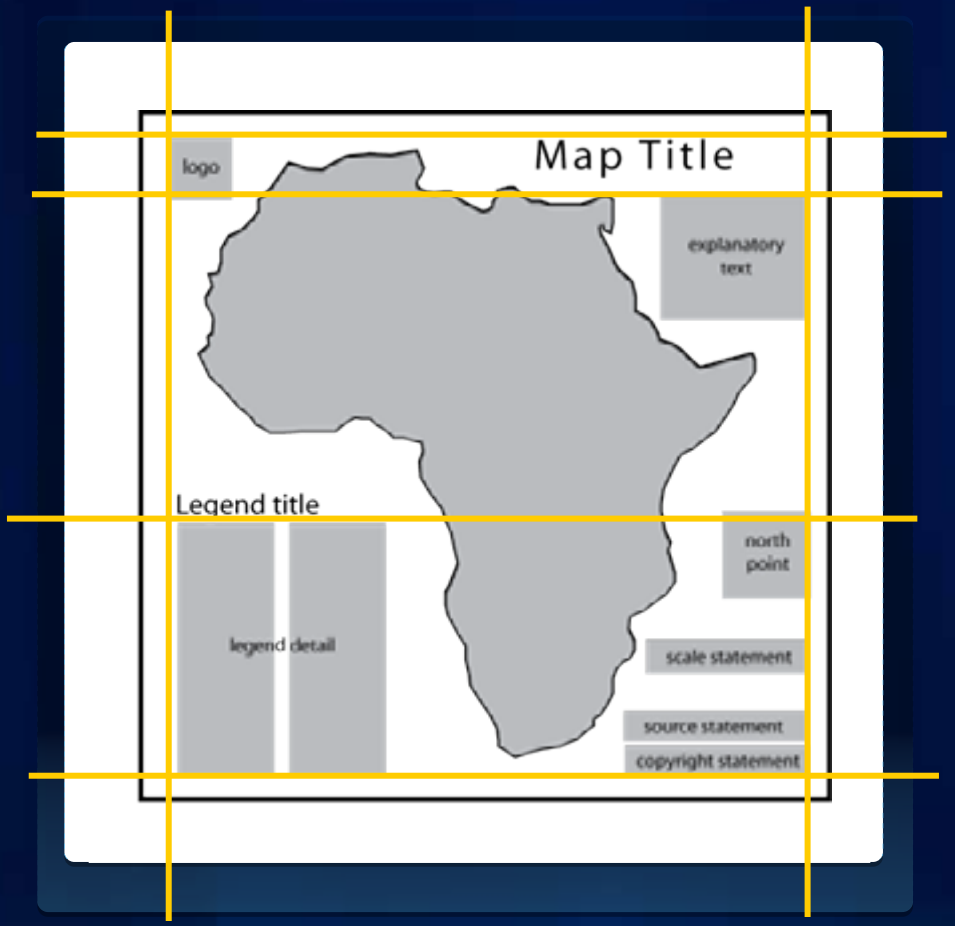
Marginalia: Orientation





Visual balance

Layout


Map Title
logo
explanatory text
Legend title
legend detail
north point
scale statement
source statement
copyright statement

Demo: layout

Synopsis

Maps and Maidens

Edward Willats 1908-2000
Geographer & cartographer
Founder member of British Cartographic Society

"They must be well proportioned and not too plain;

Color must be applied carefully and discretely;

They are more attractive if well dressed but not over dressed;

They are very expensive things to dress up properly;

Even when they look good they can mislead the innocent;

And unless they are very well bred they can be awful liars!"

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