

Appendix C

Menu Command Plug-ins

Menu command plug-ins are accessed via the Plug-in menu.

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◆ Introduction

Select the plug-in icon in the menu bar. A list of available menu command plug-ins displays:



Select the plug-in name from the list to use it. Hold down the Option key and select the plug-in name to display any plug-in options that are available.

The first time a plug-in icon is selected, the top item in the menu is Last Plug-in, and this is grayed out. After selecting a plug-in, the top item will be the name of the last plug-in selected. This can be chosen by selecting the top item or typing Command - *.

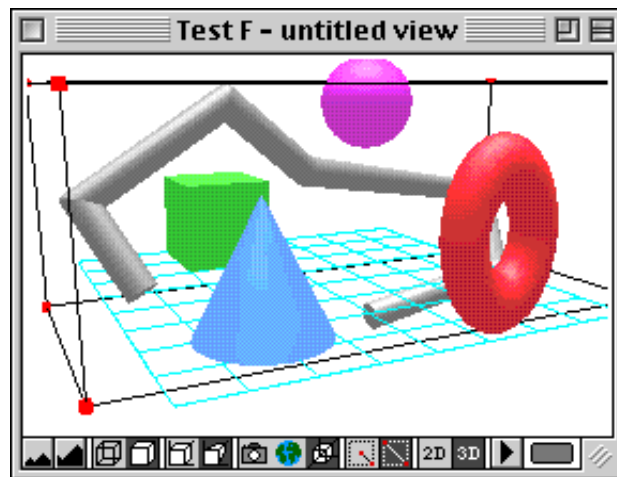
3D Controller is a menu command and a palette. *See 3D Controller on page D-8 for more details.* The following plug-ins are available as both menu command plug-ins and plug-in modifiers: Add UV, Animate Color, Animate Textures, Bomb, Color, Delete Attributes, Gravity, Make Wireframe, Material, Random Color, Scale Object and Spin. *See Appendix H – Plug-in Modifiers on page H-1 for details.*

◆ Animate Camera

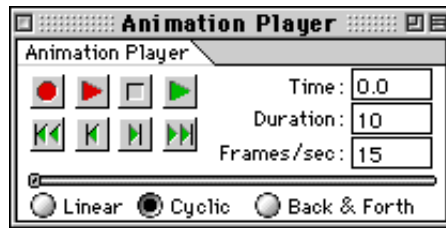
The Animate Camera plug-in is used to move the camera along a specified path, over a set time.

To use the Animate Camera plug-in you will require the Animation Tweener plug-in to be loaded. The Animation Player and Pipes plug-ins will also be useful.

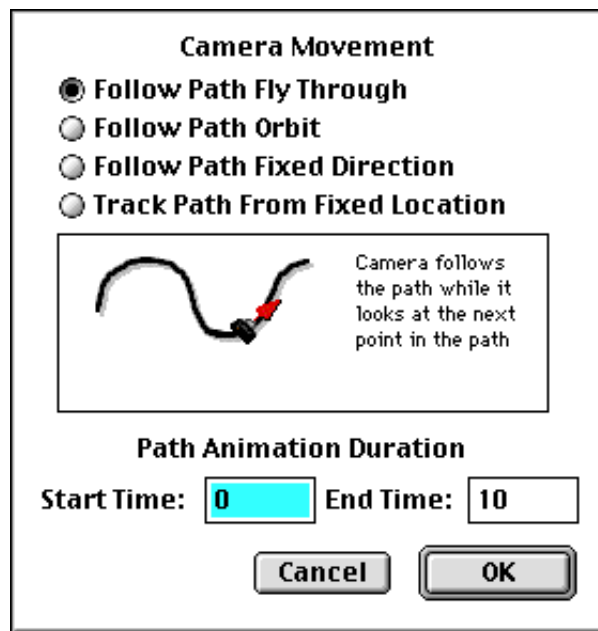
1. Define a path for the camera to be animated along. The screen shot below shows a path created by using the Pipes plug-in. *See Pipes on page G-43 for more details.*



2. Set up the Animation Player palette according to your requirements for the movie you wish to record. *See Animation Player on page D-12 for more details.*

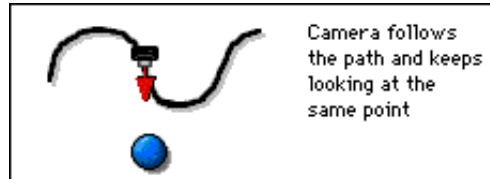


3. Select the path object in the 3D World document and choose Animate Camera from the Plug-in menu. The Animate Camera Options dialog displays:

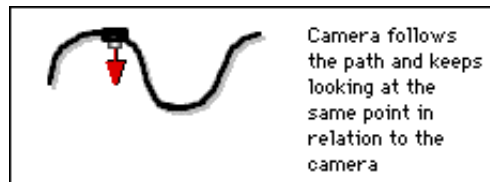


4. Select one of the Camera Movement radio buttons to specify the way in which the camera should move along the path. The preview below the radio buttons shows how the camera will move.
 - **Follow Path Fly Through:** Both the camera object and the camera view will move along the path.

- **Follow Path Orbit:** The camera moves along the path, but the camera view remains centered at the point it was looking at initially. When using this option, set the camera view prior to selecting the Animate Camera plug-in.



- **Follow Path Fixed Direction:** The camera moves along the path, the camera view settings remain constant in relation to the camera position.

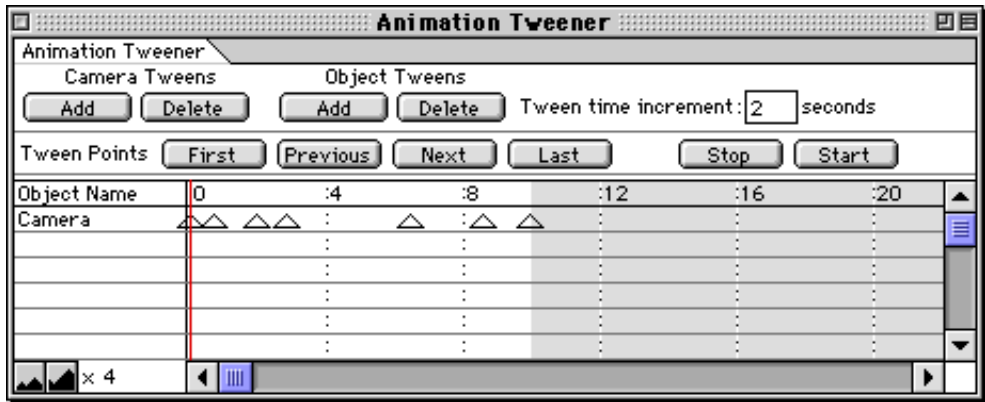


- **Track Path From Fixed Location:** The camera remains in its initial position, the camera view follows the defined path.



5. Enter values in the Start Time and End Time fields to specify when this particular camera animation should start and finish. The maximum time for the camera animation is determined by the duration for the animation as set in the Animation Player palette. Multiple camera animations can be saved for different time periods in the same animation.
6. Once Animate Camera has been selected, Camera Tweens are saved and displayed in the Animation Tweener palette. The object drawn to define the path can then be deleted

or moved to another layer and hidden. *See Animation Tweener on page D-17 for more details.*

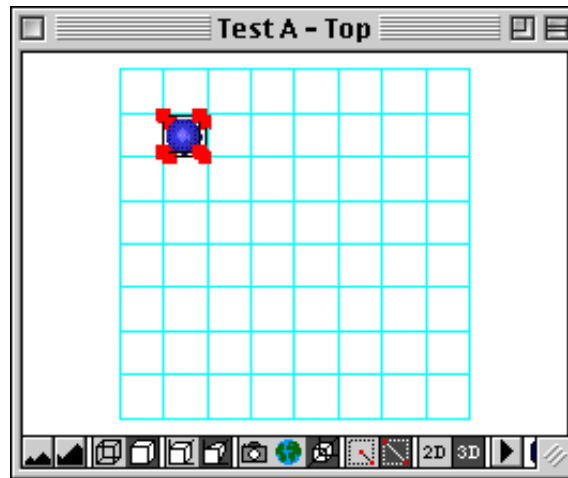


Note: The camera is not linked to the path in any way. If the path is edited, the animation for the camera will not be changed. The camera must be animated along the new path for the animation to be updated.

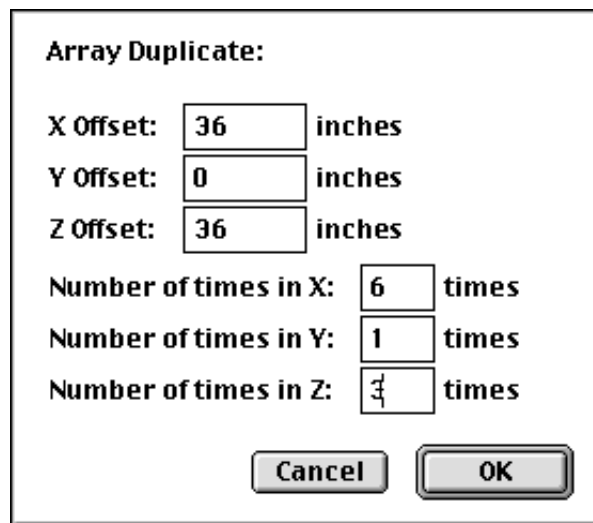
◆ **Array Duplicate**

The Array Duplicate plug-in is used to duplicate an object in any or all of the x, y and z axes, by a specified offset, a specified number of times.

1. Select an object in the document.

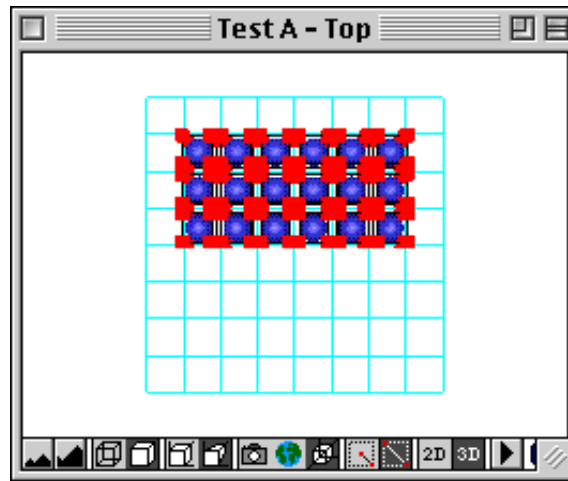


2. Select Array Duplicate from the Plug-in menu. The Array Duplicate dialog displays:



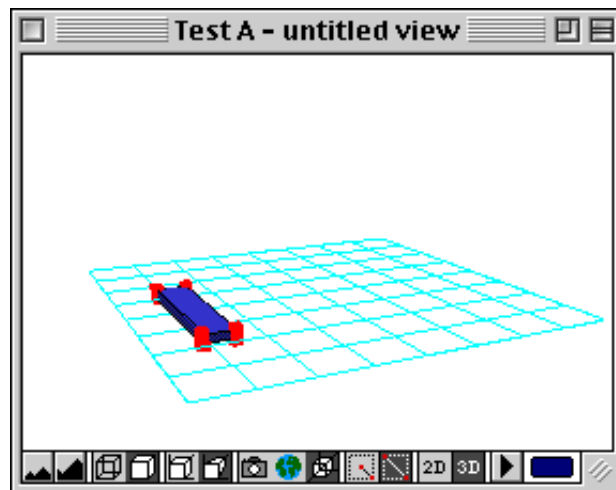
3. Enter an offset, and number of times for the object to be duplicated, in each of the x, y and z axes and click OK.

4. The object will be duplicated the specified number of times, with the duplication offset applied each time, in the x, y and z axes as per your settings.



It is possible to apply an offset in more than one axis but only duplicate the selected object a set number of times in one axis. In this case, both the offset values are applied each time the object is duplicated.

1. Select an object in the document.



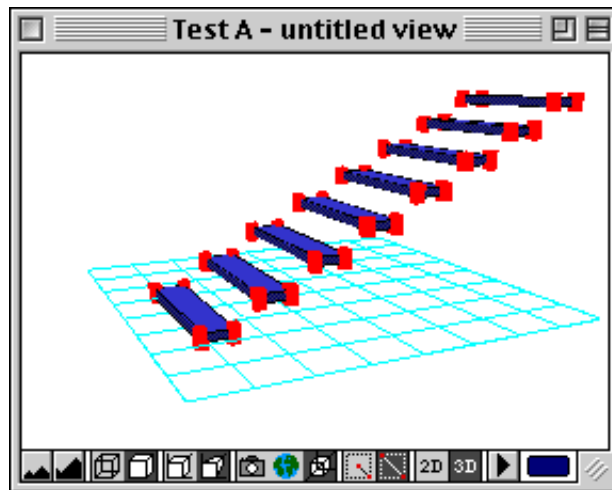
2. Select Array Duplicate from the Plug-in menu.

3. In the Array Duplicate dialog, enter an offset in both the x and y fields, but only duplicate the object in the x dimension:

Array Duplicate:

X Offset:	<input type="text" value="36"/>	inches
Y Offset:	<input type="text" value="12"/>	inches
Z Offset:	<input type="text" value="0"/>	inches
Number of times in X:	<input type="text" value="8"/>	times
Number of times in Y:	<input type="text" value="1"/>	times
Number of times in Z:	<input type="text" value="1"/>	times

4. Click OK.
5. The object will be duplicated the specified number of times in the x dimension. Each time the object is duplicated, the specified offset in both the x and y axes is applied.



◆ Convert To Mesh

The Convert To Mesh plug-in converts any QuickDraw 3D 1.5 geometries, NURBs and general polygons into QuickDraw 3D 1.0 mesh geometries. This means that other applications that support only QuickDraw 3D 1.0 geometries will be able to understand 3D objects produced in 3D World.

1. Make a selection, or select nothing to convert the entire scene.
2. Choose Convert To Mesh from the Plug-in menu.
3. Any QuickDraw 3D 1.5 geometries, NURBs and general polygons, either in the selection or (if nothing was selected) in the entire scene, will be converted into QuickDraw 3D 1.0 mesh geometries.

Note: Any QuickDraw 3D 1.0 triangles (which will be present if the Triangulate plug-in has been used) will be grouped together and converted into a single mesh geometry. The triangles may originally be from several different objects, and may not necessarily be connected in any way before conversion to a mesh geometry.

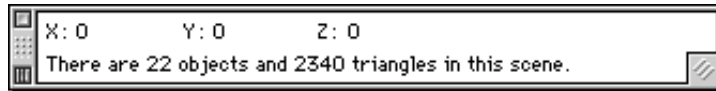
Note: There will be no visible difference between the QuickDraw 3D 1.5 geometries, NURBs and general polygons, and the QuickDraw 3D 1.0 mesh geometries, but the scene may render more slowly.

◆ Counter

The Counter plug-in counts the number of objects and triangles in the selection or scene.

1. Make a selection to count only the number of objects and triangles in the selected objects, or select nothing to count the number of objects and triangles in the entire scene.
2. Choose Counter from the Plug-in menu.

3. The number of objects and triangles is counted, and the result displayed in the Help palette. (Select Help from the Palette menu to display the Help palette.)



◆ Draw Direct

The Draw Direct plug-in is used to draw the 3D scene directly to screen.

When a large file is being drawn to screen it may take a few moments for the object to appear. It will then appear as a complete object as it will appear on screen once it has been completely drawn in memory.

To receive feedback as to what is happening during this time, select Draw Direct from the Plug-in menu. Objects will then be drawn directly to screen, and you will be able to see them in the process of being drawn rather than having to wait to see the finished object. To turn Draw Direct off, select the plug-in again from the Plug-in menu.

◆ Earthquake

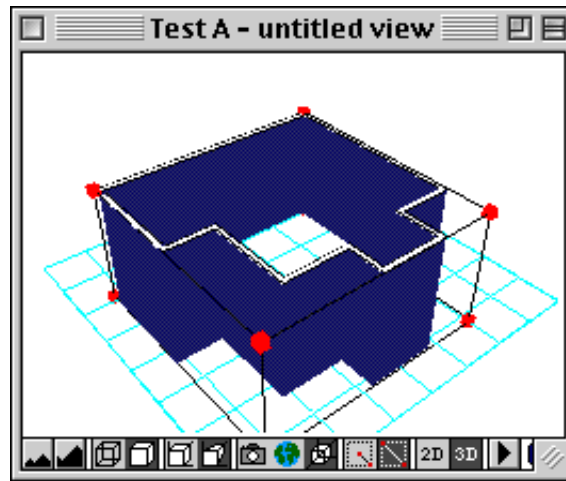
Use the Earthquake plug-in to shake the view as though an earthquake were occurring.

Choose Earthquake from the Plug-in menu. The view will be shaken and a sound will play for a short time. This does not change your document in any way.

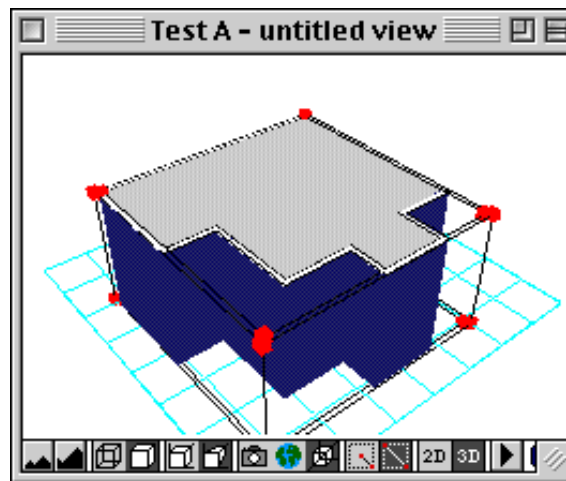
◆ Floors And Ceilings

The Floors And Ceilings plug-in is used to quickly add floors and ceilings to selected objects drawn with the 4 Walls or Multi Walls drawing tools.

1. Draw an object using the 4 Walls or Multi Walls drawing tool:



2. Select the object and choose Floors And Ceilings from the Command plug-in menu.
3. A floor and a ceiling will automatically be added to the object.



◆ Interactive

The Interactive plug-in is a mode command that switches 3D World automatically between interactive and non-interactive rendering, to avoid the user having to manually switch the renderer to use.

1. Select Interactive from the Plug-in menu to switch into Interactive mode. A check mark by the plug-in name shows that it is active. The plug-in does not do anything when an interactive renderer is selected.
2. Select a non-interactive renderer (e.g. LightWorks SuperLite) in the Renderer Options palette.
3. The scene will be rendered using the non-interactive renderer.
4. Manipulating an object in the scene will cause 3D World to automatically switch back to using the interactive renderer.
5. If nothing is redrawn for 1 second, 3D World will automatically switch back to the non-interactive renderer and will redraw the scene with it.
6. Select Interactive again from the Plug-in menu to switch out of Interactive mode.

Note: The Interactive plug-in performs a similar function to the To Interactive plug-in, and ideally only one of these plug-ins would be used at the same time. If both plug-ins are loaded and active, the Interactive plug-in will take priority. *See To Interactive on page C-16 for more details.*

Note: The Interactive plug-in will only load if you are running QuickDraw 3D 1.5 or later.

◆ Rain

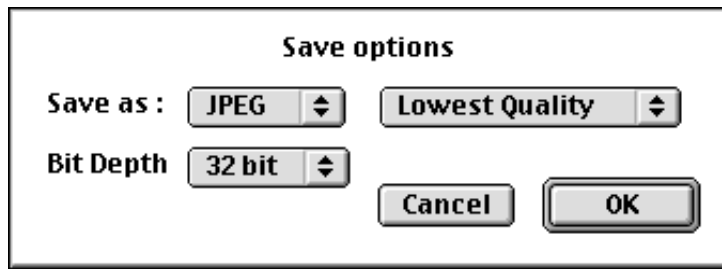
The Rain plug-in creates the effect of rain in the 3D document.

Select Rain from the Plug-in menu. An animated rain effect will appear in the document window. Select the plug-in again to remove the effect.

◆ Save Textures

Use the Save Textures plug-in to save the textures on any selected object as a file in PICT, JPEG or TIFF format. This is useful if you have modified a texture (e.g. with the Paint plug-in) or have a texture for which the original file has been lost.

1. Select an object with texture applied to it and choose Save Textures from the Plug-in menu.
2. The Save Options dialog displays:

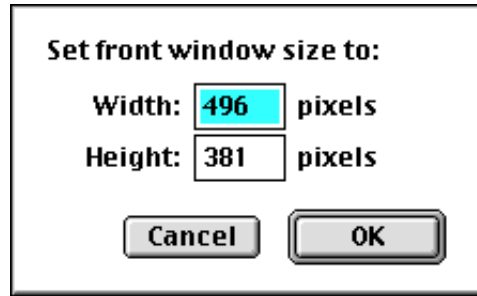


3. Select PICT, JPEG or TIFF as the file type from the Save as popup menu.
4. Select the desired compression option from the popup menu that is available when JPEG or TIFF is selected as the file type. PICT has no compression options.
5. Select the desired bit depth for the picture from the Bit Depth popup menu.
6. Click OK.
7. Enter a name for and location to save the file, in the standard save dialog that displays.
8. Click Save to save the texture in a file as per your directions.

◆ Size Window

The Size Window plug-in allows you to specify the size of the of the 3D World document window in pixels. This is useful, for example, when you want to output from the document as a QuickTime movie.

1. Select Size Window from the Plug-in menu. The Size Window dialog displays.

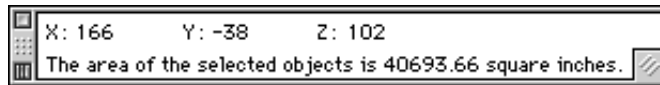


2. Enter values in pixels for the width and height of the document window and click OK.
3. The window size is changed to reflect your entries.

◆ Surface Area

The Surface Area plug-in calculates the surface area of the objects in a selection or in the entire scene.

1. Make a selection to calculate only the surface area of the selected objects, or select nothing to calculate the surface area of all the objects in the scene.
2. Choose Surface Area from the Plug-in menu.
3. The surface area is calculated and the result displayed in the Help palette. (Select Help from the Palette menu to display the Help palette.)



◆ Timer

Use the Timer plug-in to calculate how often the screen is redrawn per second. This will be useful in comparing the speed advantages of different hardware accelerator cards with software rendering, or to see the way that changing factors such as window size, wireframe rendering and backface removal can affect rendering speed.

1. Display the Help palette by selecting Help from the Palette submenu in the view menu.
2. Select Timer from the Plug-in menu.
3. The number of redraws per second is calculated over ten seconds, and the result displayed in the Help palette.

◆ To Interactive

The To Interactive plug-in is a mode command that switches 3D World automatically from non-interactive to interactive rendering, to avoid the user having to switch manually back to interactive rendering when the image is to be manipulated.

1. Select To Interactive from the Plug-in menu to switch into To Interactive mode. A check mark by the plug-in name shows that it is active. The plug-in does not do anything when an interactive renderer is selected.
2. Select a non-interactive renderer (e.g. LightWorks SuperLite) in the Renderer Options palette.
3. The scene will be rendered using the non-interactive renderer, but manipulating an object in the scene will cause 3D World to automatically switch back to using the interactive renderer.
4. To use a non-interactive renderer again, it must be manually selected.
5. Select To Interactive again from the Command plug-in menu to switch out of To Interactive mode.

Note: The To Interactive plug-in performs a similar function to the Interactive plug-in, and ideally only one of these plug-ins would be used at the same time. If both plug-ins are loaded and active, the Interactive plug-in will take priority. *See [Interactive on page C-13](#) for more details.*

◆ Turbocharge

The Turbocharge plug-in is used to speed up redrawing of the 3D scene by converting selected geometries or the entire scene into QuickDraw 3D 1.5 trimesh geometries. QuickDraw 3D has been optimized to render this geometry type much faster than any other.

Note: The Turbocharge plug-in only loads if you are running QuickDraw 3D 1.5 or later.

1. Select an object or objects in the 3D World document. If nothing is selected, an alert displays warning that the command will be applied to the entire scene.
2. Select Turbocharge from the Plug-in menu. The selected objects or the entire scene will be converted.

◆ Use Conics

The Use Conics plug-in menu is used to specify that 3D World should use the new QuickDraw 3D 1.5 conic geometries.

Conics are used to draw spheres, cones, and cylinders and use much less disk memory than the QuickDraw 3D 1.0 trigrid geometries, although they use more memory while rendering.

Select the Use Conics plug-in from the Plug-in menu to use conic geometries, and select the plug-in again to revert to using the QuickDraw 3D 1.0 compatible trigrid data type.

Note: Conics can only be used, and the Use Conics plug-in will only load, when QuickDraw 3D 1.5 or later is loaded.

Note: The Use Conics plug-in is effectively superseded by the Subdivision palette, which is used to specify the type of internal geometries used to draw conics and how geometries drawn using conics or NURBs are triangulated. *See Subdivision on page D-85 for more details.*