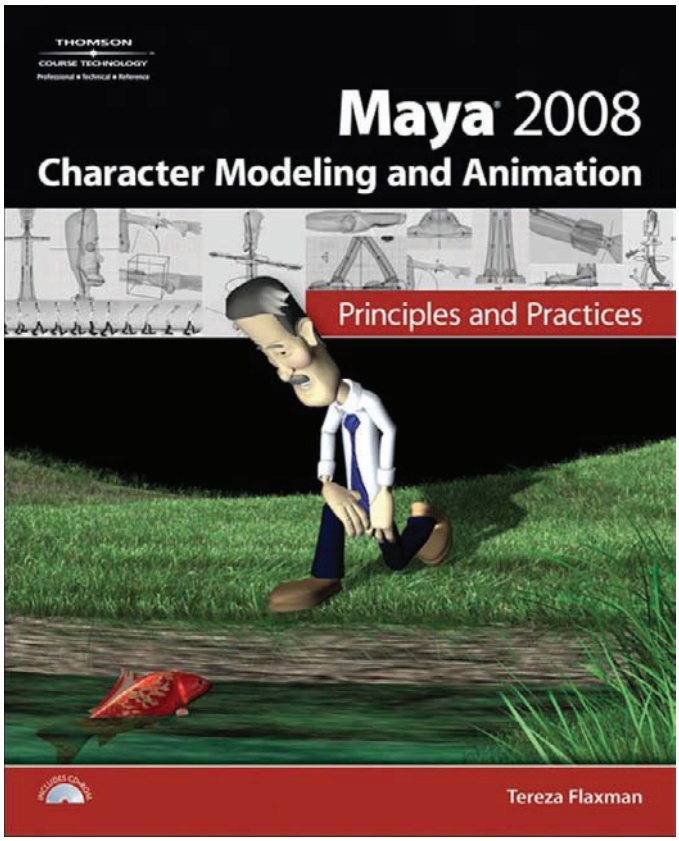
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TUTORIAL 3.1: MODELING A SACK

By modeling and texturing a sack, you will become acquainted with basic Maya polygon modeling and texturing tools.

Modeling the Sack

To model the sack, follow these steps.

1. Create a new project and call it sack.
2. Press F3 to go into Polygons mode.
3. Select Panels > Saved Layouts > Four View.
4. You should find it helpful to see your model in Top, Front, Side, and Perspective views.
5. In Front view, select View > Image Plane > Import Image.
6. Open the file called sack_front.tif from the chapter3, Image_Planes folder on the CD-ROM (see Figure 3.54).

ON THE CD

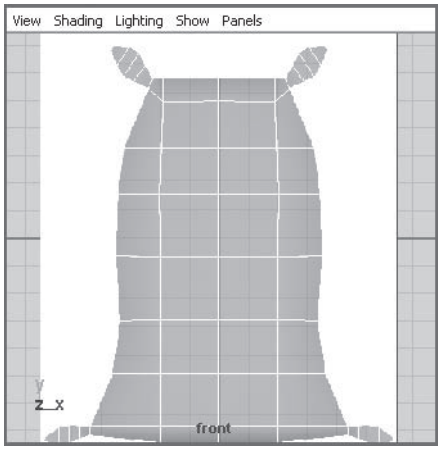

FIGURE 3.54 Sack image plane in the front view.

7. In Side view, select View > Import Plane > Import Image.
8. Open the file sack_side.tif from the Image_Planes folder on the CD-ROM. Notice that the image planes are centered in the origin of the axes. You are going to move and scale them.
9. Select both image planes in the Perspective view.
10. In the Channel Box, scroll down until you see imagePlane under INPUTS.
11. Enter the following values: Offset X, Y = 0, 0, Center X = 0, Center Y = 7.6, Center Z = 0, Width = 15, Height = 15 (see Figure 3.55).

ON THE CD

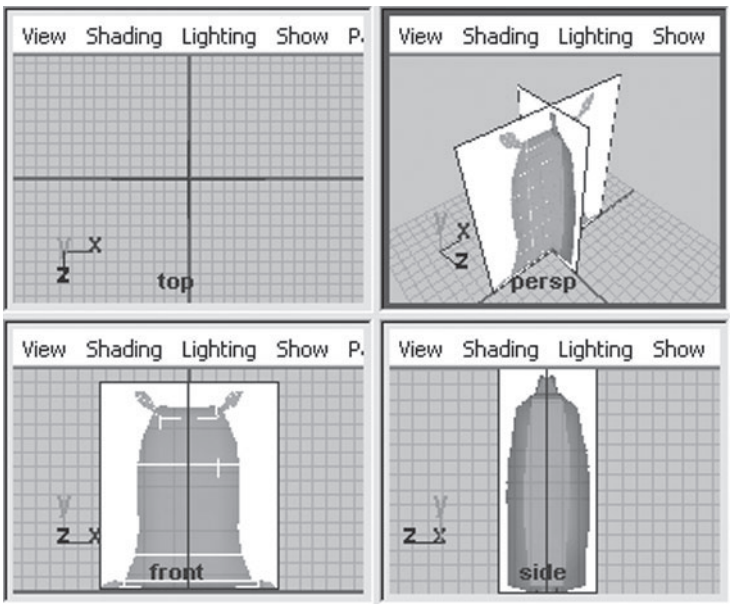

FIGURE 3.55 Image planes seen from all windows.

12. Select Create > Polygon Primitives > Cube. Make sure Interactive Creation is unchecked. Maya creates the cube at the origin.
13. In the Channel Box or the Hypergraph window, change the name of the cube to sack.
14. In the Channel Box, enter 0.5 in the Translate Y axis field. This moves the sack to ground level.
15. With the sack still selected, press the W key to change to the Move tool.
16. Press the Insert key to see to the sack's pivot point.
17. Holding down the X key on the keyboard, move the pivot point to the bottom of the sack, at the origin of the axes, as shown in Figure 3.56.

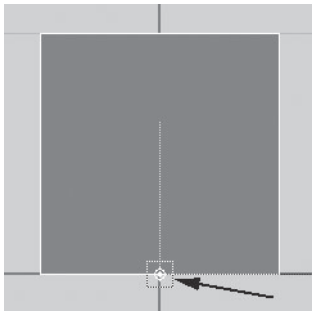

FIGURE 3.56 Sack's pivot moved to the origin.

18. Press the Insert key to close Pivot mode.
19. With the sack still selected, press the R key to change to the Scale tool.
20. In Front view, scale the sack in the X and Y axes to match the sack's size in the Image plane.
21. Press the 5 key to change the cube to Smooth Shade All mode, as shown in Figure 3.57.

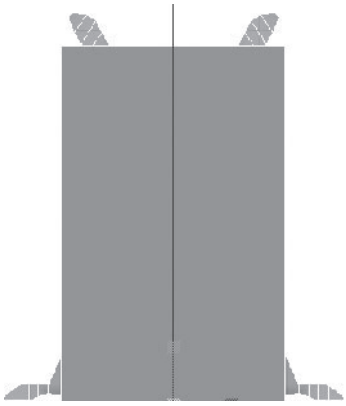

FIGURE 3.57 Polygon sack scaled to match the reference image.

22. In the Front view, select Shading > X-Ray. This makes the cube transparent.
23. Select Edit Mesh > Cut Faces Tool.
24. In Front view, hold down the Shift key, press and hold the left mouse button, and drag to cut the sack. Cut the sack into four parts of equal size horizontally and six parts of equal size vertically (see Figure 3.58).

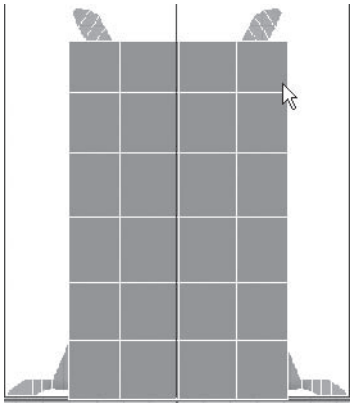

FIGURE 3.58 Polygon sack divided.

25. Press the Q key to change to the Selection tool.
26. Right-click the sack and select Face.
27. Select all the faces of the sack on the left side of the axis grid, as shown in Figure 3.59.

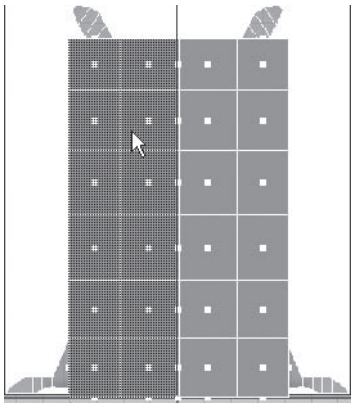

FIGURE 3.59 Selected faces of the sack on the left side of the grid.

28. Press the Delete key. You should have only half of the sack. Because the sack is symmetrical, you can work on half of the model, as shown in Figure 3.60 and later on in the modeling process mirror it,.

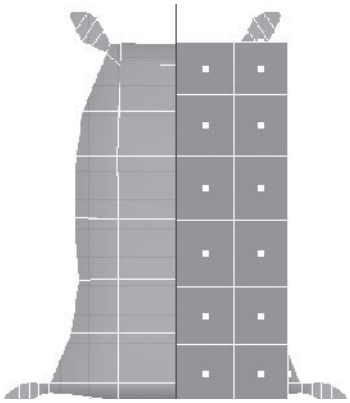

FIGURE 3.60 Half of the sack.

29. Right-click the sack and select Face.
30. In Side view, select the top face of the sack's side, as shown in Figure 3.61.

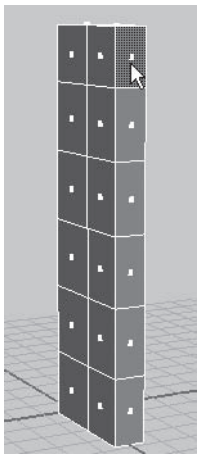

FIGURE 3.61 Top face of the sack's side selected.

31. Select Edit Mesh > Extrude Option Box.
32. Enter 3 in the Divisions field and click Extrude Face, as shown in Figure 3.62.

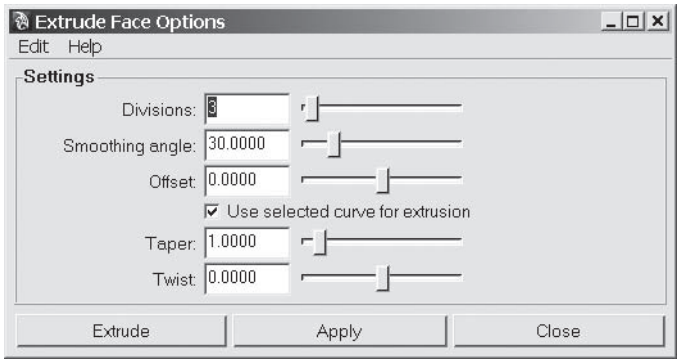

FIGURE 3.62 Extrude Face Options window.

33. In Top view, press and hold the left mouse button to select the blue handle and then drag to the right approximately three units to create the sack's arm, as shown in Figure 3.63.

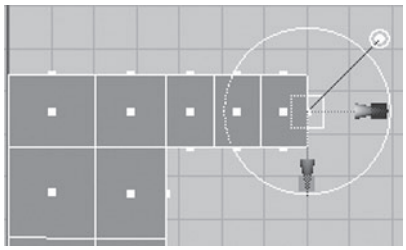

FIGURE 3.63 The sack's face extruded to create the sack's arm.

34. In Front view, drag the green handle approximately three units as shown in Figure 3.64.

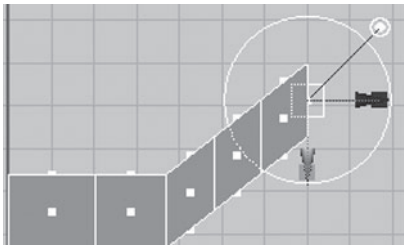

FIGURE 3.64 Extruded faces pulled up.

35. If the image plane covers the sack, select Show in the view panel menu and uncheck Cameras. This hides the image plane. (Select Camera again to see the plane.)
36. In Side view, select the bottom face of the sack's side.
37. In Front view, extrude the face approximately three units to create the sack's foot, as shown in Figure 3.65.

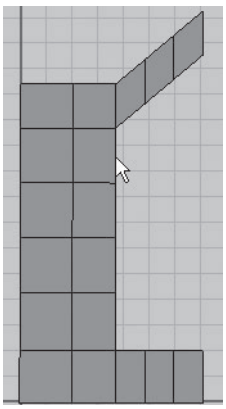

FIGURE 3.65 Bottom face of the sack's side extruded.

38. Press F2 to change Maya's mode to Animation.
39. Press F8 to change the mode to Object mode.
40. Select Deform > Create Lattice. You should see the lattice enveloping the sack, as shown in Figure 3.66.

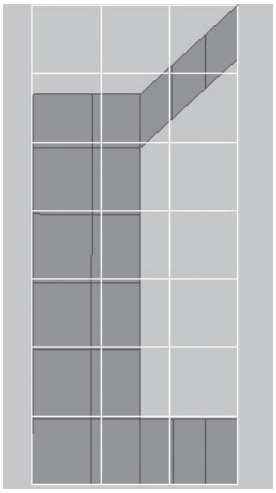

FIGURE 3.66 Lattice enveloping the sack.

41. In the Channel Box, under SHAPES, find a node called ffd1Lattice-Shape. You should see S, T, and U Divisions. These are the lattice space coordinates.
42. Enter the following division values: S Divisions = 4, T Divisions = 8, U Divisions = 2.
43. In Perspective view, right-click the lattice and select Lattice Point.
44. In Front view, click the lattice influence points in the two inner rows between the arm and the foot while holding down the Shift key. Make sure you have selected only the front points. Deselect any other lattice influence points (see Figure 3.67).

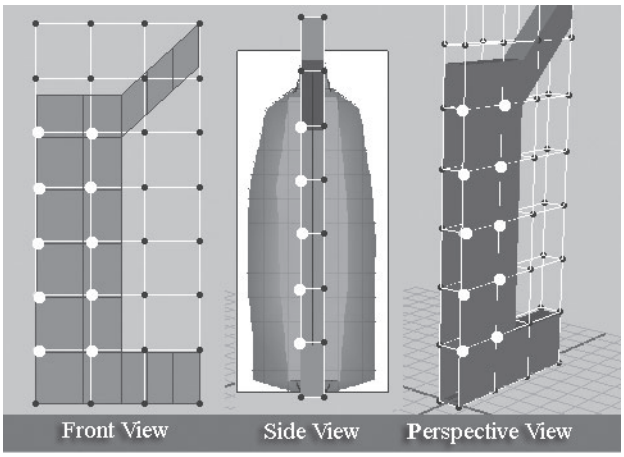

FIGURE 3.67 Selected front lattice influence points viewed from Front, Side, and Perspective views.

45. Make sure the view is in the Smooth Shade All mode. In Side view, select Shading > X-Ray. You should see the reference image behind the sack.
46. Press the W key and drag the selected lattice influence points to the left approximately two units on the Z axis. Drag the individual lattice points to the edge of the sack (see Figure 3.68).

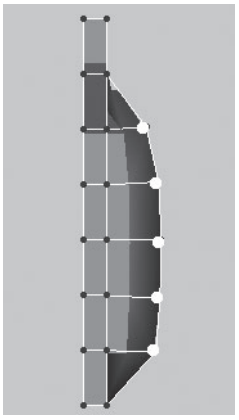

FIGURE 3.68 Points of the lattice adjusted to match the image plane.

47. In Perspective view, select the lattice influence points in the back of the sack by clicking on them. Make sure you select the two inner rows between the arm and the foot. Any other point should be deselected (see Figure 3.69).

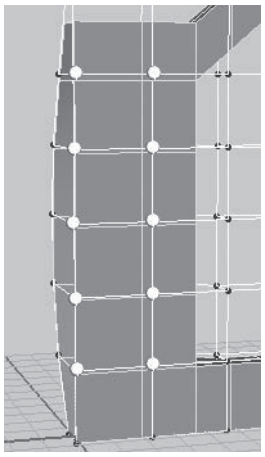

FIGURE 3.69 Selected back lattice influence points.

48. In Side view, drag the selected points approximately two units on the Z axis to match the other side of the sack, as shown in Figure 3.70.

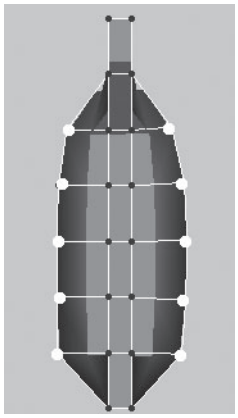

FIGURE 3.70 Lattice influence points dragged on both sides of the sack.

49. Select the sack and then select Edit > Delete By Type > History. This deletes the lattice but preserves the sack deformation.
50. Make sure the cube is in shaded mode.
51. In Top view, select the two outer edges of the sack's top and move them a bit inward to narrow the top of the sack, as shown in Figure 3.71.

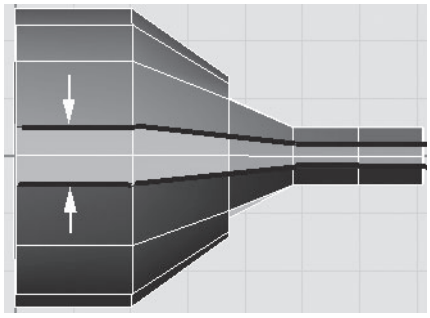

FIGURE 3.71 The sack's top outer edges moved inward.

52. Select the sack and then select Mesh > Mirror Geometry Option Box.
53. Click Mirror direction –X and make sure Merge with the Original and Merge Vertices are selected. Click the Mirror button.
54. Save your work.

Sack Artistic Features

At this point, you have a conventionally shaped sack. To give the sack a more artistic shape, use the Sculpt Geometry Tool to shape the polygon mesh. This tool allows you to modify the polygon's vertices by painting them with a brush. The Sculpt Geometry Tool pushes, pulls, and smoothes the vertices. To use the tool, follow these steps.

1. Select the sack and select Mesh > Sculpt Geometry Tool Option Box.
2. The tool Attribute Editor opens on the right side of the screen.
3. Position the mouse cursor on the sack. Notice that the cursor has a circle on it. This circle is the size of your brush, as shown in Figure 3.72.

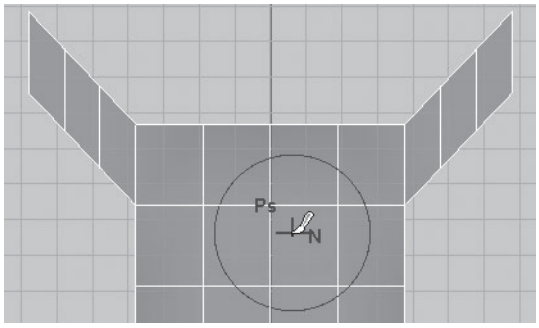

FIGURE 3.72 Sculpt Polygon brush.

4. Hold down the B key while pressing the middle mouse button and then drag the mouse to the right or left to adjust the brush size. You also can adjust the brush size numerically on the Sculpt Geometry Tool Brush settings.
5. In the Sculpt Parameter, check the operation push or pull and paint the sack to see the results. The control vertices should move when you paint the sack.
6. Continue to paint the sack to give it some character.
7. When you have finished sculpting, close the Sculpting tool.
8. Right-click the sack and select Edge.
9. Click the middle edge of the sack's right arm to select it, as shown in Figure 3.73.

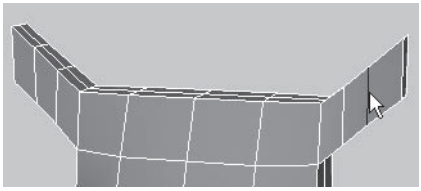

FIGURE 3.73 Middle edge of the right arm selected.

10. Hold down the Ctrl key while right-clicking on the edge.
11. Select Edge Loop Utilities > To Edge Loop. This selects all the edges on that loop, as shown in Figure 3.74.

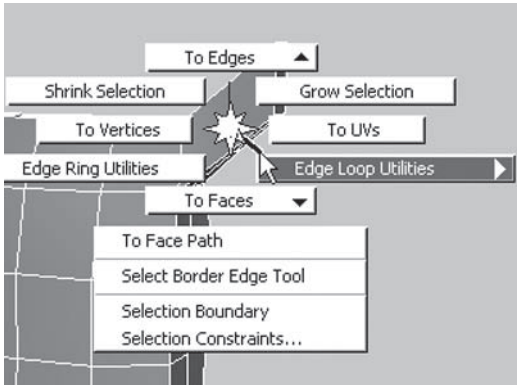

FIGURE 3.74 Edge Loop Utility marking menus.

12. Repeat the same procedure to select the middle edge loop of the left arm.
13. Press R to change to the Scale tool and scale the selected edge's loop a bit on the Y axis, as shown in Figure 3.75.

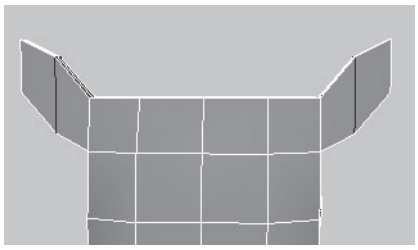

FIGURE 3.75 The arm's edge loops scaled.

14. Right-click the sack and select Face.
15. Select the face on the end of the right arm and scale it a bit, as shown in Figure 3.76.

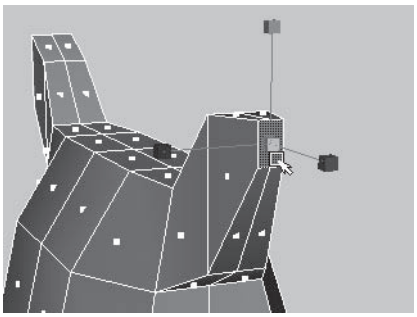

FIGURE 3.76 Front face of the right arm scaled.

16. Repeat steps 6 through 10 for the right and left legs.
17. Continue sculpting the sack until you have a pleasing shape.

Smoothing the Sack

To smooth the sack, follow these steps.

1. Select the sack.
2. Select Mesh > Smooth Option Box.
3. Make sure Add Divisions: Exponential is selected and Division Levels is 1, as shown in Figure 3.77.
4. Click the Smooth button. Notice that the sack now has a smoother surface.
5. In the Channel Box under INPUTS, look for PolySmoothFace1 and click it. You should see a series of attributes, including Divisions.
6. Type the value 0 in the Divisions field, as shown in Figure 3.78.

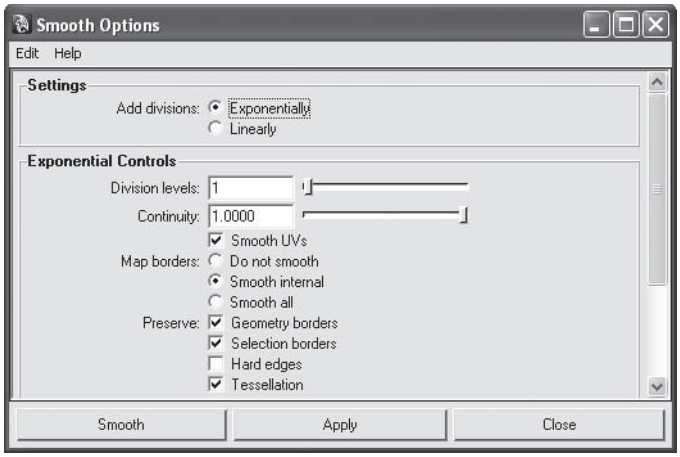

FIGURE 3.77 Polygon Smoothing Options window.

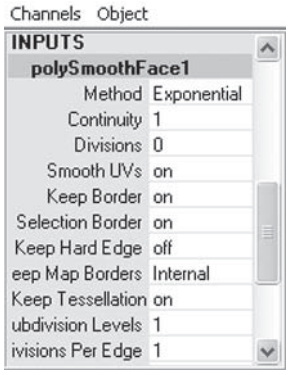

FIGURE 3.78 Polygon Smoothing Channel Box parameters.

Notice that the sack surface changed back to a nonsmooth surface. You can switch the surface to smooth and nonsmooth by changing the Divisions values. When the Divisions value is set to 0, the surface is in Nonsmooth mode, and when the Divisions value is set to 1, the surface is set to Smooth mode.