

Automated Zoning Methods

Automated zoning methods

- Zoning problems
 - eg. political districting
- Combinatorial complexity
 - modifiable areal units
- Objective functions
 - population count, shape, homogeneity etc.
- Computational solutions
 - eg. Openshaw AZP (late 1970s)

AZP

- Building block polygons (postcodes)
- Constraining polygons (wards/parishes)
- Objective functions (population etc.)
 - Initial random aggregation into Output Areas
 - Experimental swapping of building blocks between adjacent OAs
 - Evaluate effect on objective functions
 - Keep swaps which improve the solution

OA design (1)

Initial random
aggregation of
postcodes into
potential output
areas



OA design (2)

Choose one
postcode at
random as
candidate for
swapping into a
different output
area



OA design (3)

Make the swap and evaluate the impact on the overall solution



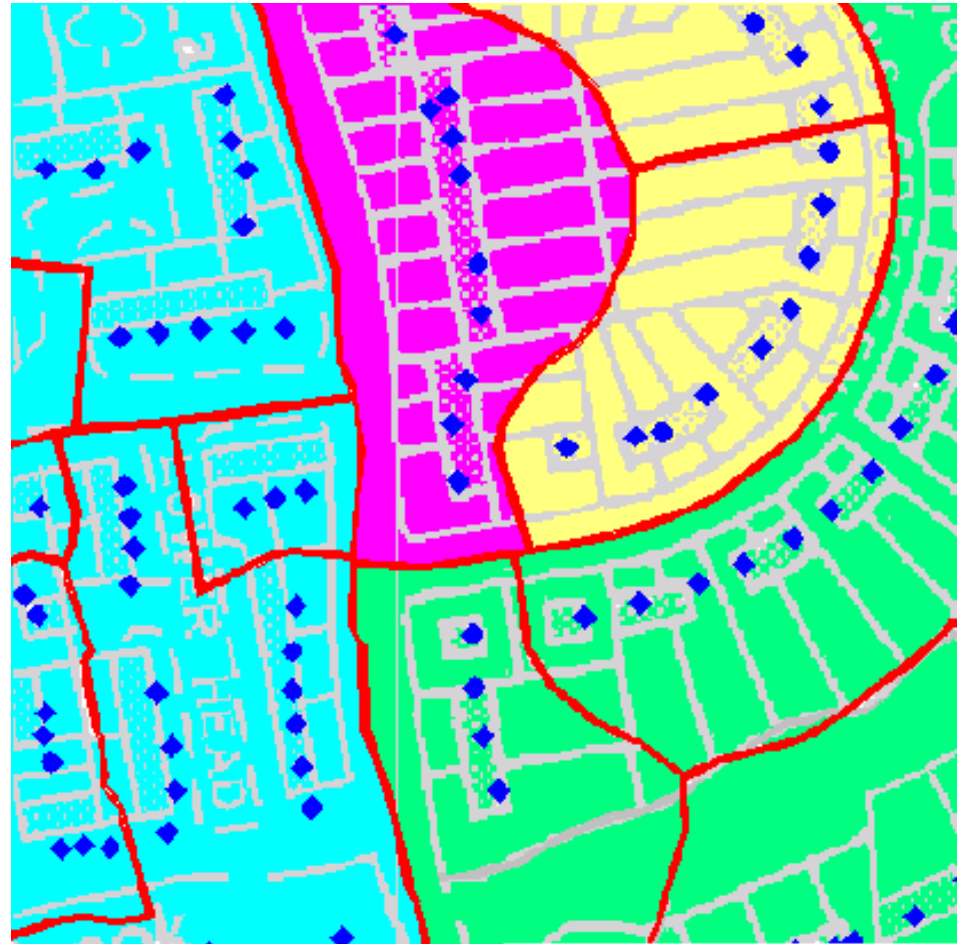
OA design (4)

If swap does not result in an improvement, go back to the previous configuration



OA design (5)

Choose another
postcode at
random as
candidate for
swapping into
another output
area



OA design (6)

If the swap results in an overall improvement, keep it as part of the solution and examine a new potential swap...



Why do it?

- Different collection/output requirements
- Size of task
- Intractability of manual approach
 - too much data
 - too many constraints
 - too many combinations
 - cannot achieve 'optimality'
 - lack of consistency