Desktop Mapping: Using Cartographic Representations

Ralph Denkenberger - esri
What are cartographic representations?

- An intelligent way to symbolize features to solve common cartographic challenges
- A storage model that stores symbols with data
- Part of a feature class, managed through a layer
What can representations do?

Representations can draw features cartographically.
What can representations do?

Representations can produce dynamic geometry which may differ from spatial geometry.
What can representations do?

Feature classes can have more than one representation to draw the same data in different ways.
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What can representations do?

Representations can be data-driven to tailor symbols to feature attribution

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How do I get started?

Convert a symbolized layer to a representation on the source feature class from the Table of Contents.
How do I draw representations?
What are representation rules?

- Like symbols: a set of drawing instructions
- Consist of:
  - symbol layers
  - geometric effects
Sample representation rule

- Lake representation rule:
  - marker layer
  - stroke layer
  - fill layer

[Diagram showing marker layer placed in center, solid stroke layer, and solid fill layer]
Why should I use representations?

• To produce a better map with intelligent symbology

• To generate multiple cartographic products from a single set of master feature classes

• Better map production process (everything happens in ArcGIS)

• Database management – use geodatabase functionality to store and manage symbology
Working with representations
Geometric Effects and Marker Placement Styles
Representation rules

Representation rules contain:
- symbol layers- *drawing instructions*
- geometric effects- *dynamic geometry changes*
- marker placements- *marker position instructions*
What are geometric effects?

• Components of representation rules that perform the following:
  - Dynamically alter the geometry of features
  - Used for cartographic display purposes
  - Can be used to change the geometry type
Geometric effects examples

Extension

Move

Donut

Dashes
What are marker placements?

- Position representation markers
  - Along lines and polygon outlines
  - Within polygons
  - In relation to points
- Extensible: write your own
Marker placement example

- **stroke layer** - *solid outline*
- **marker layer** - *large dots*
  - placement = along outline
  - offset = -3 pt
- **marker layer** - *medium dots*
  - placement = along outline
  - offset = -7 pt
- **marker layer** - *small dots*
  - placement = inside polygon
  - offset = -10 pt
Creating representation markers

Marker Editor

- Import font glyphs, edit vertices
- Draw polygons and lines
- Align, order, group, rotate
- Resize, erase, warp
Geometric effects, marker placement and the marker editor
Overriding representations
What are representation overrides?

Exceptions to the rule
- Customize individual features
- Made while editing

Property overrides (appearance)
- Change any property of the rule

Geometry overrides (location)
- Store alternate geometry
Property override

Create an exception to the rule
Geometry overrides

Must enable representation to handle geometry overrides
Creating overrides

- Interactively with the representation toolbar
- Explicitly change rule property
- Use field in the attribute table to define override
- Cartographic Refinement geoprocessing toolset
Interactive overrides

Use the Representation Properties window to manage feature overrides
Overrides in explicit fields

Link symbol layer properties to feature attributes
- Size, width, angle, visibility, etc.

Draw symbols based on current data

Any rule property can use attribute values
- Must use valid field data type
Overriding representations
Geoprocessing Tools

ArcToolbox

- 3D Analyst Tools
- Analysis Tools
- Cartography Tools
  - Cartographic Refinement
    - Align Marker To Stroke Or Fill
    - Calculate Line Caps
    - Calculate Polygon Main Angle
    - Create Overpass
    - Create Underpass
    - Disperse Markers
    - Set Representation Control Point At Intersect
    - Set Representation Control Point By Angle
  - Data Driven Pages
  - Generalization
  - Graphic Conflicts
  - Grids and Graticules
  - Masking Tools
  - Representation Management
    - Add Representation
    - Calculate Representation Rule
    - Drop Representation
    - Remove Override
    - Select Feature By Override
    - Set Layer Representation
    - Set Layer Override
    - Update Override
Geoprocessing Tools

- **Create Overpass**
  - Angled
  - Parallel
  - None
  - Creating overpass with different wing types

- **Align Marker To Stroke Or Fill**
  - Perpendicular
  - Parallel
  - Input Markers
  - Search Distance

- **Disperse Markers**
  - A cluster of points which are within the minimum spacing distance.
  - Expanded
  - Random
  - Squares
  - Rings
  - Square
  - Ring
  - Cross
  - X-Cross
  - Illustration of the dispersal styles.
Representation
geoprocessing tools
Representations in the ArcGIS platform

- To create or edit representations the Standard or Advanced edition of ArcGIS for Desktop is required
- Recognized by all ArcGIS products

Basic, Standard and Advanced editions of ArcGIS for Desktop

ArcGIS for Server

ArcGlobe, ArcScene

ArcGIS Online

ArcGIS Pro

ArcReader
Extras – Export Map Styles
Extras – Disperse Markers
Thank you…

Questions?
Ralph Denkenberger | Instructor
Educational Services
rdenkenberger@esri.com