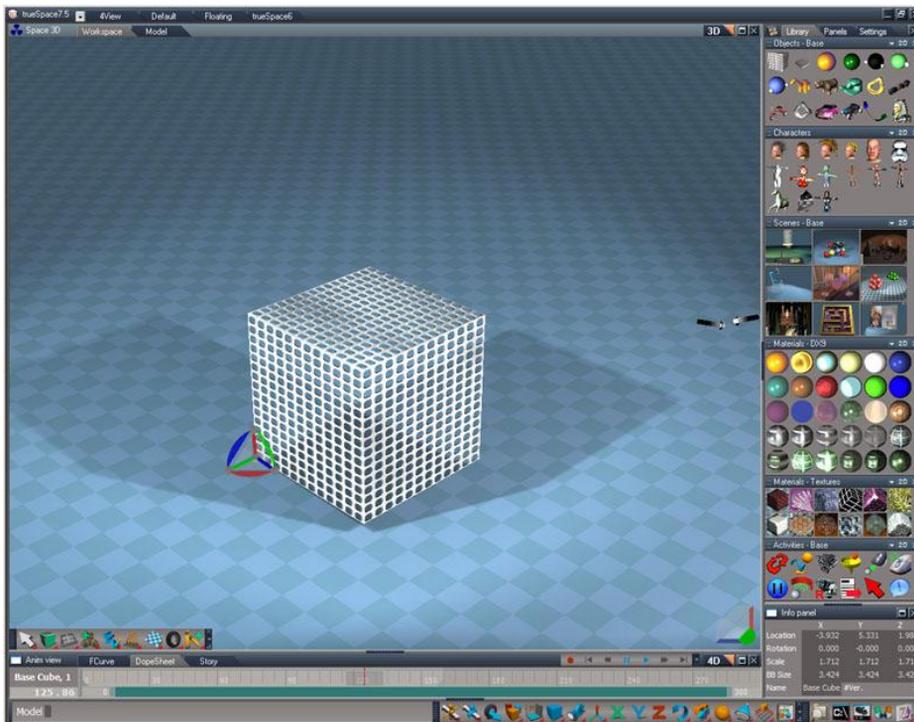


Chapter 1 INTRODUCTORY TUTORIALS	2
1.1 Polygon Edit in Workspace View	2
1.2 NURBS Editing in Model View	7
1.3 Creating a Mechanical Part (Model View)	11
1.4 The Magic Ring Primitive Manipulator (Model View)	15
1.5 The Selector Cage (Model View)	19
1.6 Mixed Editing in Model and Workspace Views	22
1.7 Creating Behaviors Using Link Editor (Workspace View)	27
1.81 Bridge Video	30
1.82 Interface Video	31
1.83 Setting Video	32

Chapter 1 INTRODUCTORY TUTORIALS

1.1 Polygon Edit in Workspace View

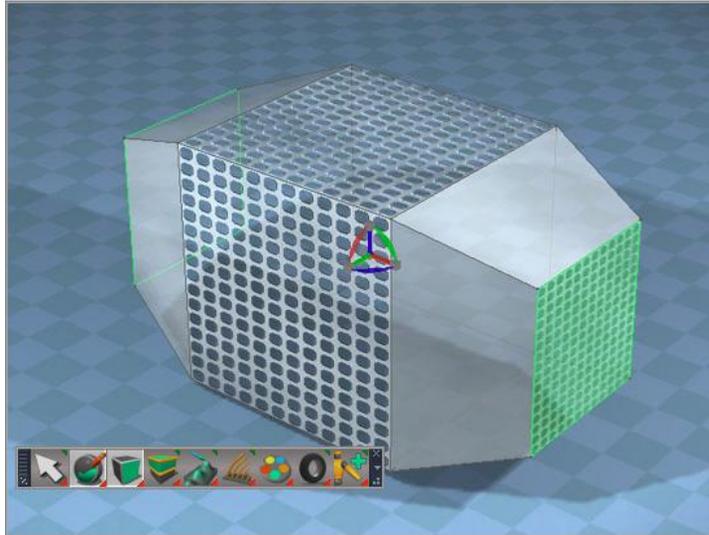
Step 1: In the Default layout, drop a **Simple Cube** object from the Base Objects library into the **3D Workspace View**.



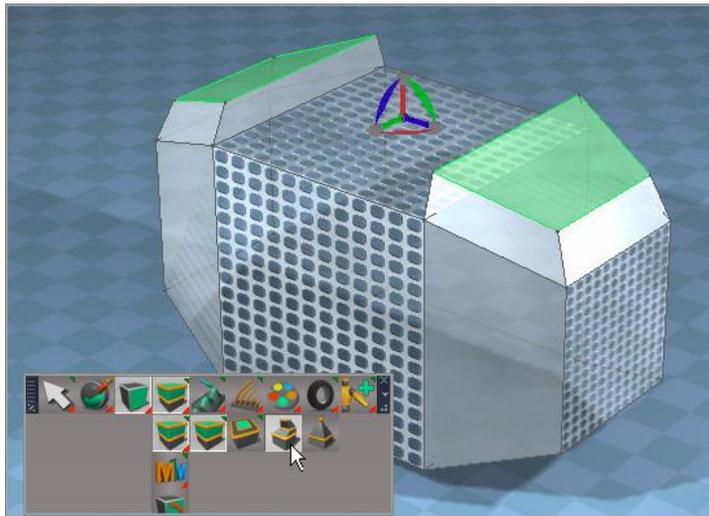
Step 2: Right-click the cube to enter **Point Edit mode** or use the pick by paint method from the toolbar. Make sure you set selection to **face**, and left-click inside one of the side faces to select it. (When selected, it will be highlighted green)

Encircle the view around the cube using green semicircle on the **View widget**, and left-click on the opposing face while holding the CTRL key to add it to the selection.

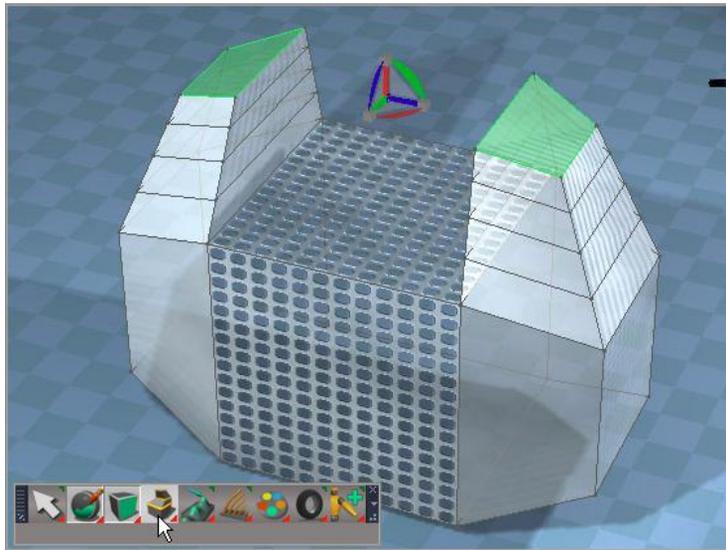
On the Point Edit toolbar, click the **Sweep** tool. After both faces are swept, scale them down by dragging the scale part of Point Edit widget, holding both mouse buttons.



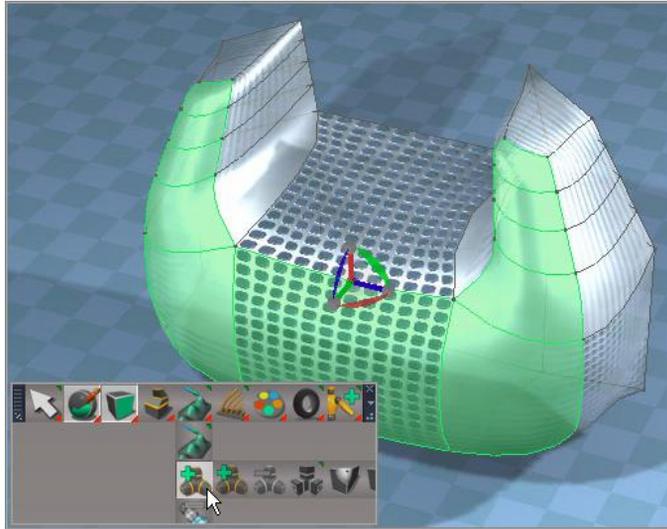
Step 3: Now select the two top faces, sweep them, and scale them down, using the same steps as above.



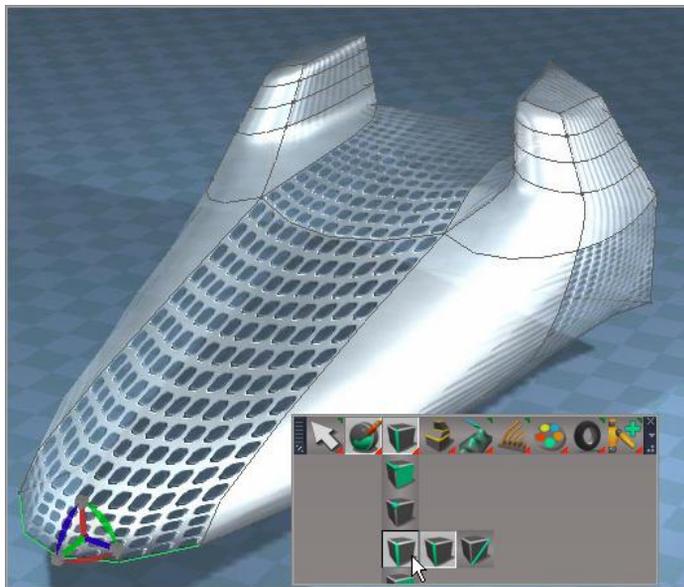
Step 4: Click the **Sweep** icon a few more times. Notice that the new extrusions inherit and continue the alterations you made in the previous step.



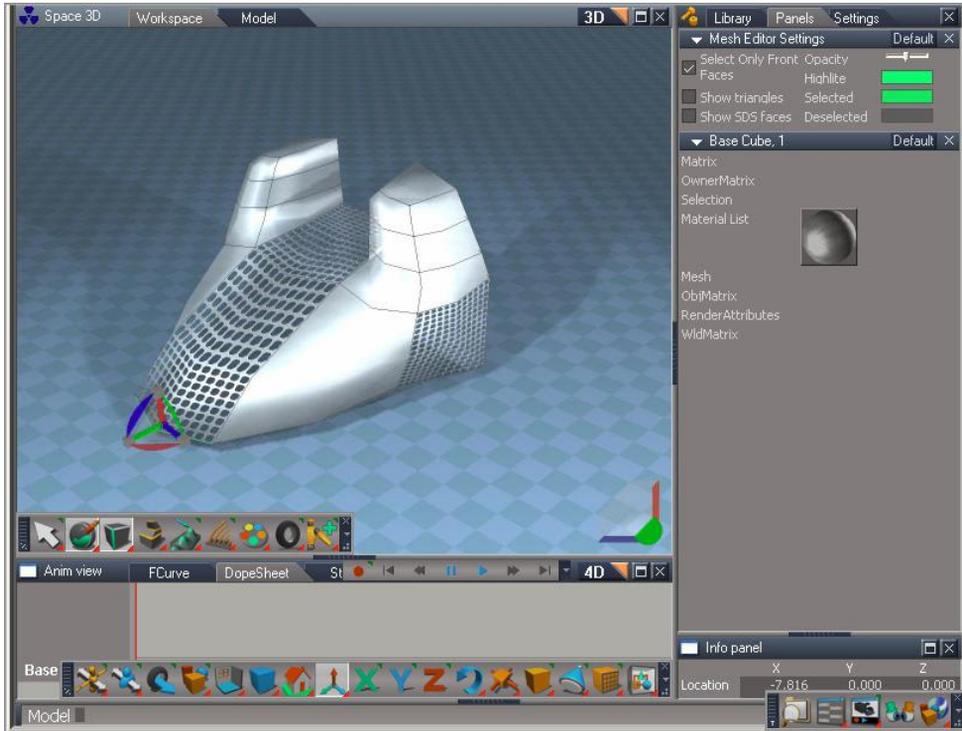
Step 5: Select **Paint Selection** and select all front facing polygons. Now click twice on **Add One Layer from SS** (located on the lower left toolbar by default) to smooth the front part of the edited object using subdivision surface tool.



Step 6: Select **Edge** selection and select the center bottom edge in front. Drag the mouse outward from the subdivided face to form the nose of the emerging spaceship.



Finished Space Ship



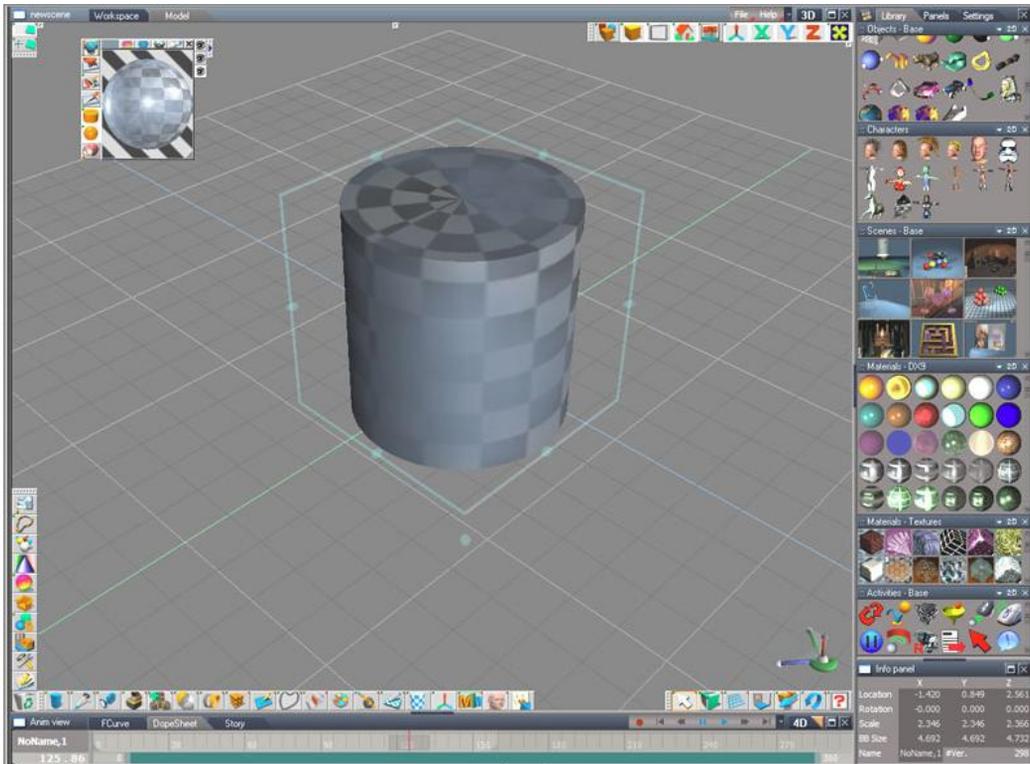
Introductory Tutorial: Workspace Point Edit: Spaceship



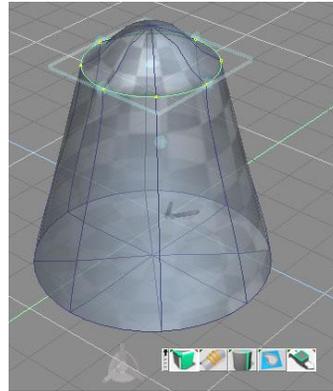
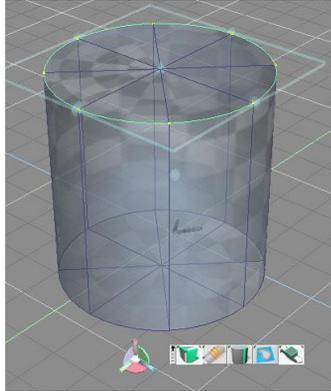
[Video link](#)

1.2 NURBS Editing in Model View

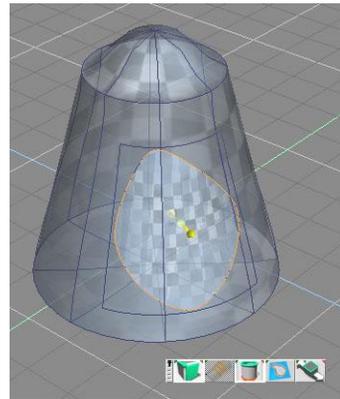
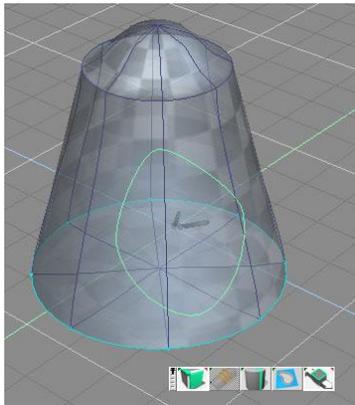
Step 1: From Model View in Default layout, open the **Material Library** , and select the **SolidCubes** material. Draw a medium-sized **NURBS cylinder** (from the toolbar to the left of the Model window).



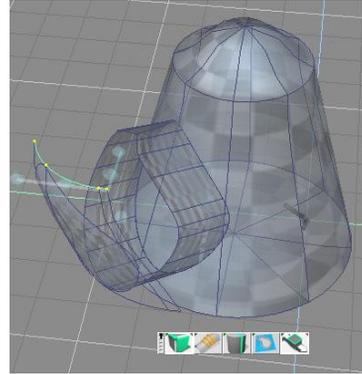
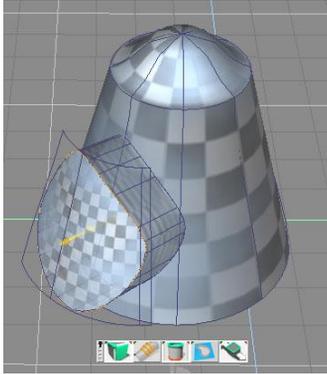
Steps 2 & 3: Right-click the NURBS cylinder to enter edit mode. Left-click to select the top circle curve. Use the selection box control to scale the circle smaller and move it slightly down.



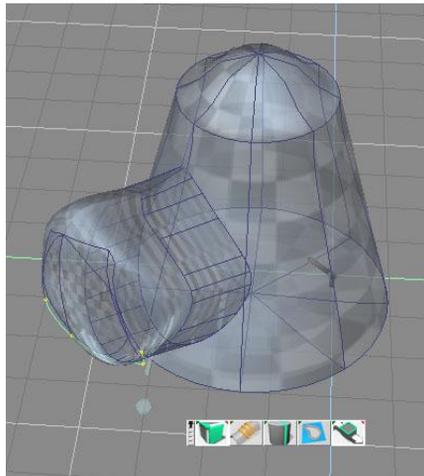
Steps 4 & 5: From the NURBS context edit menu, select **Draw Trimming Curve** . Draw a simple closed curve on the surface of the cylinder. Select the **Extrude from Edge** tool.



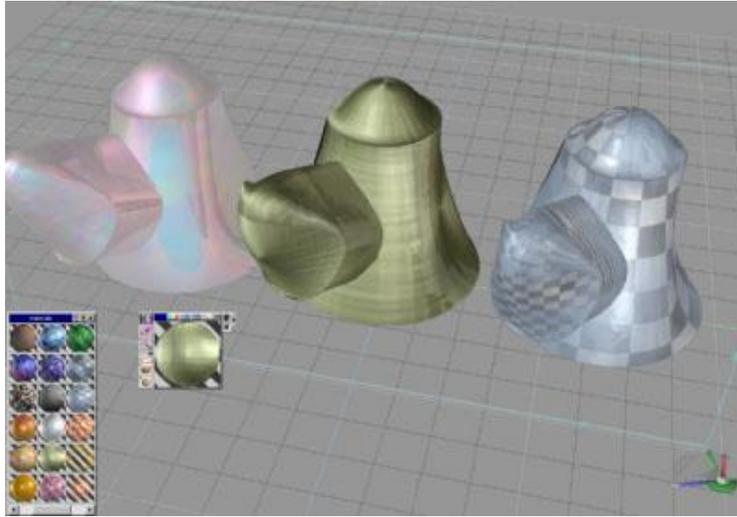
Steps 6 & 7: Pull the yellow handle to offset the trimmed patch slightly. Exit edit mode by selecting the **Object** tool to see resulting surface better. Right-click the cylinder to enter the edit mode again. Select the top edge of the extruded trim patch, and pull it away from the adjacent surface.



Steps 8: Select the **Blend** tool (from the toolbar at the bottom of the Model window), and then select both curves on the extruded patch and adjacent surface. Adjust the blend handles to get a smoother blend. Enter edit mode again, select a control vertex on the bottom circle. Right-click on the control vertex again to enter CV edit context. Adjust the vertical yellow handle to add curvature to the side of the teapot.



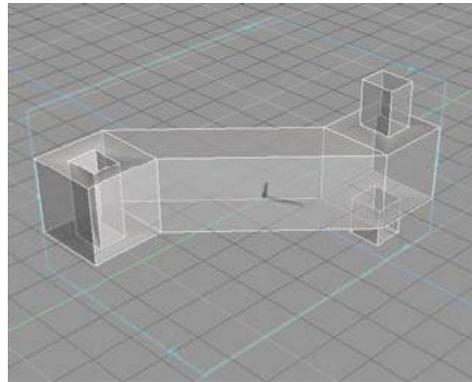
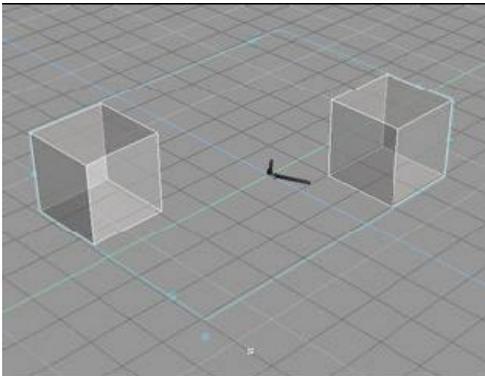
Step 9: Copy the resulting teapot two times and paint two copies with different materials. Glue all three of them together and select the **Render Object** option. Not bad for a few minutes' work!



1.3 Creating a Mechanical Part (Model View)

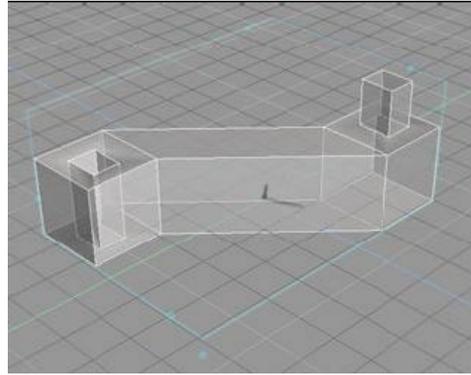
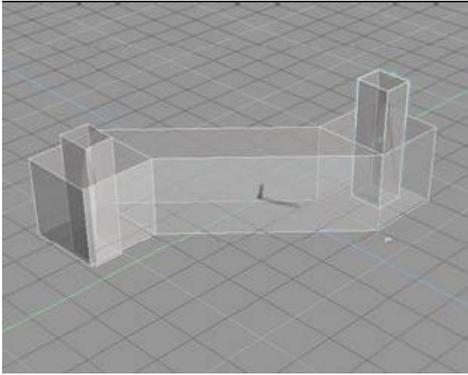
Step 1: Select the **Cube**  tool and click in two places to create two cubes. With one cube selected, activate the **Object Union**  tool, and click the other cube to Boolean union them into a single object.

Step 2: Right-click on the cube assembly to bring up the point edit tools. Select the **Add Edges**  tool and connect the matching corners of the two cubes. Faces are created as they are defined by four sides. You now have a solid object that you can perform other operations on.

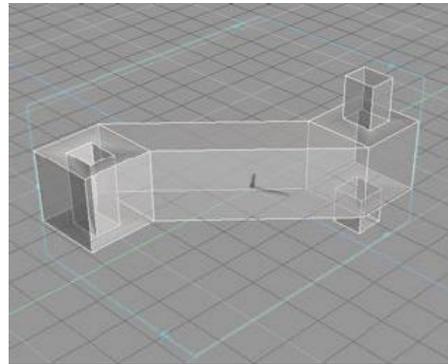
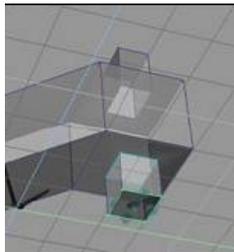
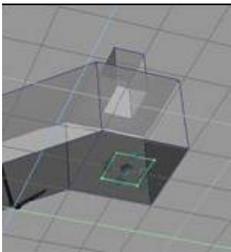


Step 3: Create a custom cube by activating the **Cube**  tool, left-clicking and dragging a square, and without releasing the left mouse button, right-clicking and dragging the square to create a tall rectangle. Use the **Object Move** tool to move the rectangle so that it intersects the first object as below. Press CTRL+C to create a copy of the rectangle, and drag it to the other end of the assembly.

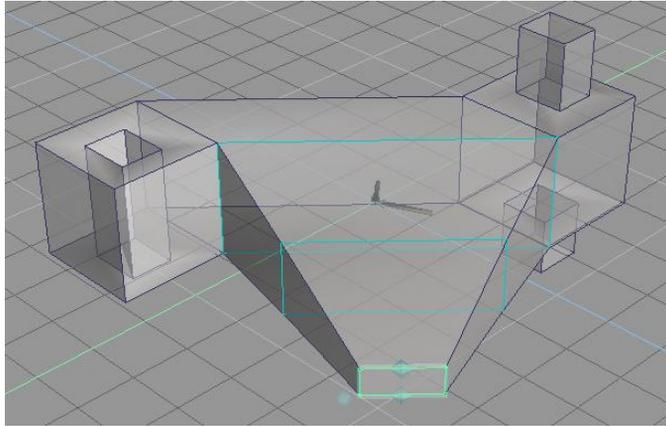
Step 4: Right-click the **Object Union**  tool, and uncheck Delete Edges. Move the bottom face up inside the first object using the selector control, and Boolean union them together. **Boolean subtract**  the custom cube from the other end.



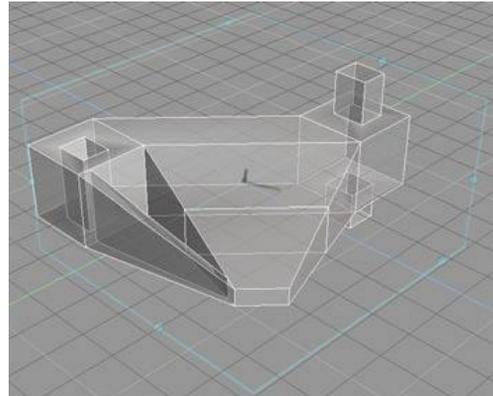
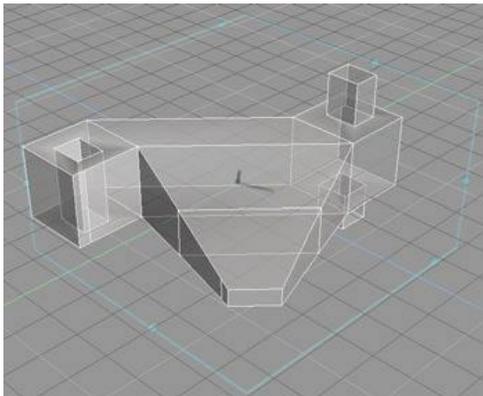
Step 5: An easy way to add a similar piece of geometry is to use the **Polygon Bevel**  tool. Rotate your view using the green base of the **View Control** to see the bottom of the object. Activate the **Polygon Bevel** tool, and then move your mouse cursor over the bottom face under the Boolean joined geometry. As you move across the face, a new face will appear inside the original one. When it is about half the size of the original face, left-click once to “set” it. Use the **Sweep**  tool to sweep it downward once, and then use the selector cage to adjust the distance.



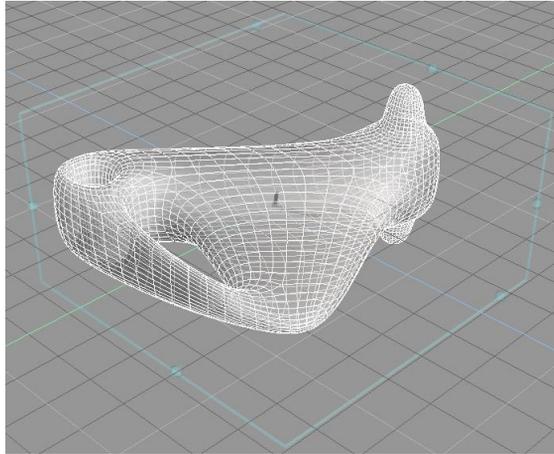
Step 6: Use the **Sweep**  tool and the selector box to sweep and adjust the distance and size of the front face.



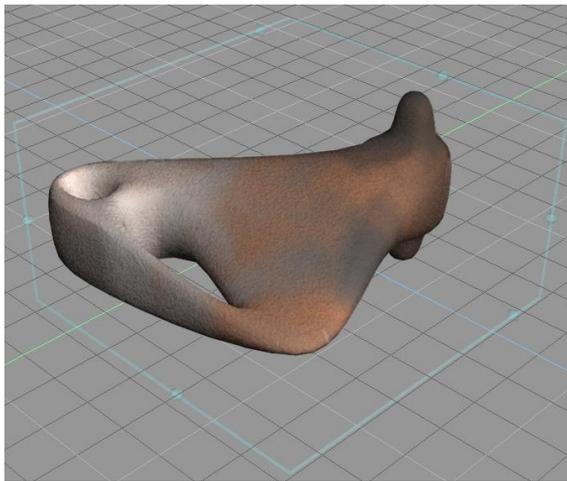
Step 7: Right-click the object, and select the **Add Edges**  tool again. Add two new edges at the locations indicated in the image below. Connect the new edges with the **Add Edges** tool to form a span.



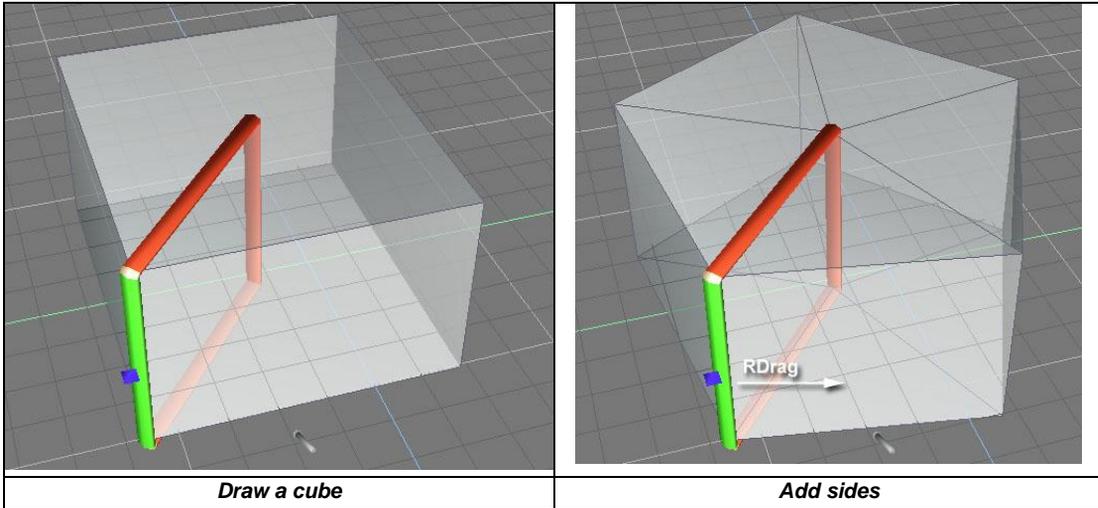
Step 8: Click on the **Add SubDivision Level**  tool three times to smooth out the object.



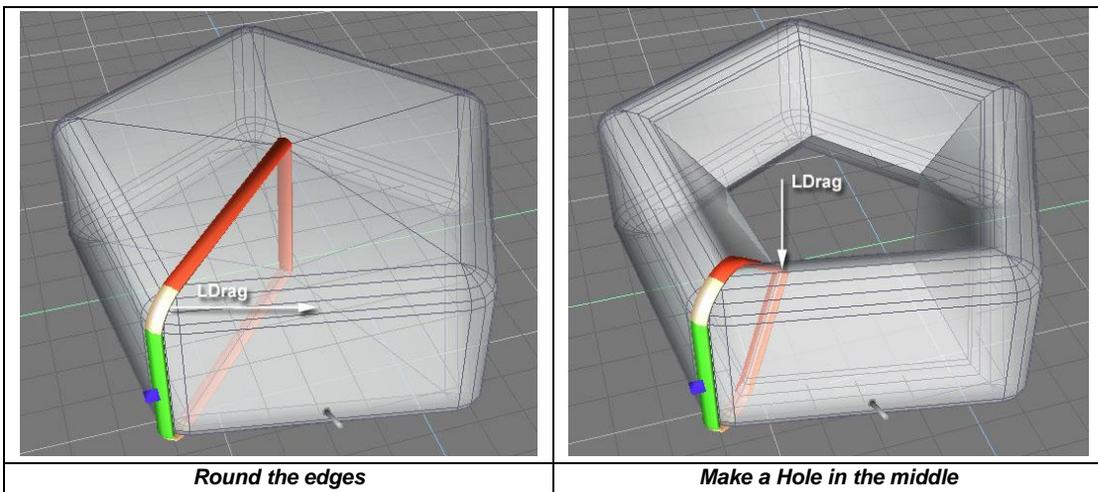
Step 9: Drag and drop the material labeled “Rough” from the material library, and render the object using the **Render Object** tool.



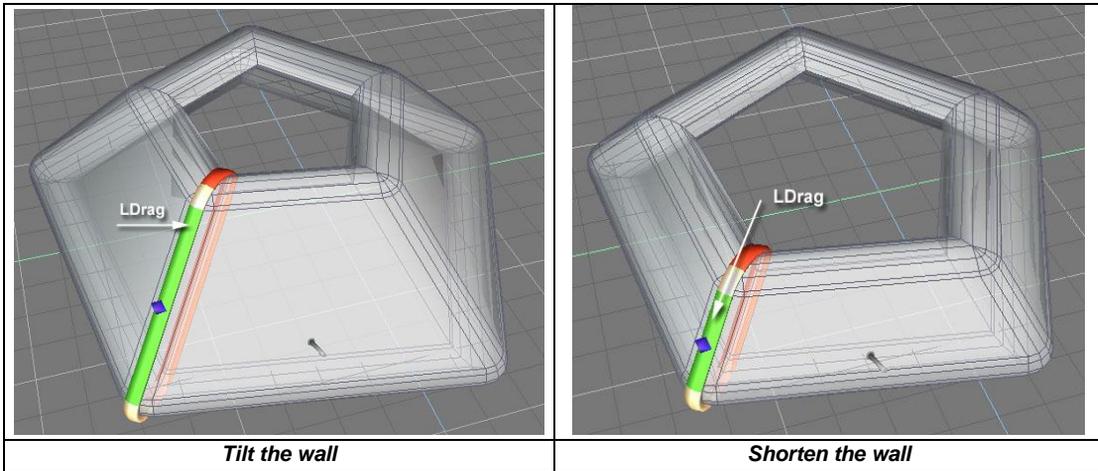
We now have a weather-beaten mechanical part that took minutes to create.



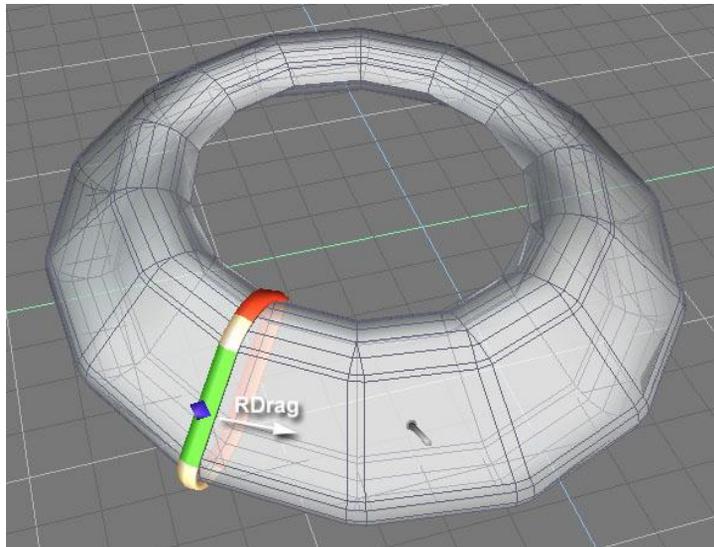
A left-click drag side to side on the tan corners of the ring will adjust the spherical rounding of the primitive corners. A left-click drag up and down on one side of red part will adjust the conic angle of the primitive and open the hole inside the primitive.



Horizontally left-clicking and dragging will change the angle of the primitive vertical wall. Vertically left-clicking and dragging will shorten the wall length.



Horizontally right-clicking and dragging on blue diamond will increase further the number of segments in the primitive wall .

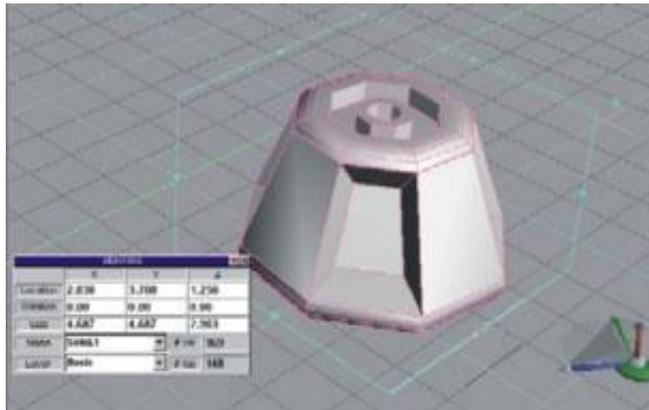


As you can quickly see by combining all these controls in different combinations, an immense number of primitive shapes are right at your fingertips through the wonder of the magic ring.

Once you like the look of your primitive you can click elsewhere on the grid and start making changes from the point you left off with the previous one. Once satisfied you can leave it as is and create as many as you like or, with a right-click on the grid, tapping the space bar, or clicking on the object tool, you can exit the primitive creation mode.

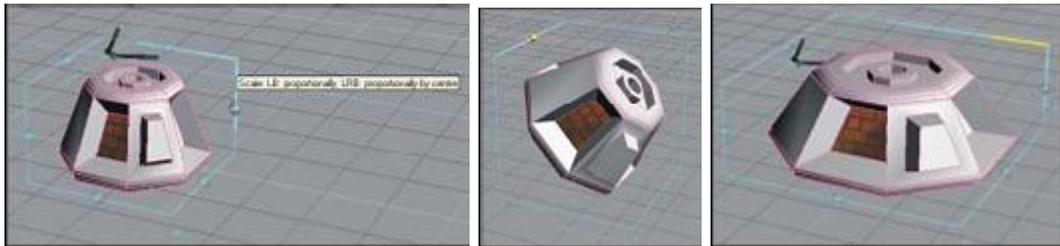
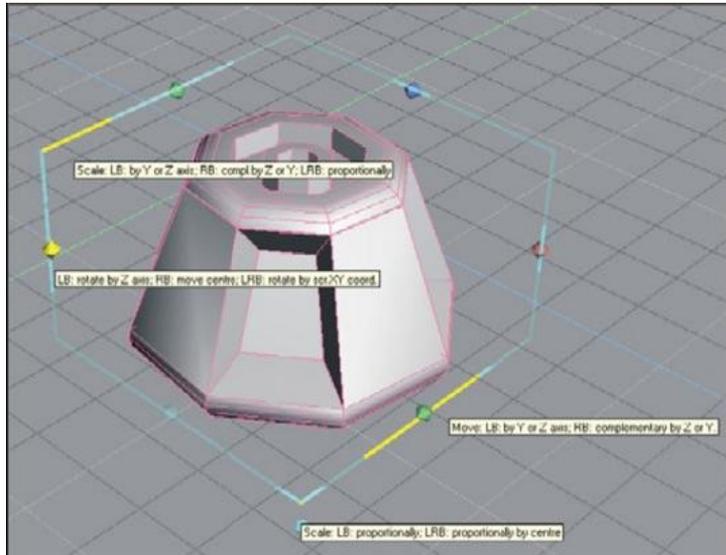
1.5 The Selector Cage (Model View)

When you exit the primitive creation mode, you will notice a blue selector cage around the active object. This is the key to learning trueSpace. It is the easiest tool to learn and yet one of the most important. The selector cage controls all aspects of the active object or selection relating to its location, rotation, and scale. A right-click on the **Object** tool will bring up the numerical control panel for this manipulator.

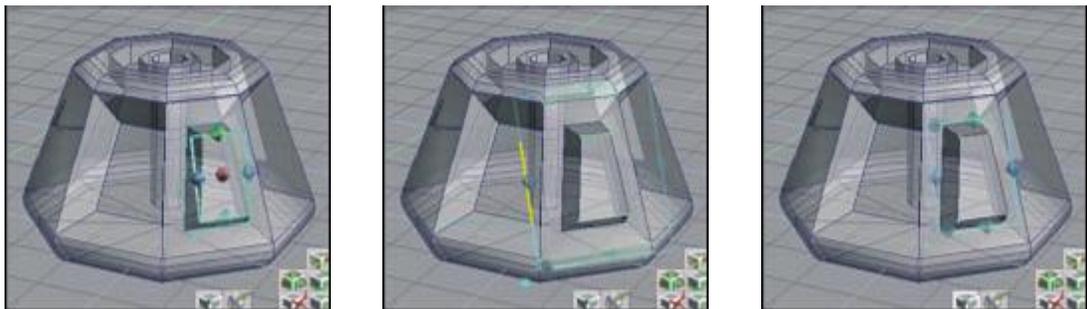


Notice as you mouse over the various parts of the selector cage that the activated part turns yellow. It does not take long to learn the basic functions of the four different parts.

The points of the corners will scale the object proportionately. The sections next to the corners will scale the object in the direction you drag them or scale the object proportionately when you hold down both mouse buttons at the same time and drag. The middle sections will move the object in the direction you drag them. The rotation diamonds in the middle of those will rotate the object around its various axes. As you mouse closer to the diamonds you will notice that they darken in color to match the axis they will rotate around. Blue is Y, Green is X, and Red is Z.

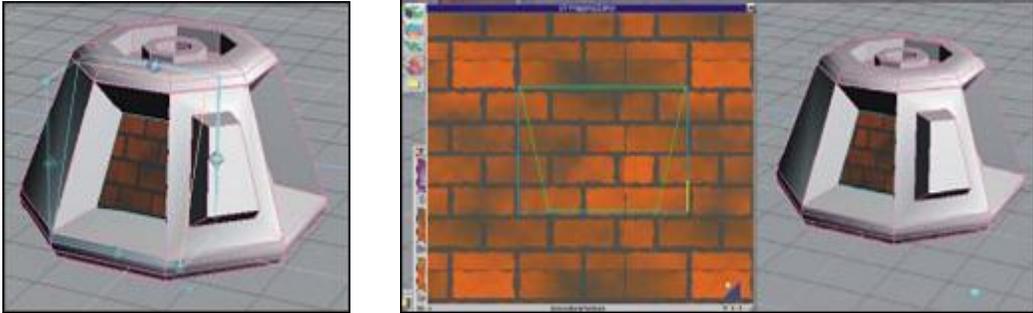


Why is this manipulator the key to learning trueSpace? Within the Modeling View, from the entire object down to the selection of faces, edges and vertices you will find this same control cage.



You even use it to adjust the UV projections for materials and in the UV editor to position textures exactly on

faces.

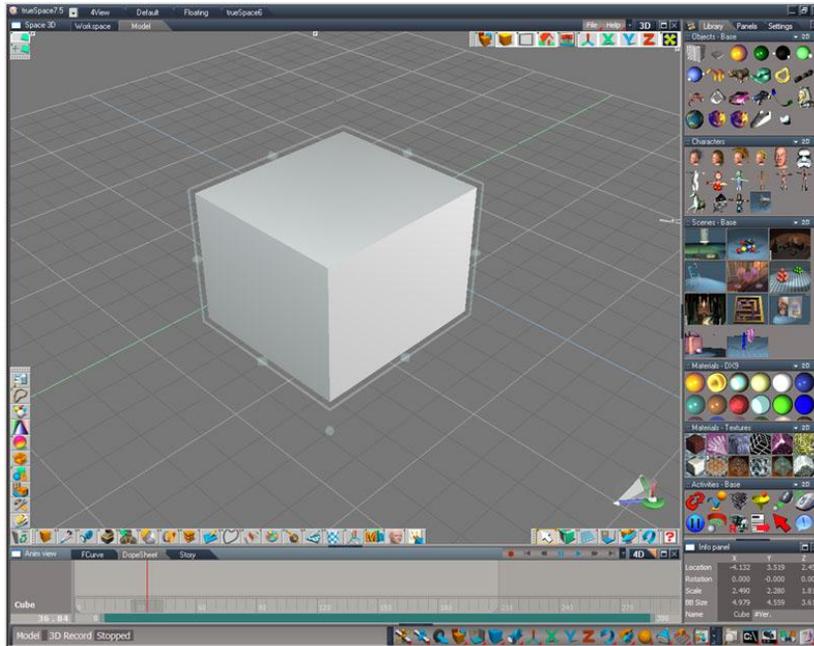


Many of the point edit tools even use it to control the changes they make on the geometry. Once you learn this tool you will find that you have control over most of the aspects of shape creation in Model View.

1.6 Mixed Editing in Model and Workspace Views

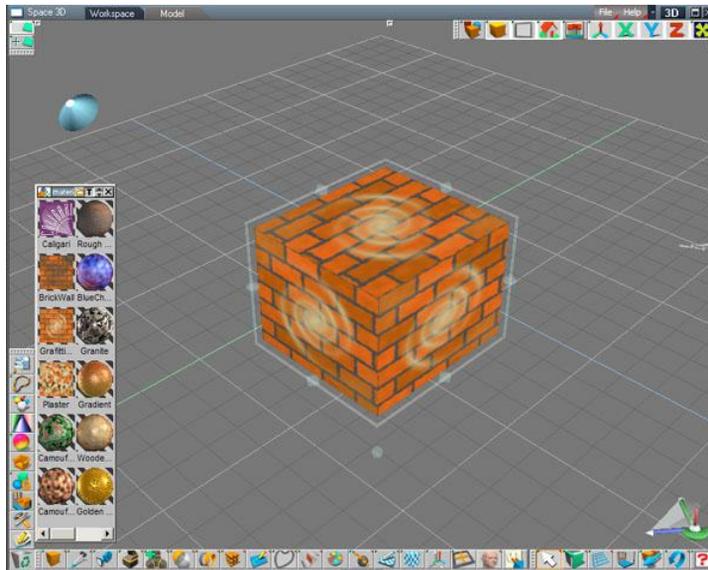
The real-time live bridge in trueSpace allows you to edit your model in both views with different sets of tools, while going back and forth between Model and workspace. This provides added flexibility as long as you remember that some operations may override object construction history. For example, you will lose Player SDS history after you apply (older) Model View Point edit. Even with this limitation, the number of design scenarios is greatly expanded with the ability to alternate between both views.

Step 1: Start in Default Layout with Model View open. Draw a cube  using a cube tool from the primitives toolbar.



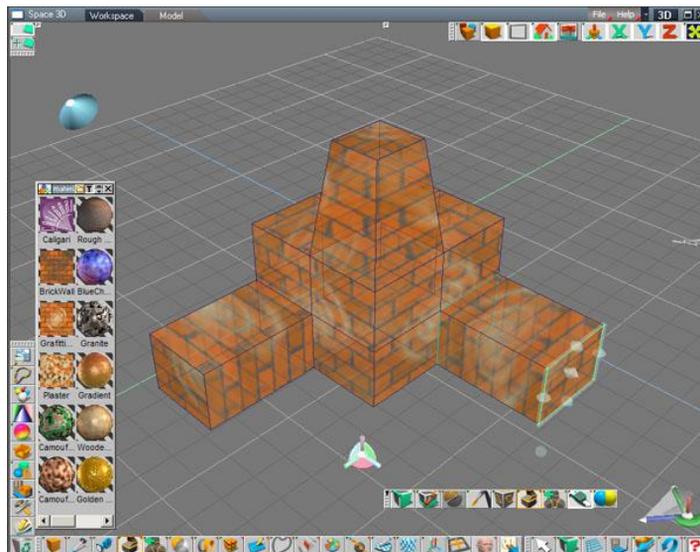
Step1: Load the cube into Model View

Step 2: Open the “LW materials” library and drag the “graffitiWall” material onto the cube. Select the **Cubic UV Projection**  icon. Finally, select the **QuadDivide**  icon to subdivide each face of the cube.



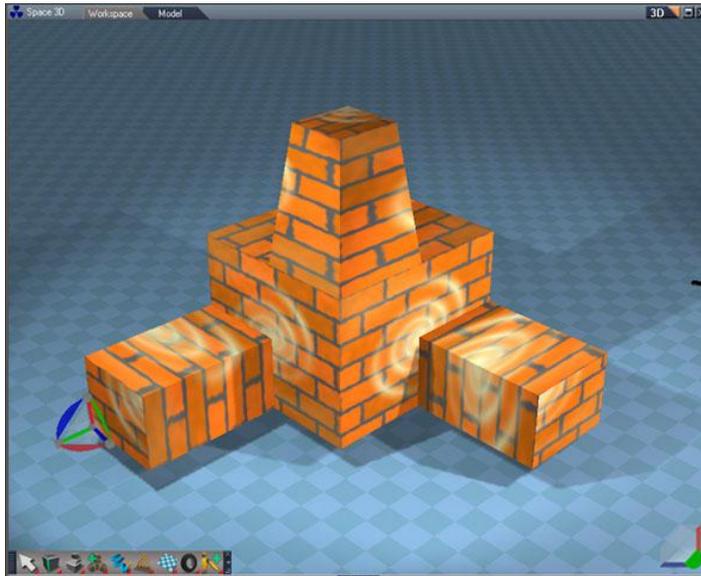
Step2: Cube after material assignment and quad-division

Step 3: Right-click on the cube to enter point edit mode. The cube will become transparent, and Model's point edit toolbar will appear. Select and sweep in turn three faces using the **Sweep** tool from the toolbar. Drag the swept faces out using center part of blue NAV widget (selector cage).



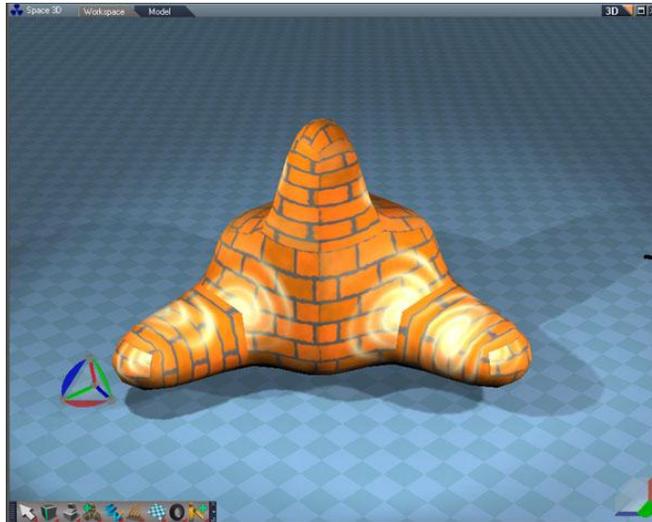
Step3: Three swept faces (top one was scaled slightly)

Step 4: Now switch to Player View using the Workspace tab on the title bar.



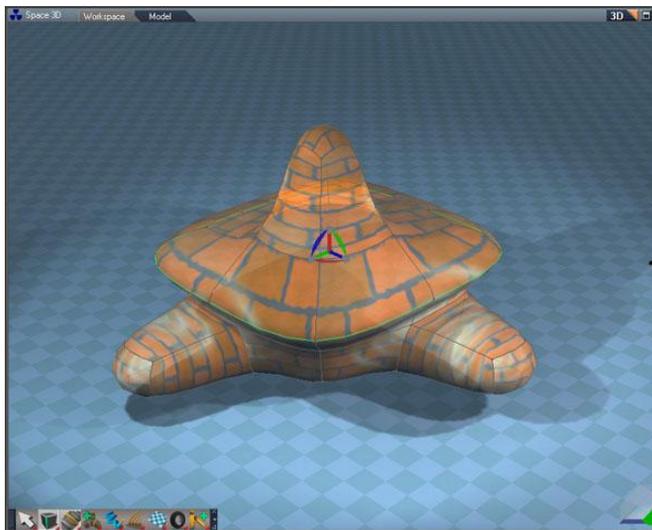
Step4: Switching to Player View

Step 5: Click twice on the **Add One Layer**  SDS icon on the left side of the Workspace View to add two SDS layers.



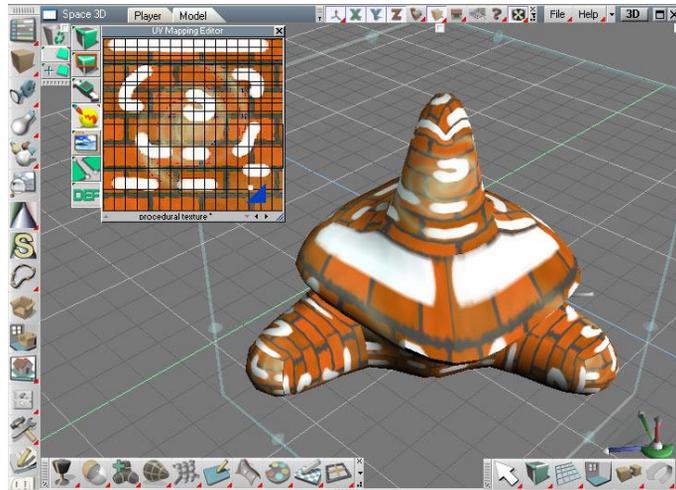
Step5: SDS tool applied twice

Step 6: Right-click on the smoothed object to enter edit mode. The object becomes transparent, and the Workspace-side point edit toolbar appears. Select the **Add Loop**  tool and add a horizontal loop on the main part of edited cube, then scale the new slice up using the small grey cube of the point edit 3D widget.



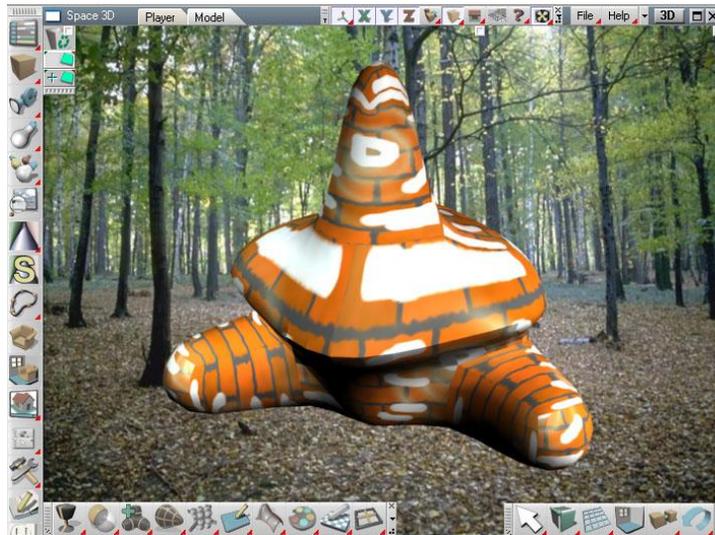
Step6: SDS loop added and scaled

Step 7: Now switch back to Model View using its tab on the title bar. Open the **UV Mapping Editor** panel, select the paint brush, and paint a white pattern into UVE panel. It immediately appears on the 3D model.



Step7: UVE paint creates “Alien hut”

Step 8: Close the UVE (you will be asked to save the altered texture), and then open the PhotoRender panel by right-clicking on the **Render Scene**  icon. Choose “Image” from the Background drop-down list, and then left-click the Background button to open the Background Image panel. Load “5.jpg”. Select the Render Scene icon for a final photo render inside Model View.



Step8: Alien hut fully rendered in Model View

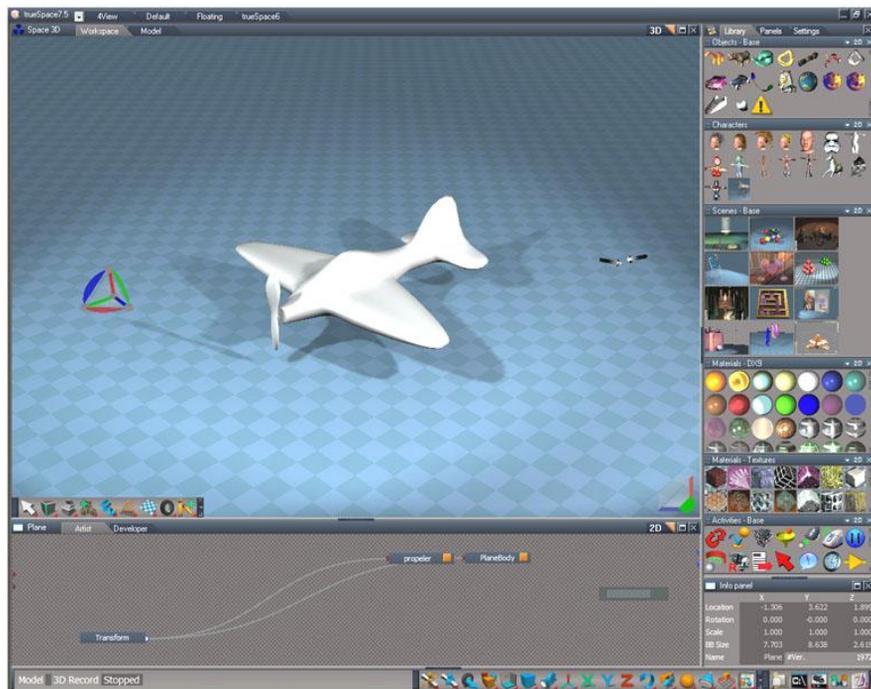
1.7 Creating Behaviors Using Link Editor (Workspace View)

This tutorial will teach you how to add a simple but realistic behavior to your models using **drag, drop** and **link** inside the **Link Editor**. In example below, we will make the propeller spin when the plane moves forward.

Step 1: Start in Default Layout with Player View opened. From the Base library, drag and drop the “Plane” object into the 3D View. When it appears in Link Editor view, click on its orange triangle to enter it. You should see 3 objects: **Propeller**, **PlaneBody**, and **Transform**

*Note: Propeller and PlaneBody are just plain 3D objects. The **Transform** object glues them together, so if you move plane, both plane body and plane propeller move together.*

Enter the Propeller object by clicking on its orange triangle.



Pict. 1: Load the Plane model and enter its propeller object

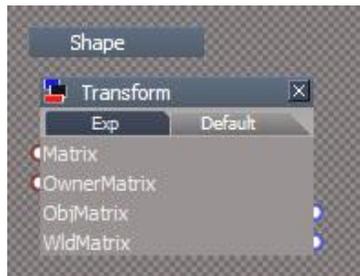
Step 2: In this step you prepare to replace the 0D joint (identity Transform) with the 1D one. The 1D joint is called

Rotation Engine and you can find it in Objects/Tutorial objects library. Drag and drop it into the Propeller object.



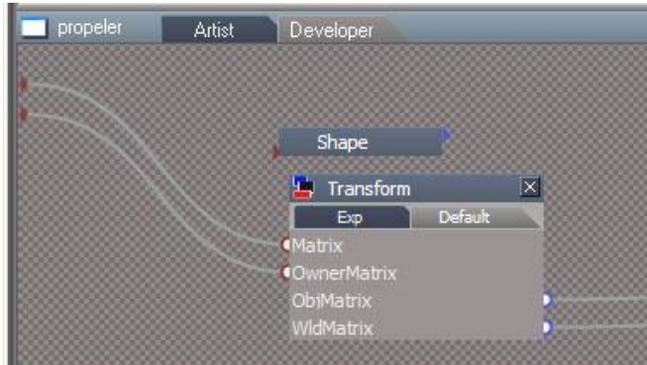
Pict.2: Add Rotation Engine object into propeller object

Then open the default aspect of the Transform object. To do this, left-click on the Transform object in Link Editor and again click on the Default tab.



Pict.3: Select the transform object and switch it to Default aspect.

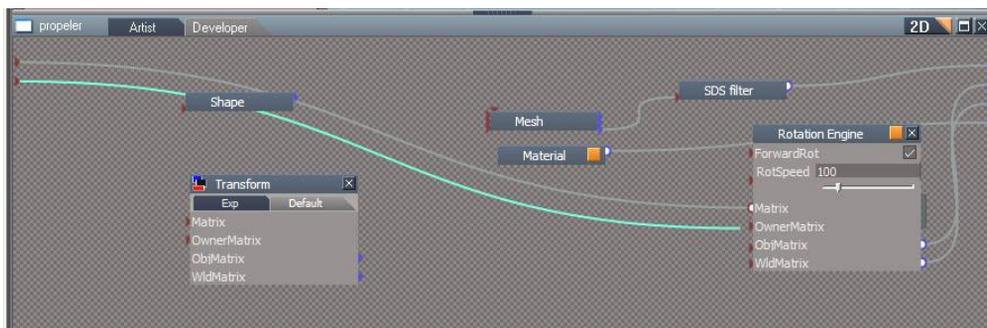
Since we will be reconnecting some links we need to display them first. To do it choose Developer tab on the Link Editor.



Pict.4: Choose Developer aspect

Step 3: The last step is to plug-in the Rotation Engine. Drag and drop all the links from Transform object into corresponding connectors on the Rotation Engine. It is recommended you start with input connectors (red ones) and finish with output connectors, so the recommended order would be as follows:

1. Matrix
2. OwnerMatrix
3. ObjMatrix
4. WldMatrix



Pict.5: Move all the links from Transform to Rotation Engine object

We are done! Now, the propeller should rotate when you move the plane object. To test this, click on its wing in Player view. It should become selected. Then move it. If you want slowdown or speed up the rotation, just adjust the RotSpeed slider.

Notice that the propeller rotates only when you move the plane forward or backwards. If you uncheck the ForwardRot attribute, then it will rotate on any movement of plane.

1.81 Bridge Video

One important aspect of working in trueSpace is the Bridge. In trueSpace, the Bridge acts as a communication medium between the Workspace and the Model windows. There may be circumstances where utilizing the Bridge is required, while other times the Bridge is not necessarily required. The ability to turn the Bridge on or off as required, will benefit your work by saving time and effort.



Introductory Tutorial: Bridge



[Video link](#)

1.82 Interface Video

Within trueSpace, the ability to customize your interface holds great power and potential. Some important aspects of the interface and how to customize these elements are covered in this tutorial.



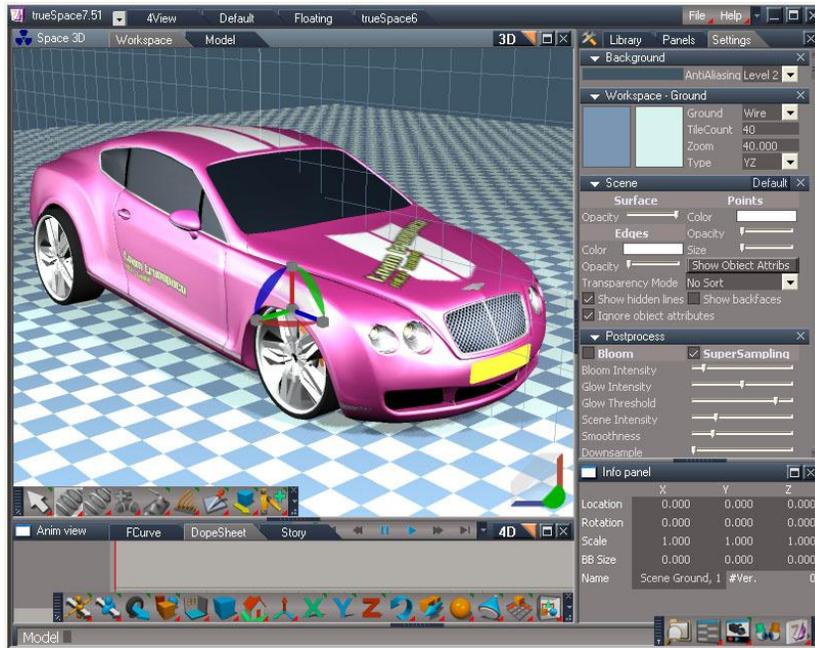
Introductory Tutorial: Interface



[Video link](#)

1.83 Setting Video

Each window in trueSpace has settings associated with it. The ability to customize the settings for various windows in trueSpace, allows you to customize the windows for better workflow or for individual taste/preference. Many of the important settings are introduced in this tutorial.



Introductory Tutorial: Settings



[Video link](#)