

Best Practices: Working with Cartographic Representations

Transcript

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Natalie: Welcome to our ESRI Instructional Series Podcasts, *Best Practices: Working with Cartographic Representations*. My name is Natalie Vines, and I'm an instructor in the Educational Services department at ESRI in Redlands, California.

Tim: My name is Tim Ormsby. I'm an education specialist in the Educational Services department, and today we're going to look at some best practices when working with cartographic representations. This discussion is tailored to ArcGIS Desktop users who work with symbology (that's everybody), but especially cartographers, and also to people who are involved in geodatabase management, because when you work with cartographic representations, there are some implications for the geodatabase.

Natalie: Cartographic representations are a new symbology for ArcGIS that was released with version 9.2, and representations have several advantages over traditional symbology. One advantage is that representations allow us to store symbology in the geodatabase. The second advantage is that now we can edit our symbology without editing the underlying feature geometry. This means that we can produce sophisticated cartographic output without compromising the integrity of our spatial data.

Tim: Another great thing about representations is that they give us full control over our symbology, and a great new drawing environment called the Marker Editor. It allows us to create sophisticated maps from start to finish easily and efficiently, and all without leaving the ArcGIS environment.

Natalie: Tim and I will now discuss five best practices when working with cartographic representations, and the best practice is all about planning. Storing our symbology within the geodatabase creates a bigger responsibility to know in advance the kind of symbology that we need.

Tim: So, Natalie, suppose we've decided to start working with cartographic representations. Where do we begin?

Natalie: First, we need to decide when to create representations, and for which feature classes. There are two schools of thought here. Some people like to only create representations for feature classes that need that sophisticated representation functionality. So, they take traditional

symbolology as far as it can go and, if they have further needs, they will convert that to a representation. So they use representations really as a finishing tool. A second workflow you could incorporate would be to use representations for all of your feature classes from the very beginning, to incorporate as part of your geodatabase schema. So, whether you're going to use a very simple symbol or something very complex, you're going to use representation. I think both ways of thinking are perfectly valid. It just depends on your perspective.

Tim: It might partly depend on whether you're a cartographer or a geodatabase manager.

Natalie: Our second best practice tip is to consider from the start your intended map outputs and their intended scales. Tim, why is this important?

Tim: Well, when you use cartographic representations, because you're storing symbolology in the database, in general you want to give more thought in advance to what your symbolology needs are.

- One thing to consider is how many different representations do you want to store for a feature class, and that depends on how many different kinds of maps you're making, or maps at how many different scales. So, if you're making maps of very different scales, you'd probably need different symbols and that requires different representations—same thing if you're making maps for very different purposes or audience. Any maps that require different symbol sets are going to require different representations.
- Another thing to think about is, how many rules do you need for each representation? Generally, every unique symbol is going to have its own rule.
- And a third thing to think about is, how much of your existing symbolology can you incorporate into your representations? If you've invested a lot of time in creating symbolology that's stored in map documents or in layer files, you can leverage that just by converting those directly to cartographic representations. On the other hand, you may want to create your own unique symbols in the Marker Editor.

A third tip when using representations, is your naming conventions. Natalie, what do you think about that?

Natalie: Well, when you first convert your symbolology over to representation, or if you can create a representation from scratch, you'll get default names for your representations, for your RuleID

and override fields, and for your rules. If you're going to create a lot of representations, this could lead to confusion quite easily. I think it's a good idea to name your representations either by their intended use or their intended scale. The same goes for your RuleID and override fields. Each time we create a representation for a feature class, it tacks on two new fields: RuleID and override. If I've got five representations, that means I have 10 new fields, all with very similar names. So, it's a good idea to take a moment to consider a useful name for that RuleID and that override field. The same thing goes for your rules. It's a good idea to give your rules meaningful names. This will help you remember what that rule was created for and, if you share that rule with someone else, they know what its intended use is. And, just as with all naming conventions, this should all be documented in your metadata.

Tim: A fourth thing to consider is using styles with representations.

Natalie: We certainly don't have to use styles in conjunction with representations, but I think it's a really good idea for a number of reasons. With version 9.2, we get two new folders within each one of our style files. We get a representation marker folder and representation rules. One way I like to use these is to create markers and rules directly within the Style Manager, completely independent of any data. So, I can create them in the Style Manager environment and then associate them with the feature class after the fact. Another way to use styles in conjunction with representations is to create my rules within the feature class, but then save it to a style. This is good as a backup, but then let's say I go into my Layer Properties and I delete a rule because I no longer need it for that feature class. Once I click OK on my Layer Properties, there's no recovering that rule. It's gone for good. So, I like to keep a backup within my personal style, and it's also a great way to share your rules about sharing your data. By default, when I save a rule it goes to my personal style. I could then go into the Style Manager, copy it to a different style, and then share that with my coworkers, for example.

Tim: Another good thing about using styles is that you can save rules to a style file and use them kind of as a template for creating new rules, especially if you spend a lot of time developing a complex rule, may have a lot of geometric affects or unusual marker placement styles, and you want to adapt it for use in another rule if you've got it in your style file. That's an easy way to access that work that you've already done.

Natalie: Right, instead of starting from scratch each time. So, I highly recommend using styles in conjunction with your representations.

Natalie: So, the fifth topic we'd like to discuss is when to use rules, overrides, and field mapping. With representations, there are a lot of different workflows to get to the same result, and it can be difficult to decide when to incorporate overrides, when to create additional rules. So, Tim, what are some best practice guidelines here?

Tim: It is a complex topic. About the simplest thing we can say is that insofar as possible, you want to capture your symbology with rules. You use overrides in special cases where you may have a particular feature or two that doesn't fit well into the rule. But, if you're not capturing most of your symbology with rules, then there's probably something wrong with your planning.

Natalie: Tim, what's a good example of when I would incorporate an override into my workflow?

Tim: Well, we worked together on a bicycle map in Corvallis, Oregon, and we had a lot of municipal buildings, one of which was important to the map. It was a parks and recreation office, and we wanted that feature to show up bigger than the other municipal buildings on the map. We decided to override the default symbology, which was a 12 point gray square, and make it a 16 point square. That's an example in a particular case, where you might want to change or make an exception to a rule with an override.

Natalie: Right. So all of our buildings were represented with the same symbol. They shared a common symbol, but for this one particular map output, we wanted this one building to vary slightly. So, it was a good reason to create an exception to create an override.

Tim: Exactly.

Natalie: What about field mapping? What are some things I need to consider if I'm going to incorporate this into my rules.

Tim: Well, a problem that comes up in symbology is that you sometimes have features that vary according to some particular symbol attribute. For example, suppose that my buildings are oriented to the nearest street. Each building may end up with a different angle value. That would

be really hard to capture with rules because I'd need a hundred, or a couple of hundred, rules. The same goes for overrides. I don't want to have so many overrides that I don't have a rule really anymore. Field mapping allows us to take some particular value like that, like angles or line widths, that varies for each of the features in my representation, and store those variable values as an attribute called an Explicit representation field. We can use that attribute to drive the symbology. That allows us to keep one rule and yet incorporate the variation, the symbol variation, into the rule.

Natalie: So, field mapping is a great way to incorporate variation into your rules. If you're going to have a field that you will use for field mapping, it's important to consider the data type when you first create that field. Most commonly, we need to store this information as a float, or a double, if we're going to use it in field mapping down the line.

Tim: So, in conclusion, Natalie, let's review the five tips we gave for best practices with cartographic representations. The first thing we said is that when you decide to use representations, you need to consider which feature classes you're going to create them for, and at what point in the process you're going to introduce them into the workflow. Are representations a finishing touch or are they part of your basic geodatabase design?

Natalie: Our second tip was to really think about what map outputs you're going to be creating, and their scales. This will help you decide how many different representations you need and how many different rules.

Tim: A third tip was to think about naming conventions, both for representations and for rules, that will help you keep track of multiple representations for a feature class, and also be helpful to other people who are using the data.

Natalie: Our fourth tip was to use styles in conjunction with representations. It's a great way to back up your work and to share your rules as well.

Tim: Our fifth tip was to think carefully in advance about your rules, your overrides, and field mapping. Use rules to capture most of your symbology. Use overrides as exceptional cases, and use field mapping to store symbol attributes that vary from feature to feature.

Natalie: For further information regarding cartographic representations, check out our instructor-led training courses at training.esri.com, and there you will find information on our new course *Managing Cartographic Data and the Geodatabase*. This two-day course covers cartographic representations in detail. Thank you for tuning into this session of our ESRI Instructional Series Podcast. Please stay tuned for future podcasts.