

Working with 3D symbols in ArcScene 9.0

Software Requirements:

ArcGIS 9.0
3D Analyst

New to ArcGIS 9.0 3D Analyst extension is a wealth of 3D symbols and textures that allow you to visually enhance your 2D maps to depict the real-world. The following scenario will utilize these 3D symbols to render the Chateau Lake Louise resort in Alberta, Canada. In an effort to convert conventional energy use to a more environmentally friendly method of energy consumption, Lake Louise ski resort is attempting to

implement solar paneling and wind turbines. We will use the 3D symbols to depict what the implementation of solar paneling and a wind turbine will look like before construction begins.

To download the data for this tutorial please type the following URL into your browser and save the zip file to your c:\temp directory. 3D Symbols Demo Data: (http://www.esricanada.com/english/support/get_tech/arcgis/downloads/3DSymbolsDemoData.zip)

Please note that this sample data is quite large. If you have issues downloading it please send a request to support@esricanada.com with the subject 'Getting Technical 3DSymbolsDemoData.zip', including your name and address in the body of the email, and we will be glad to mail you a CD copy of it.

Examine the Data

1. Open **ArcScene** with a new, empty scene document. Click the **Add Data** button and navigate to the c:\temp folder. Select **lakelouise.img** and click **Add**.
2. Click the **Add Data** button and navigate to the shapefiles located in the c:\temp data folder. Select all the shapefiles using the shift key and click **Add**. Explore the attribute tables for the shapefiles and notice the attributes in the **TYPE** field. We will use these to model the resort in 3D.
3. Right-click on **lakelouise.img** in the Table of Contents (TOC) and select **Properties**. Click the **Base Heights** tab, and click the radio button for **Obtain heights for layer from surface**. Click the **Browse** button and navigate to the surface dataset located in c:\temp. Select the **Elevation** file and click **Add**. Click **OK** to finish and close the **Layer Properties** dialog. Use the navigate tools to navigate around the Lake Louise image. This data can be used to create a fly-through animation to really enhance the visual affect of our 3D Symbols classification. For more information on animating in ArcScene please visit: http://esricanada.com/english/support/get_tech/arcgis/3d_flyby.asp

3D Texture Fill Symbols will be used to model our land and water features

4. Click the **New Scene File** button to clear the Table of Contents. Click the **Open** button to open the **LakeLouise.sxd** located in c:\temp.
5. Right-click the **Land** shapefile in the TOC and select **Properties**. Notice the three land types: LAND, PASTURE, PARKING under the Symbology tab. Double-click the **LAND** symbol and choose **3D Basic** from the **More Symbols** button. Click the **Category** drop down menu and select **Texture Fill**. Click **Forest1** and select **Properties**. (See *Figure 1*) Change the height and width dimensions to 200 to allow us to see the forest texture at a larger scale.
6. Double-click the **PARKING** symbol under the Symbology tab. Select the **Asphalt** symbol and click **Properties**. Change the height and width dimensions to **10** and click **OK**.
7. Double-click the **PASTURE** symbol under the Symbology tab. Select the **Asphalt** symbol and click **Properties**. Change the height and width dimensions to **10** and click **OK**.
8. Right-click the **Water** shapefile in the TOC and select **Properties**. Click on the **blue polygon** under the **Symbology** tab and choose **3D Basic** from the **More Symbols** button. Click the **Category** drop down menu and select **Texture Fill**. Select the **WaterBody2** symbol and click **Properties**. Change the height and width dimensions to **150** and click **OK**. (See *Figure 2*)

3D Texture and Simple Line Symbols will be used to model our roads and fence features

9. Right-click the **Roads** shapefile in the TOC and select **Properties**. Notice the two roads types: DRIVEWAY and ROAD under the Symbology tab. Double-click the **ROAD** symbol and choose **3D Basic** from the **More Symbols** button. Click the **Category** drop down menu and select **Texture Line**. Click **SolidYellowLine** and select **Properties**. Change the width to **10** and click **OK**.
10. Double-click the **DRIVEWAY** symbol under the Symbology tab. Click **Properties** and select the **3D Simple Line** Symbol from the **Type** drop down menu. Change the **Style** to **Strip** and the width to **4** and click **OK**.
11. Double-click the **Fences** symbol in the TOC. Select the **PicketFence2** symbol and click **Properties**. Change the width to **3**, check the **vertical orientation** checkbox, and click **OK**.

3D Marker Symbols will be used to model our Trees, Buildings, Street Furniture, Automobiles, and Alternative Energy features.

12. Right-click the **Trees** shapefile in the TOC and select **Properties**. Notice the three tree types: FIR, PINE, and SPRUCE under the **Symbology** tab. Double-click the **FIR** symbol and choose **3D Trees** from the **More Symbols** button. Click the **Category** drop down menu and select **CONIFER**. (See *Figure 3*) Click **Spanish Fir** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z)** Dimension to **8**, **11**, and **17** respectively. Click **OK** twice to return to **Layer Properties**.

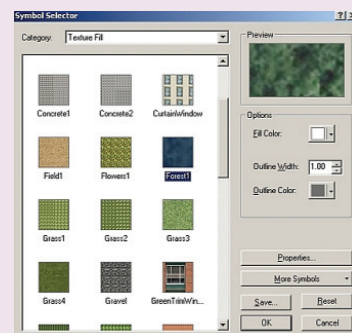


Figure 1

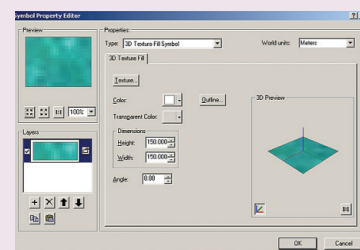


Figure 2

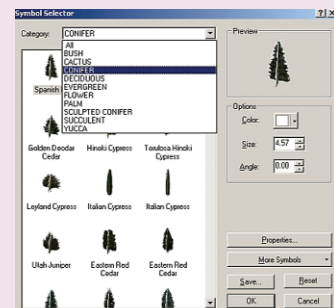


Figure 3

13. Double-click the **PINE** symbol under the **Symbology** tab. Click the **Category** drop down menu and select **CONIFER**. Click **Canary Island Pine** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z)** Dimension to **10**, **10**, and **15** respectively. Click **OK** twice to return to **Layer Properties**.
14. Double-click the **SPRUCE** symbol under the **Symbology** tab. Click the **Category** drop down menu and select **All**. Click **Colorado Spruce** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth (Y)**, and **Size (Z) Dimension** to **10**, **10**, and **15** respectively. Click **OK** twice to return to **Layer Properties**.

All but five of the building features have been symbolized to save time. The three remaining building points will be symbolized to create the **Chateau Lake Louise** and **Brewster Stables** and the **Employee Residences**.

15. Right-click the **Buildings** shapefile in the TOC and select **Properties**. Notice **Hotel1**, **Hotel2**, and **Hotel3** and **Brewster Stables1** and **Emp_Res1** under the **Symbology** tab do not have symbols yet. Double-click **Hotel1** and uncheck **3D Trees** and check **3D Buildings** from the **More Symbols** button. Click the **Category** drop down menu and select **Assorted Living**. Click **Hotel1** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **50**, **19**, and **35** respectively. (See *Figure 4*) Select the **3D Placement** tab and change **Normalized Origin Offset dx: value** to **0.30**. Click **OK** twice to return to **Layer Properties**.
16. Double-click the **Hotel2** symbol under the **Symbology** tab. Click the **Category** drop down menu and select **Assorted Living**. Click **Hotel1** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width (X)**, **Depth (Y)**, and **Size (Z) Dimension** to **76**, **33**, and **45** respectively. Select the **3D Placement** tab and change the **Rotation Angle Z:** to **-8.00** and the **Normalized Origin Offset dx: value** to **0.30**. Click **OK** twice to return to **Layer Properties**.
17. Double-click the **Hotel3** symbol under the **Symbology** tab. Click the **Category** drop down menu and select **Assorted Living**. Click **Hotel1** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **36**, **19**, and **35** respectively. Select the **3D Placement** tab and change the **Rotation Angle Z:** to **-83.00**. Click **OK** twice to return to **Layer Properties**.
18. Double-click the **Brewster Stables1** symbol under the **Symbology** tab. Uncheck **3D Buildings** and check **3D Industrial** from the **More Symbols** button. Click the **Category** drop down menu and select **Barns**. Click **Barn2** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **40**, **15**, and **15** respectively. Select the **3D Placement** tab and change the **Rotation Angle Z:** to **45.00**. Click **OK** twice to return to **Layer Properties**.
19. Double-click the **Emp_Res1** symbol under the **Symbology** tab. Uncheck **3D Industrial** and check **3D Residential** from the **More Symbols** button. Click the **Category** drop down menu and select **Assorted Living**. Click **Brownstone** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **15**, **30**, and **15** respectively. Select the **3D Placement** tab and change the **Rotation Angle Z:** to **-65.00**. Click **OK** twice to return to **Layer Properties**.
20. Right-click the **Automobiles** shapefile in the TOC and select **Properties**. Notice the types: **BUS**, **COMPACT**, **MIDSIZE**, and **SUV** under the **Symbology** tab. Only the **BUS** needs to be symbolized. Uncheck **3D Residential** and check **3D Vehicles** from the **More Symbols** button. Click the **Category** drop down menu and select **Urban Automobile**. Click **TransitVan** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **3**, **15**, and **3** respectively. Select the **3D Placement** tab and change **Offset Y:** to **3.00**. Click **OK** twice to return to **Layer Properties**.
21. Right-click the **StreetFurniture** shapefile in the TOC and select **Properties**. Notice the two light types: **LIGHT_L** and **LIGHT_R** under the **Symbology** tab. Double-click the **LIGHT_L** symbol and check **3D Street Furniture** and uncheck **3D Vehicles** from the **More Symbols** button. Click the **Category** drop down menu and select **Street Scene**. Click **stlight5** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **5**, **3**, and **15** respectively. Select the **3D Placement** tab and change **Offset X:** to **1.00** and **Rotation angles Z:** to **180.00**. Click **OK** twice to return to **Layer Properties**.
22. Double-click the **LIGHT_R** symbol under the **Symbology** tab. Click the **Category** drop down menu and select **Street Scene**. Click **stlight5** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **5**, **3**, and **15** respectively. Click **OK** twice to return to **Layer Properties**.
23. Right-click the **Altern_Energy** shapefile in the TOC and select **Properties**. Notice the two Alternative Energy types: **SOLAR** and **WIND** under the **Symbology** tab. Double-click the **SOLAR** symbol and check **3D Industrial** and uncheck **Street Furniture** from the **More Symbols** button. Click the **Category** drop down menu and select **Solar Panels**. Click **spanel1** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **10**, **10**, and **15** respectively. Select the **3D Placement** tab and change **Offset Z:** to **34.00** and **Rotation angles Z:** to **30.00**. Click **OK** twice to return to **Layer Properties**.
24. Double-click the **WIND** symbol under the **Symbology** tab. Click the **Category** drop down menu and select **Wind Power Generators**. Click **wpowerg2** and select **Properties**. Uncheck the **Keep aspect ratio** checkbox and change the **Width(X)**, **Depth(Y)**, and **Size(Z) Dimension** to **70**, **10**, and **35** respectively. Click **OK** twice to return to **Layer Properties**.

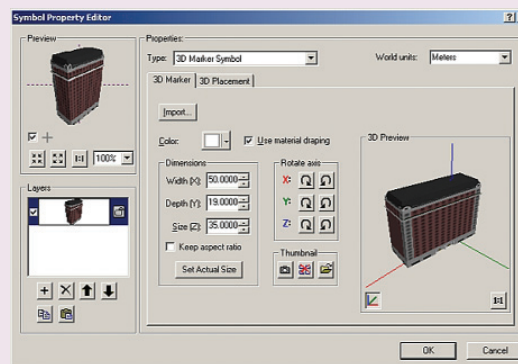


Figure 4