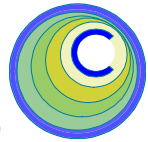


The CEDRA Corporation's COMMAND OF THE MONTH

A monthly information bulletin

May 2007

FEATURED COMMAND
Transfer Attributes based
on a Spatial Relationship



Application Description

There often are times when one wishes to transfer or copy an attribute value from one feature to another based upon a spatial relationship. In the ArcGIS® world this is referred to as “joining data by location” or performing a “spatial join”.

An example of this is when one wishes to copy an attribute value of a polygon layer and assign it to a point feature which falls within the polygon layer. In this case we are dealing with a point in polygon spatial relationship.

Although the example illustrates a point in polygon spatial relationship, other spatial relationships may need to be employed. Such as, point near line or point near polygon. Regardless, the spatial relationship always involves two layers.

The CEDRA Solution

To address the application of transferring an attribute value based upon a spatial relationship, the user can activate the CEDRA-Skeletonization-Tools toolbar, see Figure 1. This toolbar is available only for ArcGIS® users. Specifically, the [Transfer Attribute] menu item within this toolbar is the command which we will be discussing.

Transfer Attribute - Overview

The basic concept behind the operation of the [Transfer Attribute] command is that the user identifies two layers which are

to be processed. This is accomplished by activating or highlighting the appropriate layers in the Table of Contents.

Once the layers have been identified, the command displays a multi-input dialog box, from which, the user specifies pertinent information required to perform the attribute value transferring.

Although native ArcMap functionality could be used to perform the spatial join, the result of which will be a new output layer (new shapefile or featureclass). The [Transfer Attribute] command, however, does not create a new shapefile or featureclass, but rather:

- modifies a specified layer, or
- highlights the features which satisfy the spatial relationship, or
- performs a and b above.

Command Of The Month bulletin

This month's issue discusses the process of transferring the attribute value of one feature to another based upon a spatial relationship.

Transfer Attribute - Operation

Upon activation of the [Transfer Attribute] command, the command scans the Table of Contents for two active or highlighted layers. If none are found, or only one is active, or if more than one layer is active, an appropriate error message is displayed. Figures 2, 3 and 4 illustrate the syntax of the various error messages.

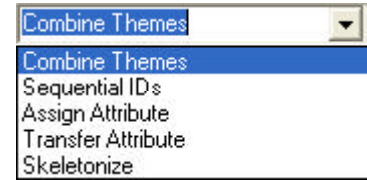


Figure 1
CEDRA-Skeletonization-Tools
Toolbar

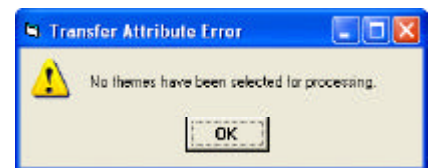


Figure 2 - Error Message



Figure 3 - Error Message

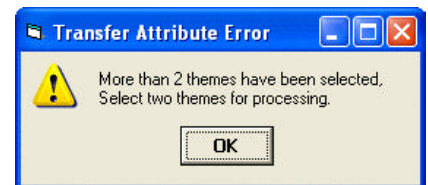
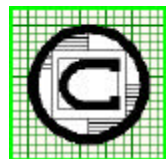


Figure 4 - Error Message

Once the two layers to be processed have been identified, the multi-input dialog box of Figure 5 is displayed. Using this dialog box, the user is able to identify the layer to be modified (layer 1) and the layer which contains the attribute that is to be transferred (layer 2). Based upon the feature types of the selected layers, the command will apply the appropriate spatial relationship.



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1. Enter the desired values for each of the parameters, shown in Figure 5, click at the:

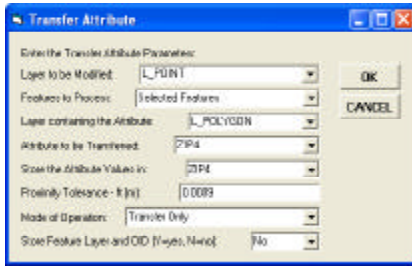


Figure 5
Transfer Attribute Main Dialog Box

- *Cancel* button to terminate the command, or the
- *OK* button to continue with the processing.

Beginning at the top of the dialog box, the user is able to control the following:

Data Line 1 - Layer to be Modified

From the choice list, select the layer that is to be modified (layer 1). Note that the choice list only contains the active layers in the Table of Contents).

Data Line 2 - Features to Process

From the choice list of Figure 6, select the option denoting which features in layer 1 are to be processed.

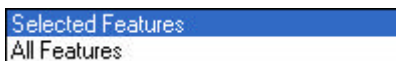


Figure 6
Features to Process Choice List

Data Line 3 - Layer containing the Attribute

From the choice list, select the layer that contains the attribute values (layer 2) to be transferred to the layer to be modified (layer 1). Note that the choice list only contains the active layers in the Table of Contents).

Data Line 4 - Attribute to be Transferred

From the choice list, select the attribute in layer 2 that is to be transferred to layer 1.

Data Line 5 - Store the Attribute Values In

From the choice list, select the attribute or field in layer 1 in which the values of the attribute in layer 2 are to be stored in. If the field that is selected for this parameter does not exist in layer 1, the field will be added to layer 1 automatically. In this case, the field, which is added, will be assigned the same properties of the field in layer 2.

Data Line 6 - Proximity Tolerance

The buffer distance used to determine which features are initially close to a feature in layer 1.

Data Line 7 - Mode of Operation

From the choice list of Figure 7, select the mode of operation in which the command is to follow.



Figure 7
Mode of Operation Choice List

Data Line 8 - Store Feature Layer and OID

Denotes whether or not, the name of the layer and the OID of the feature in layer 2, which satisfies the spatial relationship, is to be stored with the feature in the layer 1. In addition, the distance between the two features will be stored.

Once the OK button is selected the command will proceed to process the appropriate features in the layer to be modified (layer 1). Specifically, the command on a feature by feature basis, determines which feature in layer 2 is “closest” to a feature in layer 1. Once a match has

been determined, the command will transfer the attribute value from the feature in layer 2 to the feature in layer 1, provided the user has selected the Transfer Only or Transfer and Highlight option.

If the Highlight Only option has been selected, the command will not modify any of the features in layer 1. Rather, the command will only highlight the features in layer 2 which satisfy the spatial relationship. Additionally, the command will highlight the features in layer 1 which have been processed.

Notes

- a. In determining which feature is closest to another feature, the command uses the proximity tolerance entered in Data Line 6 to create a buffer about the feature in layer 1. The buffer polygon is used to find all layer 2 features which fall within the polygon. These features are then examined individually to determine which one of them is closest to the feature in layer 1.
- b. When the Transfer Only or Transfer and Highlight options are selected, the command will add the following fields to layer 1: TRANS_LYR, TRANS_OID and TRANS_DIS. These fields will contain the name of the layer and feature OID that is closest to the feature in layer 1, as well as, the distance between the two features.

Summary

Users who have a need to perform a spatial join without having to create a new shapefile or featureclass should check out the [Transfer Attribute] command. As always, if there are any requests for additional functionality in transferring attribute values, please feel free to let us know.

If you have a request for Command Of The Month, feel free to phone, fax or e-mail your request to The CEDRA Corporation.