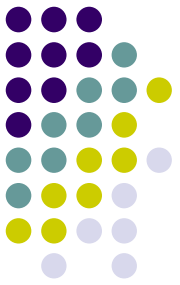
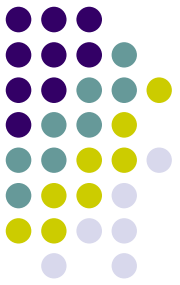


Spatial conflicts



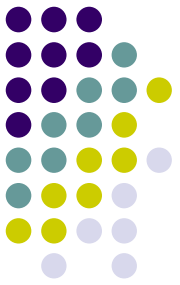
- Pre
 - Congestion - the crowding of features
 - Coalescence - features are indistinguishable
 - Self-coalescence – spikes or similar
 - Conflict - feature symbology overlaps
 - Imperceptibility – feature or its part is too small at given scale
- Post
 - Complication – topological inconsistency
 - Inconsistency - features are wrongly transformed differently under similar cartographic conditions

Identification of Spatial conflicts



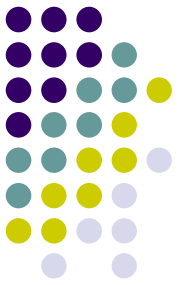
- Congestion – graphic fill measurement
- Coalescence – hausdorffian distances
- Conflict – buffers and overlays
- Imperceptibility – SVO theory
- Complication – shape validation, relationships validation
- Inconsistency – shape measurement

Graphical filling

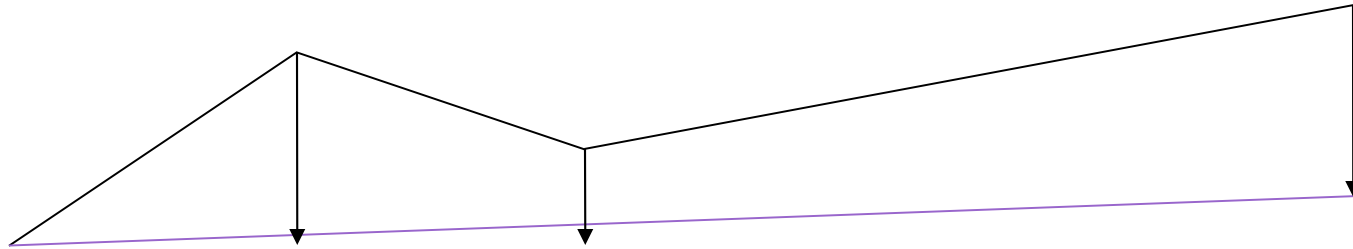


- Max. 30 mm²/100 mm² of map face
- Active parts of symbols
- $GF = (\sum q_i \times r_i \times \alpha_i) / 10^6 \times S$
- S is scale denominator
- Q_i is density of i-type features on 100m²
 - Number or total length
- R_i is area per unit in map in mm²
- α_i coefficient of selection max=1

Hausdorffian distances

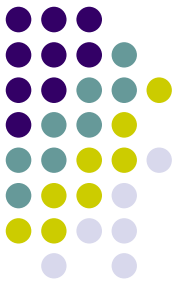


- Separability of two features
- For points identical with Euclidean distance
- Basic form is max from min distances



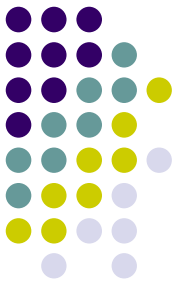
- Extended form includes
 - Descriptive statistics of distances
 - Identification of closest parts
- Often used also for text placement

SVO parameters



- 0.02 – 0.08 mm black lines
- 0.1 mm colour lines
- 0.2 mm area distance
- 0.4 - 0.7 mm min. side of rectangular shape
- 0.2 mm min. side of inner area
- 0.4 – 0.7 mm min. bend base
- 0.4 mm min. bend height

Conflict solution



- Complex issue
- But first steps are
 - Selection
 - Omission
 - Resymbolization
- Two questions
 - How many – Topfer law
 - What – not so easy

Extended Topfer law



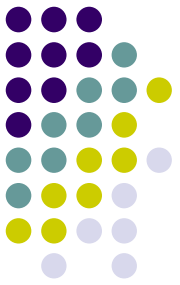
- $N_f = N_a * C_b * C_z * \sqrt{m_a/m_f}$
- N_a – source feature number
- C_b - significance of feature class
- C_z – ratio between symbols
- M_a - source scale denominator
- M_f - outcome scale denominator

Extended Topfer law



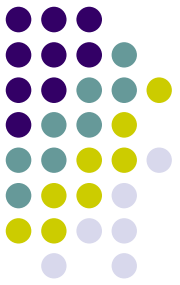
- $C_z = S_a/S_f * \sqrt{M_a/M_f}$ where
 - S_a – source width
 - S_f – final width
- C_z is equal 1 if ratio of symbols is proportional to scale change
- C_b is equal to
 - 1 for normal significance
 - $\sqrt{M_f/M_a}$ for important feature class
 - $\sqrt{M_a/M_f}$ for less important class

What select or omit



- Always combination of parameters
 - Geometric – various descriptive statistics, structure identification
 - Semantic – importance of feature and preserving character of Aol
- Developed areas
 - Settlement – theories of influence
 - Roads – shortest path combinations
 - Rivers – stream orders
 - Terrain skeleton - geomorfometry

Iterative generalisation



- Preprocessing
- Feature hierarchy
- Incremental modules
- Price of operation
- Generalization scheme
- Hardcode of generalization preprocessing results
- No simulation of man-made generalization
- Hierarchy of constraints

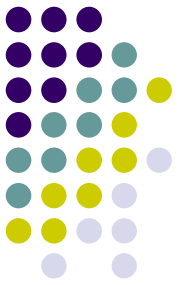
Preprocessing & Feature hierarchy



- TVM
- To remove redundant vertices
- To distinguish artificial and natural features
- To unify vertices order
- Cluster features

- Topography
 - Terrain
- Thematics according purpose
 - Usually 3 levels of importancy

Incremental modules



- Landscape skeleton
 - Terrain lines
 - Important rivers
 - Important communications
- Administrative division
 - Keep crossing of
 - Important rivers
 - Important communications
- Urban blocks
 - Road network