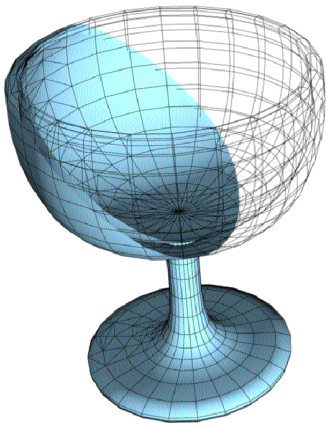


1

Revolve



Revolving is a basic modeling technique that uses 2D shapes to derive a new 3D object. The main concept of the revolve is spinning a 2D shape around an axis, creating a surface defined by the 2D shape as it spins around the axis. This technique works well for simple, symmetrical objects and can be used as a starting point for more complex forms. In addition to revolve, we will use this tutorial to further familiarize you with NURBS curves.



Overview

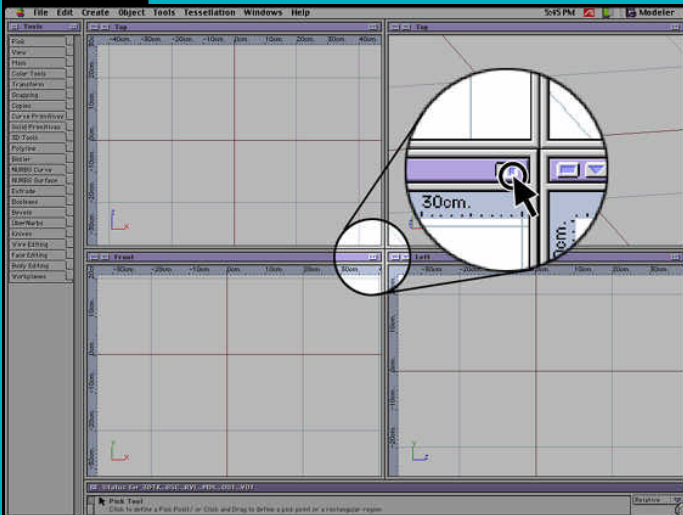




[DBL+CLK] the Universe Toolkit Modeler application program to launch the EI Modeler.

Note: Macintosh keyboard commands are indicated in **red**.
Windows keyboard commands are indicated in **blue**.



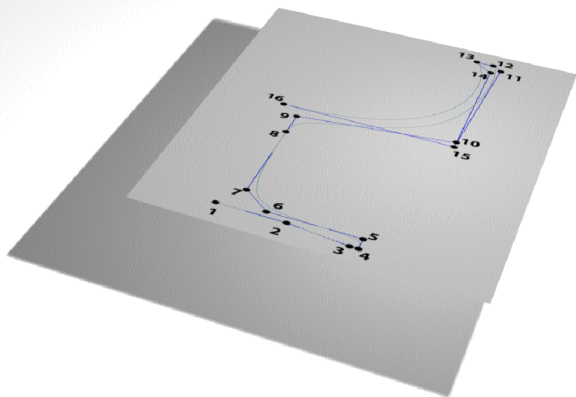


[CLK] once on the small rectangle in the upper right of the front view window to maximize it.



4

Adding and Positioning the Underlay

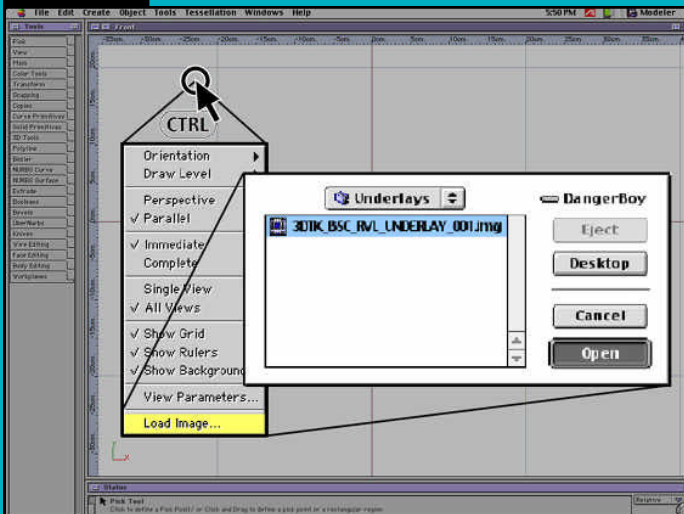


We will first be adding an underlay to help get the correct shape. Underlays are used frequently when modeling and greatly increase the speed and accuracy of the modeling process.



Overview

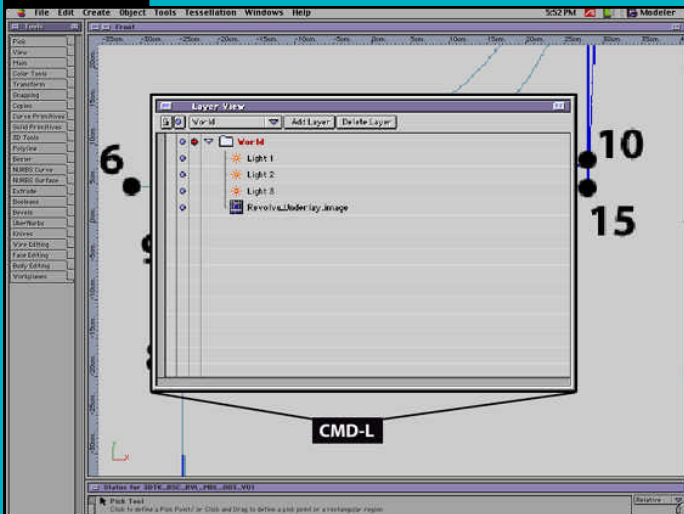




[CTRL/R+CLK] on the background of the Front view and select Load Image Template.

[DBL+CLK] on the file Revolve_Underlay.img.



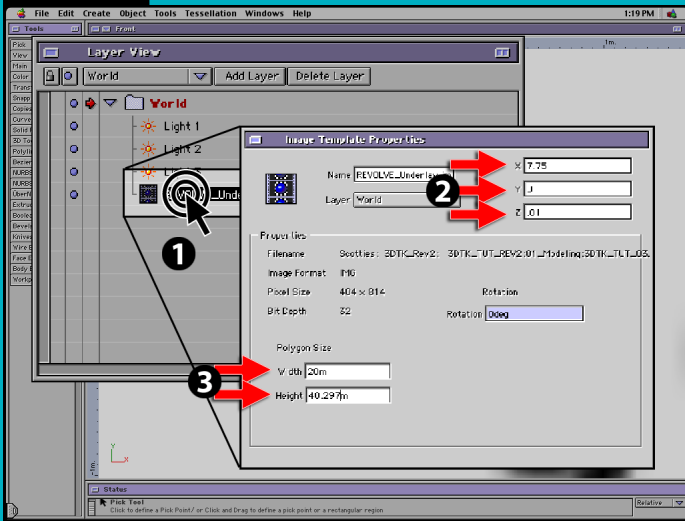


Press [**CMD/CTRL+L**] on the keyboard to open the Layer window.



Adding and Positioning the Underlay





In the layer window, **[DBL+CLK]** the underlay.

In the upper right corner of the Image Object Properties Dialog Box, enter the following values:

X: 7.75

Y: 0.0

Z: 0.01

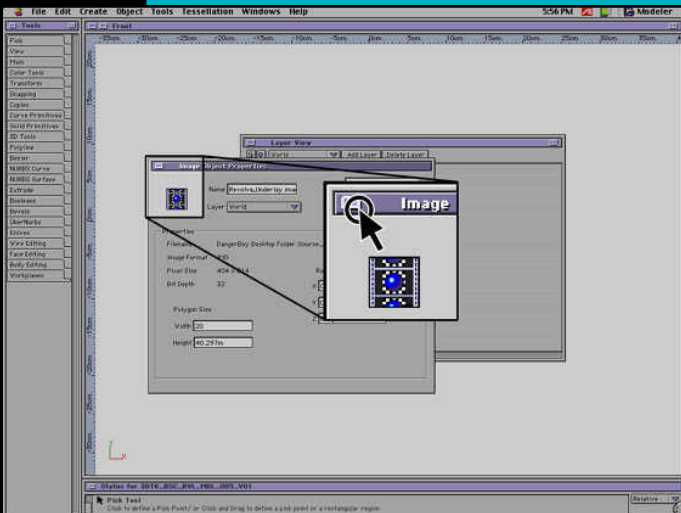
In the bottom left corner, enter the Polyon size:

Width: 20

Height 40.297

Leave the rotation values at 0.

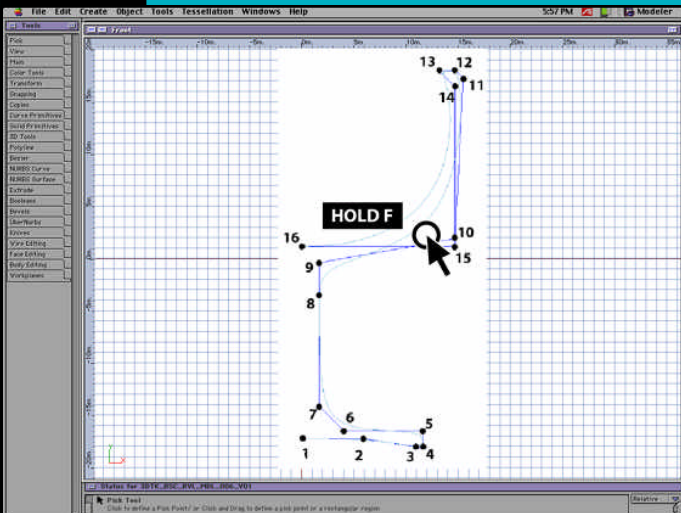




[CLK] in the small box in the upper left hand corner of the Object Properties window, or press **[CMD/CTRL+W]**.

[CLK] in the small box in the upper left hand corner of the Layer Window, or press **[CMD/CTRL+W]**.





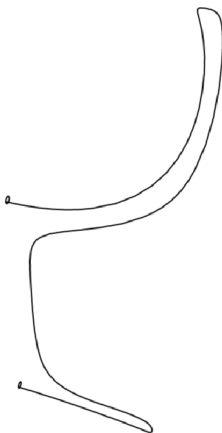
In the Front View window, hold down the **[F]** key and **[CLK]**.

Note: Sometimes you need to **[F+CLK]** more than once to get everything to fit.



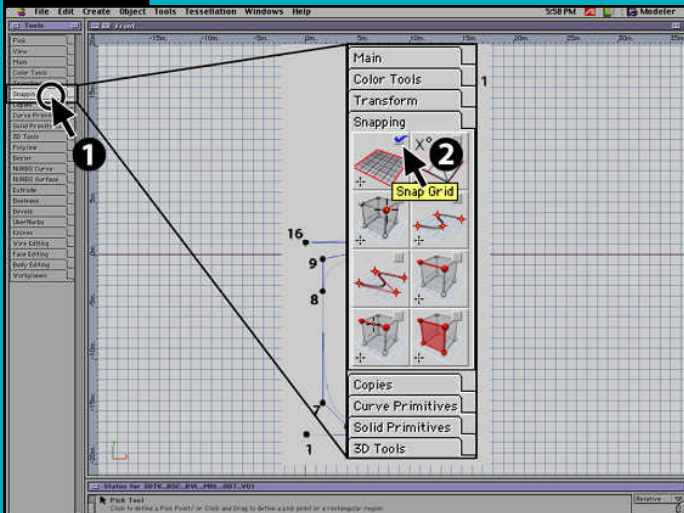
Adding and Positioning the Underlay





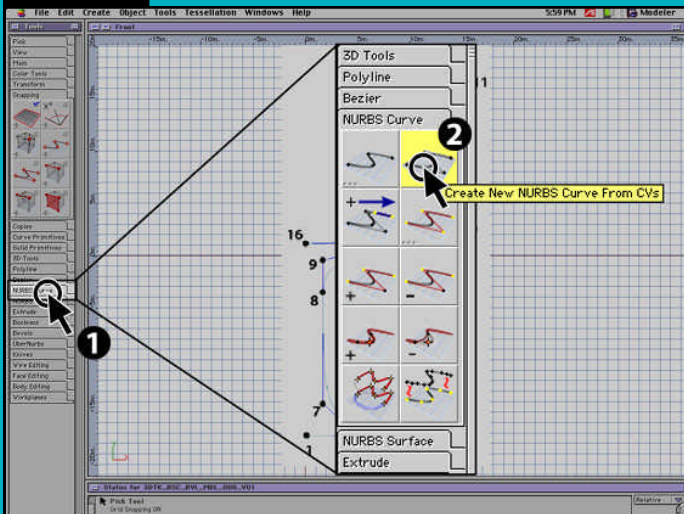
Following the underlay, we will create a NURBS curve in the shape of a half glass. We will need to zoom in and out of our viewport to accurately place each point of our curve.





[CLK] the snapping pallet and choose Snap Grid if it is not already on.

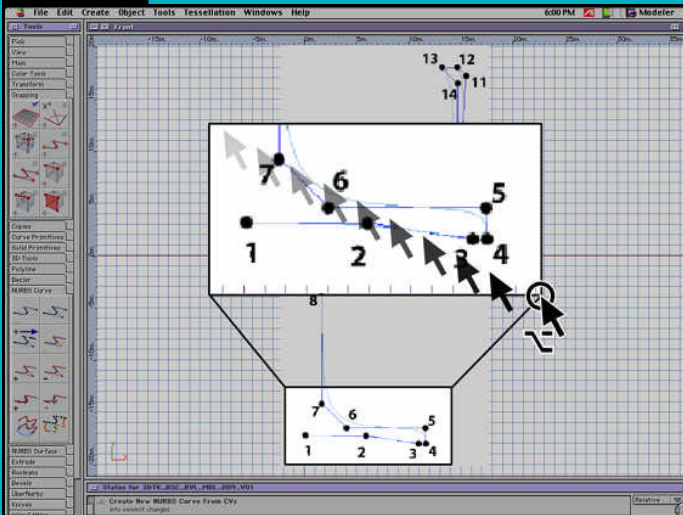




[CLK] on the NURBS Curve palette to expand the toolbox.

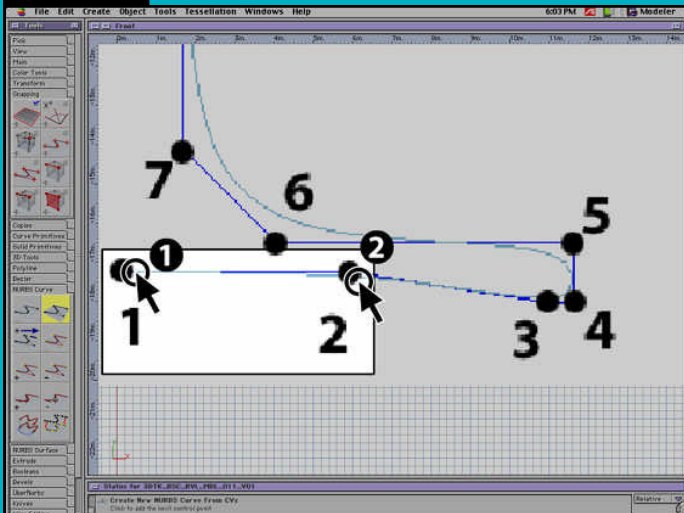
[CLK] the Create New NURBS curve from CV's Tool.





[**OPT**/**ALT**+**CLK**+**DRG**] around the bottom set of points to zoom in to the template.

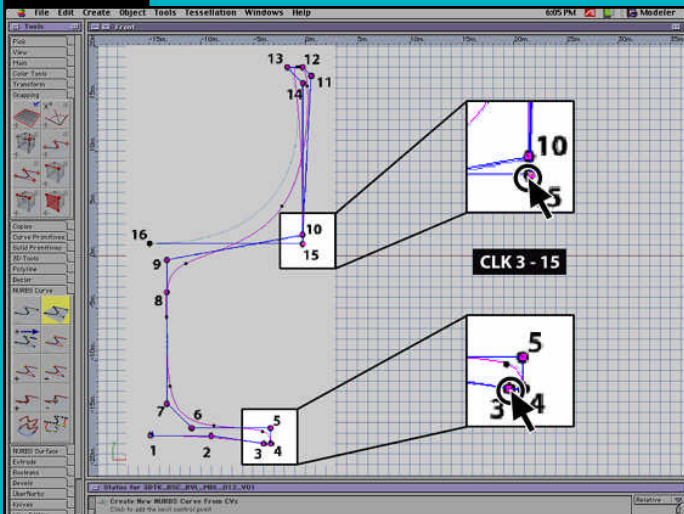




[CLK] on point 1.

[CLK] on point 2.



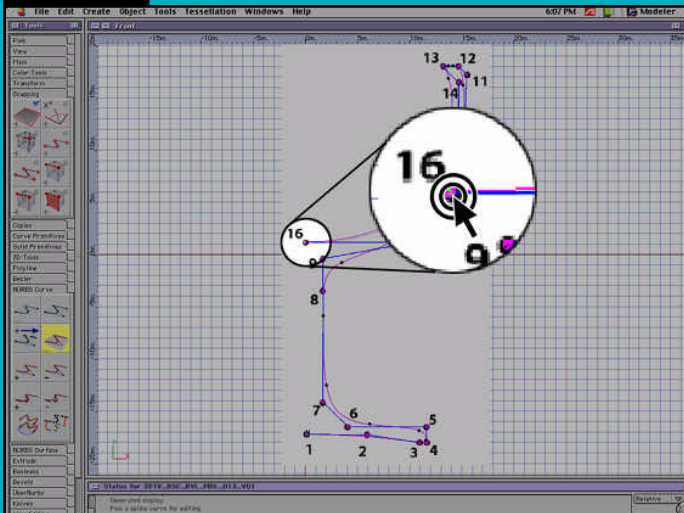


Continuing to Draw the Knots.



Drawing the NURBS Profile





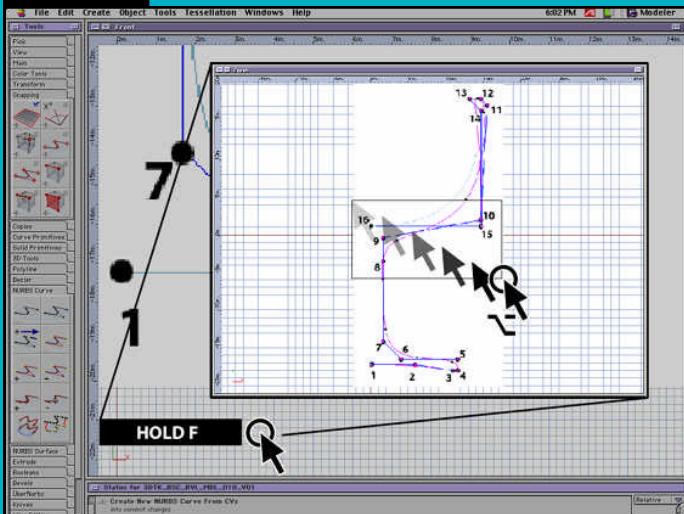
When you are done connecting the points you zoomed in on, use **[F+CLK]** to fit the underlay in the window again.

Then **[OPT/ALT+DRG]** a marquee around the next set of points.



17

Completing the Curve

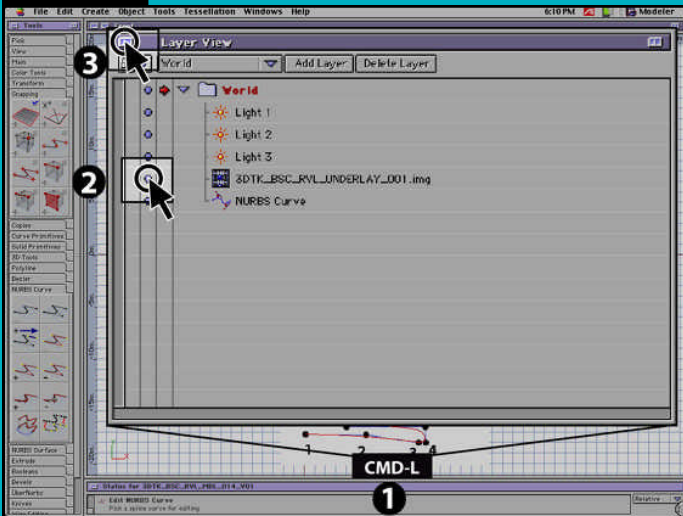


[DBL+CLK] on point 16 to complete the curve.



Drawing the NURBS Profile



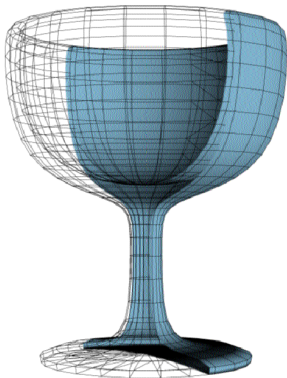


Press [**CMD/CTRL+L**] to display the Layer window.

[**CLK**] the small circle to the left of the Underlay to make it invisible.

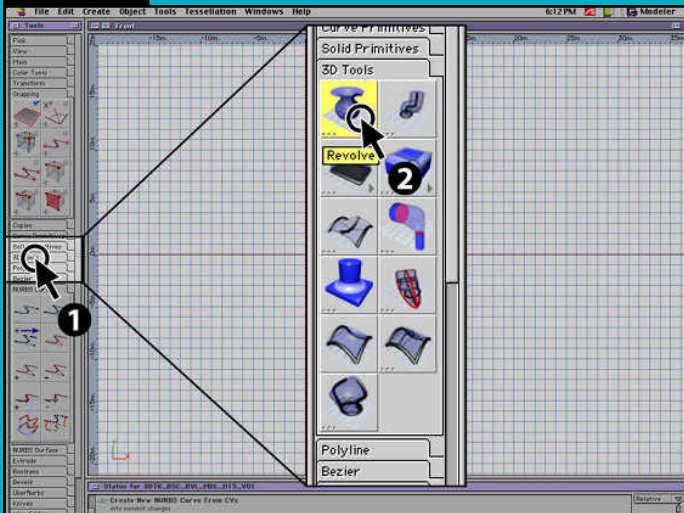
Close the Layer window.





After Selecting the Revolve Tool, we will select the NURBS curve and then create an Axis Rubberband which is simply the axis around which our revolve will take place. A potential error in this process is that one of the points of the curve being revolved crosses the axis of rotation. The modeler will not allow the operation to be performed should this happen.

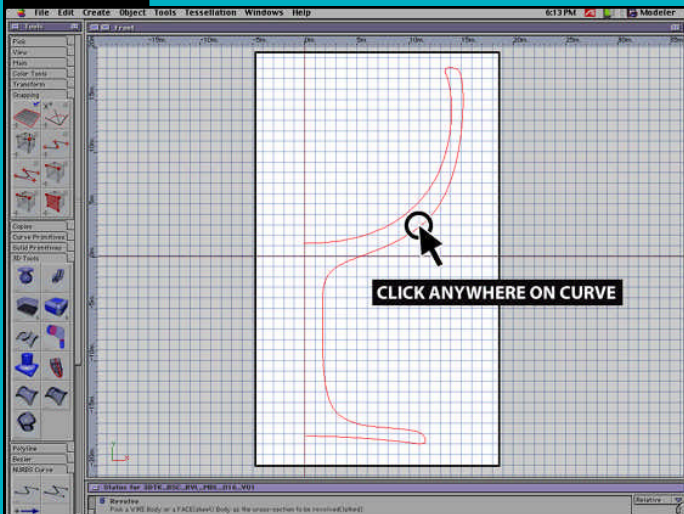




[CLK] the 3D Tools palette.

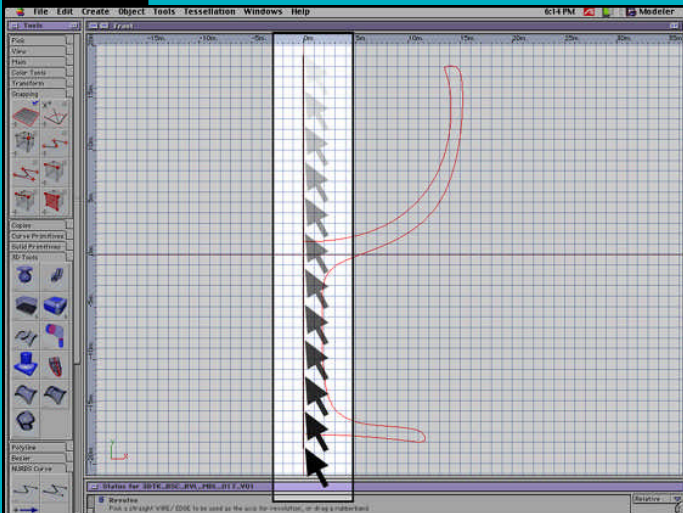
[CLK] the Revolve tool.





[CLK] on the NURBS curve you drew.



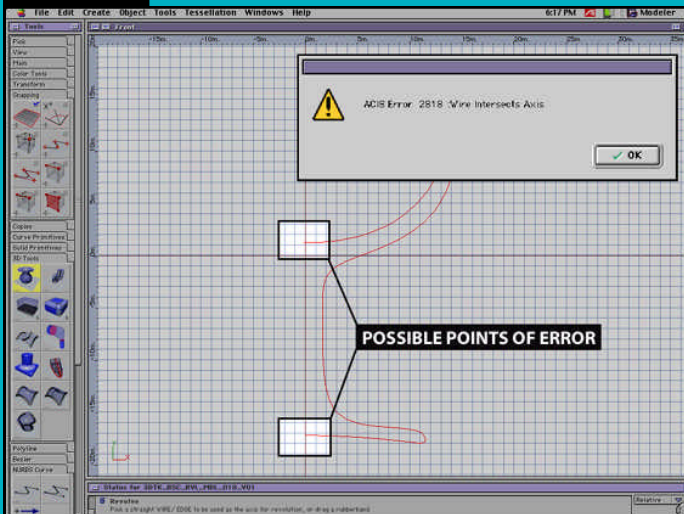


[CLK] on the Y-Axis above the outline of your glass and drag down to below the outline.



Revolving

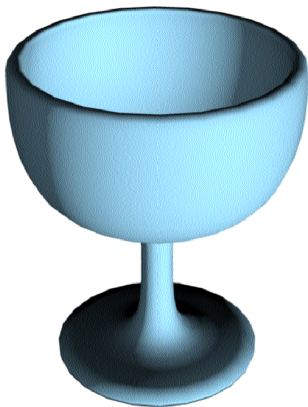




If you get a dialog box that says:"ACIS Error 2818:Wire Intersects Axis",this is because one of the knots is over the Y axis.

Use the edit NURBS tool to fix this,or simply move the whole curve to the right of the X-Axis.

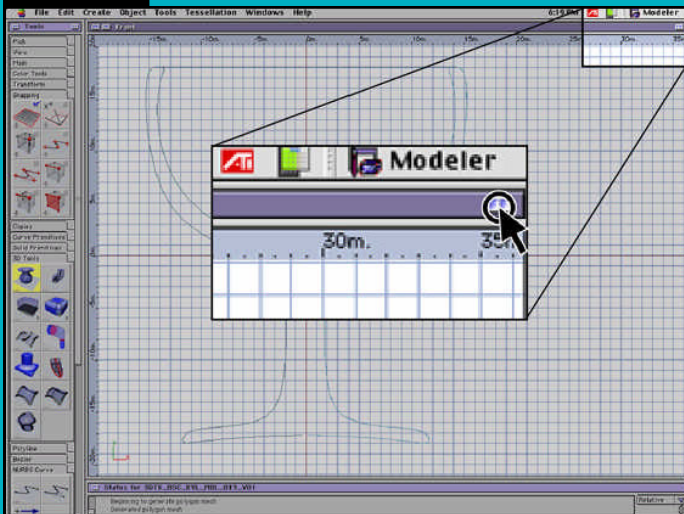




If the steps were performed correctly, the result is a wine glass.

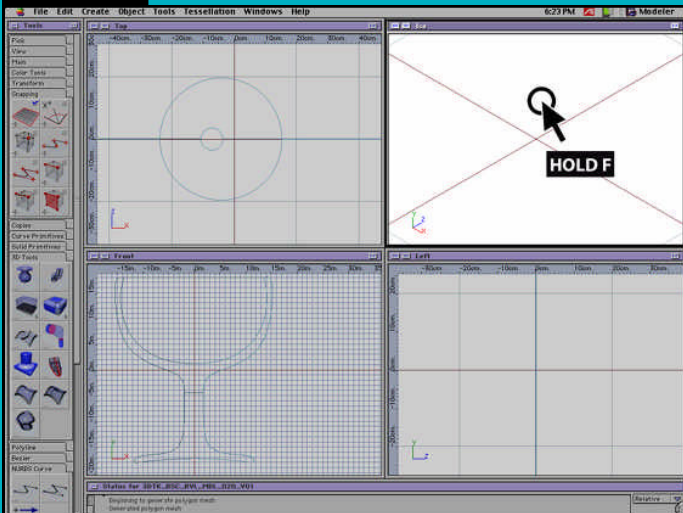
Change the shading to view the cup in more detail.





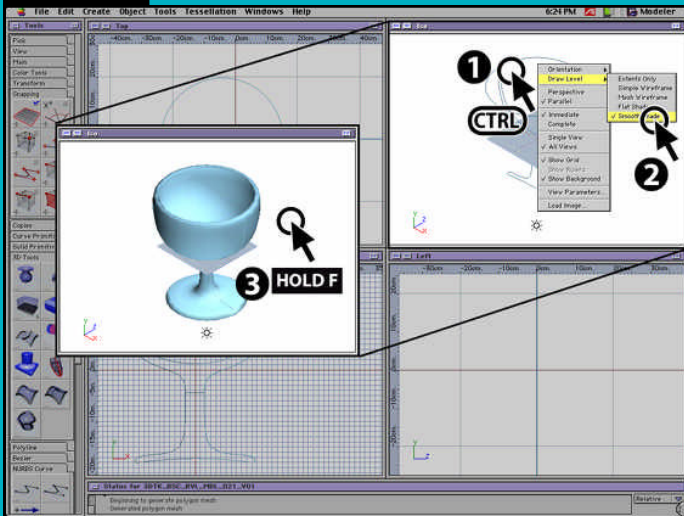
[CLK] in the upper right hand corner of the Front view to return it to its original size.





[F+CLK] in the Iso view window to zoom out.





[**CTRL/R+CLK**] in the Iso View window, and select Draw Level, then smooth shaded.

[**F+CLK**] in the Iso View window to fit the wine glass in the window (This may need to be done more than once).

Now you can see your wineglass.

