

Using Geoprocessing Tools for Cartographic Representations

Transcript

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Hello and welcome to our ESRI Instructional Series podcast. This podcast is titled *Using Geoprocessing Tools for Cartographic Representations*. My name is Peter Kasianchuk and I am an instructor and course author with ESRI Educational Services in Redlands, California. This podcast is intended to provide you with a brief overview of the geoprocessing tools for cartographic representations. The content will be useful for cartographic technicians, map production specialists, or anyone who manages cartographic data with ArcGIS.

Before we begin discussing the tools, we should have an overview of cartographic representations. These are the method by which you can store feature symbology within the geodatabase. Symbol definitions are stored as properties of a feature class within two attribute fields. This is called a feature class representation. Within a feature class representation, the user defines a set of symbols which are applied to groups of features or individual features, similar perhaps to the manner in which you might currently use subtypes to model feature behavior. These symbols are called representation rules. The representation rule properties for individual feature representations can be further edited by using the Representations toolbar within an ArcMap edit session. Feature class representations and representation rules can be created and managed in ArcCatalog by using the feature class properties and in ArcMap through the feature layer properties. However, you can also use geoprocessing tools to automate many of these processes. So let's discuss these next.

Before getting into some of the toolsets and tool functions in detail, it might be useful to first review the broad purposes of what these tools are designed to do. And they're broken down into three broad groups: managing cartographic representations, managing workflow or automating manual cartographic tasks, and quality assurance/quality control. With the first point, managing cartographic representations, the purpose of geoprocessing tools is quite simple, and that's to take advantage of the geoprocessing framework and its functionality. Many of you probably already have cartographic data stored in a variety of style files, layer files, map documents, templates, fonts, and more. Assuming that you have now made the decision to convert your symbol information into cartographic

representations, you may want to take advantage of such geoprocessing benefits as writing scripts or looping statements to process your data automatically, or perhaps create models in ModelBuilder to replicate repetitive data management tasks. In addition to the nuts and bolts data management tools for representations, another toolset contains tools which automate cartographic data creation tasks that were previously highly manual, very time consuming or potentially not possible with core ArcMap tools. So the geoprocessing framework allows you to automate cartographic production tasks.

In addition, your workplace may have many cartographic data editors and perhaps you or someone else in your organization is tasked with examining, or error checking, or quality assurance/quality control tasks to discover any symbol conflicts, which may occur with these multiple editors. So, some of the tools available in the cartographic representation toolsets are intended for quality assurance and error checking.

So let's move into the specific toolsets and a brief discussion of these. The toolsets discussed here are all found within the Cartography Tools toolbox. This toolbox was introduced with ArcGIS 9.0 and still contains the masking tools from that release. No changes have been made to those tools or their functions; however the masking tools are not explicitly intended for cartographic representations. The first toolset that we should examine is called the Graphic Quality and this toolset contains a single tool called Detect Graphic Conflict. This is one of the quality assurance/quality control tools that I just discussed a moment ago. This tool might be thought of as a topology rule for your feature representations where the rule is that no feature symbols may overlap or perhaps be within a distance of one another. So one of the settings that you can use on the Detect Graphic Conflict tool is not just do features overlap, but are they within a distance? You may have a map specification that states that buildings may not be drawn within 25 feet of a road. And you can use this Detect Graphic Conflict tool to discover any buildings that might be within 25 feet.

The next toolset is Representation Management. Now as noted earlier you may have a number of existing feature classes and layer files which you would like to convert to

cartographic representations. Now rather than do this one at a time, you can use the Add Representation tool and in its batch mode to run this for a number of inputs. This toolset also contains the Drop Representation tool. Now this is the recommended method for removing unwanted or redundant feature class representations when working in ArcMap. You may be tempted to manually delete the representation attribute fields from a feature class, but this will not necessarily clean up all the other geodatabase relationships which exist behind the scenes. Use the Drop Representation tool to make sure that you clean out everything in a feature class. Now if you drop a representation or remove or delete a representation in ArcCatalog by using the feature class properties, the underlying relationships will be removed as well.

The Representation Management toolset contains tools for managing overrides. Now, by default, feature representation overrides are stored in the attribute field with the same name, Overrides, as a blob data type, or binary large object. As a cartographic data manager, you may be interested in discovering those features which editors might have applied an exception or an override to. However you cannot expose these blob properties in the attribute table directly or query against them. For example you can't use a blob field to select by attribute. The Select Feature by Override tool allows you to do this, and once you've selected these override features, you can then examine them to ensure the overrides have been properly assigned. The Update Override tool provides you with the ability to move the override information stored as blob data back into explicit attributes within the feature class. Now as is the case with many of the representation geoprocessing tools, you have the option of updating only the feature representation or the feature geometry or both.

The final toolset is the Symbolization Refinement. The tools in this toolset break down into two broad types: tools which create new output feature class representations and tools which create new attributes for use with representation rules. In the first category, those which create new output are the tools Align Marker To Stroke Or Fill, Create Overpass, and Create Underpass. These tools automate specific cartographic use cases. For example Align Marker To Stroke Or Fill will do exactly what it sounds like. You

may have a series of marker symbols in one feature class representation which by default are oriented in a north-south direction and what you want to do is have them align to a street, or perhaps the boundary of a polygon, and you need to rotate those markers some way. Previously this was extremely difficult to do, if not impossible, and there was no way to automate this task in ArcMap. Now you have geoprocessing tool that takes care of that for you. The Create Overpass and Create Underpass tools allow you to create two output feature classes, one which is a masking layer and one which is an optional wings layer to look like a bridge abutment.

In the second category in this toolset are Calculate Polygon Main Angle, Calculate Line Caps, and a couple of others. These tools output new values based on feature representation geometry, which can be used to dynamically define representation rule properties and thus automate the placement or orientation of feature representation symbols.

That's really all I wanted to cover in today's podcast. I hope that this brief discussion will encourage you to explore the full functionality of cartographic representations in more detail.

Thank you for tuning into this session of the ESRI Instructional Podcast Series. Please stay tuned for future broadcasts.