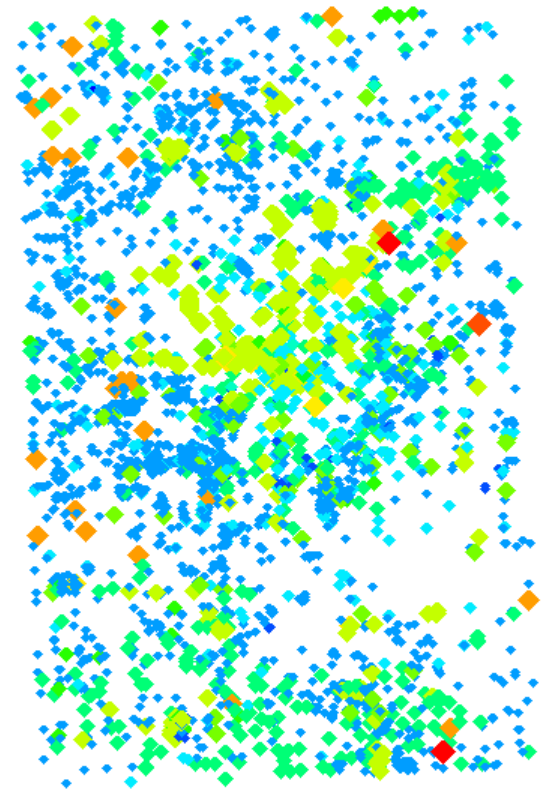# Style By Attribute: Automatic Style Generation

The *By Attribute* style option for elements in geometric objects (vector, shape, and CAD) associates a separate drawing style with each unique value in an element database table and field of your choice. This style option allows elements with different attributes to be visually differentiated in displays.

The associations between styles and attributes are stored in a *style assignment table* in the element database for the relevant element type. You set up these style-attribute associations using the Style Assignment Table window in the Display process. This window allows styles to be created and assigned to specific attribute values either manually or by a user-guided automatic procedure. The general characteristics of the Style Assignment Table window and the manual procedures are discussed in the Technical Guide entitled *Style By Attribute: Manual Assignment*. This document discusses automatic style generation and assignment.
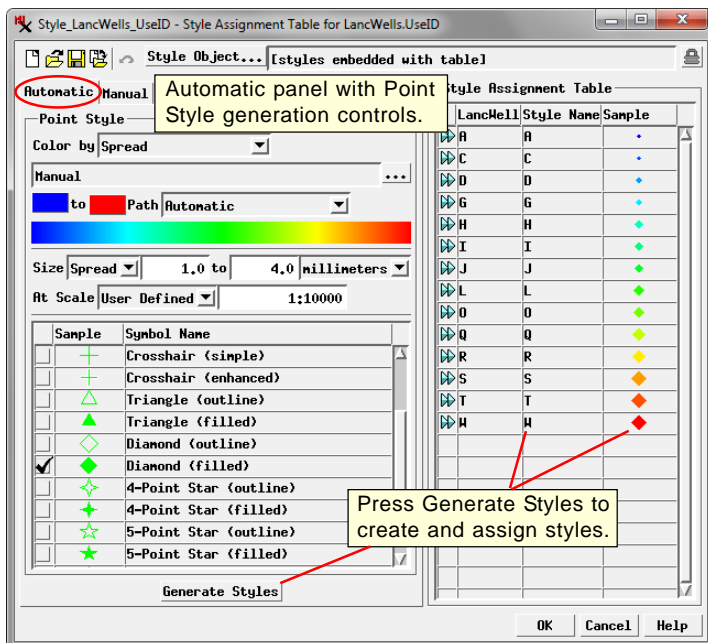
Automatic Style Generation

The controls on the Automatic tabbed panel of the Style Assignment Table window (illustrated below) can be used to automatically create and assign new styles for points, lines, or polygons. A style is automatically created and assigned for each unique attribute value in the designated database field. Style names are assigned based on the name of the associated attribute value. Automatic style generation can create styles with a variety of colors for point symbols, lines and polygon borders, and polygon fills. You can also specify a range of sizes for point symbols or a range of widths for lines and polygon borders. The automatic style generation option is especially useful when you are creating a new style assignment table and new embedded style object, but it can also be used to replace existing styles. Styles that are automatically generated can be edited subsequently using the controls on the Manual tabbed panel.

Vector points with symbols with varying colors and sizes created and assigned automatically in the Style Assignment Table window.

The controls on the Automatic panel vary depending on the element type for which you are generating the styles. The Point Style panel provides color controls, controls for specifying symbol size, and a list from which you can choose a predefined point symbol shape (see illustration below left). The Line Style panel provides controls for line color and for setting line width (see illustration below right). For polygon elements the Automatic panel provides Fill Style controls for setting fill color and transparency and Border Style controls that are identical to the Line Style controls (see illustration on the next page).
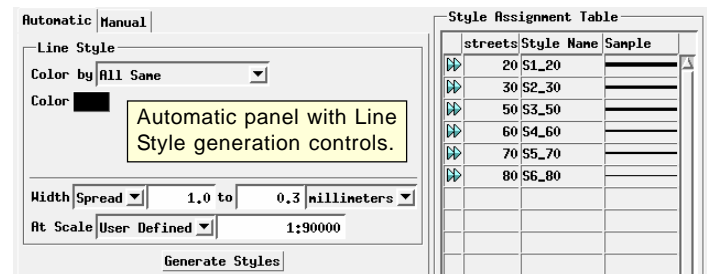
Automatic panel with Point Style generation controls.

Press Generate Styles to create and assign styles.

Automatic panel with Line Style generation controls.

After setting the style generation controls, press the Generate Styles pushbutton at the bottom of the Automatic panel to create and assign the styles. The style names and samples are then shown in the Style Assignment Table portion of the window. If you are not satisfied with the result, you can adjust the style generation controls and press the Generate Styles button again to update the styles.

Color Controls

The color controls include a *Color by* menu from which you can choose a color generation method. Several methods allow col-

ors to be generated from a continuous color palette of your choice: Palette Progression and Random in Palette. You can press the Edit Palette pushbutton next to the menu to open the Color Palette Editor window. You can use the Palette menu in this window to choose a palette, then choose File/Close to accept the palette. The range of colors in the selected palette is shown below the menu. The remaining color generation choices are All Same, Random, and Spread.

All Same: all styles are assigned the same color. When you choose this option, a Color button is provided below the menu (see the Border Style controls in the illustration to the right). Pressing the button opens a standard Choose Color window from which you can select a color from a palette or create a custom color using your choice of color models.

Palette Progression: colors are generated for the range of styles by sampling colors at uniform intervals in color index order through the selected continuous color palette.

Random in Palette: colors are generated for the range of styles by sampling colors in random order from the selected continuous color palette. The order of color sampling and assignment changes each time you press the Generate Styles button.

Random: a color is generated at random for each needed style and shown in a color bar below the menu. Press the Repick Colors pushbutton next to the menu to create a different set of colors before pressing the Generate Styles button.

Spread: sample colors from a custom continuous color spread or a selected continuous color palette. Colors are sampled at uniform intervals in order through the spread or palette. A color bar below the controls shows the color range that was created or selected.

When you choose the Spread option, another menu is provided below the *Color by* menu. This menu provides a list of available continuous color palettes that you can select, as well as a Manual option. When you choose any of the palettes, you can turn on the Reversed toggle button to reverse the palette order.

When you choose Manual from the spread menu, a pair of color buttons are shown below it so that you can set beginning and ending colors for the spread. Use the Path menu next to the color buttons to choose the spread type. The choices are Automatic, RGB, HIS Clockwise, HIS Counter-Clockwise, HBS Clockwise, and HBS Counter-Clockwise. These options use different color models to generate the range of colors.

The Automatic option picks the optimal spread type depending on the starting and ending colors selected in order to produce the greatest variety of colors. An RGB color spread includes colors found on a straight line connecting the two end-member colors in the cubic Red-Green-Blue model space (for example, the edge connecting red and yellow). HIS color spread paths define colors in the double-cone Hue-Intensity-Saturation color model. You can choose either clockwise or counter-clockwise spreads between the selected end-member colors. HBS color spread paths define colors in the single-cone Hue-Brightness-Saturation color
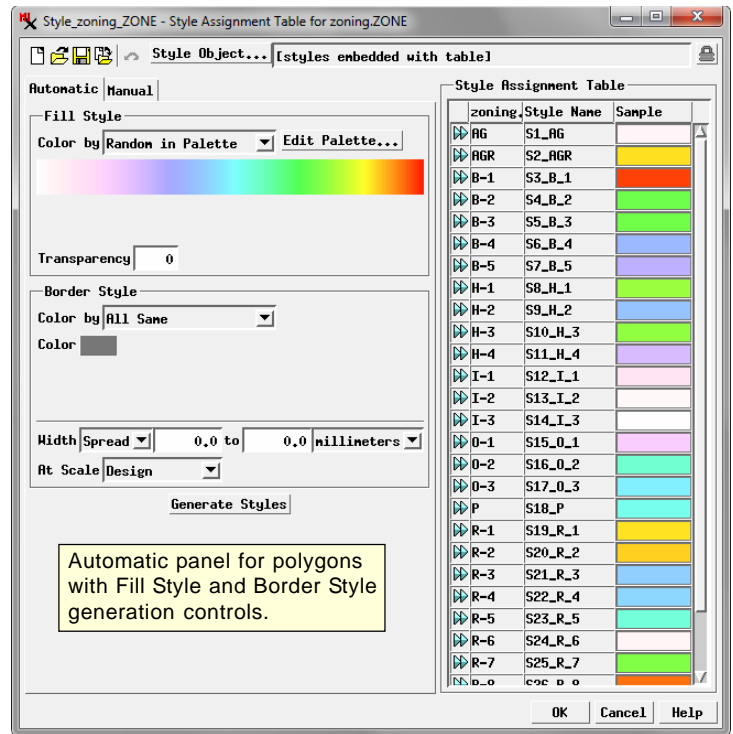
Automatic panel for polygons with Fill Style and Border Style generation controls.

model. You can choose either clockwise or counter-clockwise spreads between the selected end-member colors. For more information on color spreads and color models, see the *Getting Good Color* tutorial.

Size and Width Controls

The Size controls for points and Width controls for lines and polygon borders let you create styles with a single size or width or a range of sizes and widths. Use the provided numeric fields to set value limits in the units specified by the menu to the right of the fields (millimeters, inches, points, or pixels). Set the same value in both fields if you want the same size/width for all styles.

The Size or Width menu to the left of the numeric fields sets how the dimensions are assigned within the specified value range. The Spread option assigns values in order through the range at uniform intervals. You can create styles with decreasing size/ width in order through the attribute list by setting the higher range limit in the left-hand value field (see the illustration at the bottom right of the previous page). The Random menu option assigns the computed sizes/widths to the styles in random order.

The At Scale menu setting determines the scale at which the specified size or width apply. The option None sets a fixed screen size for the elements, so that they appear at the same size on screen regardless of the zoom level. The Design option sets the styles to use the design scale specified for a group or print layout in which the geometric object is used. When you choose the User Defined option, you can enter a scale value in an adjacent numeric field. You can enter a map scale fraction or a scale number (*e.g.*, 1:36000 or 36000) in the field. With the Design or User Defined option, the elements will appear larger or smaller on screen as you zoom in or out.