Chapter 3

Introduction to Digital Sculpting

Learning Objectives

After completing this chapter, you will be able to:

- *Understand digital sculpting*
- *Learn about different subpalettes in Tool palette*
- *Understand the usage of the Projection Master*

INTRODUCTION

In ZBrush, you can create organic as well as inorganic models using the primitive objects. Organic modeling refers to creation of living things such as humans, animals, plants, mythical characters, and insects. Inorganic modeling refers to creation of non-living things such as buildings, cars, and gadgets. ZBrush enables you to create models with complete details using the digital sculpting. In this chapter, you will learn about the process of digital sculpting using different tools and techniques.

DIGITAL SCULPTING

Digital sculpting is also known as sculpt modeling or 3D sculpting. In digital sculpting, brushes are used to modify a 3D object. Sculpting is primarily used in high poly modeling. The high poly models created in ZBrush are extensively used in movies, games, photorealistic illustrations, and so on. In ZBrush terminology, a 3D model is referred to as digital clay. Digital clay in ZBrush can be created in a number of different ways, such as by using one of the default models or primitives present in ZBrush or importing a polygon model that has been created in different modeling software applications such as Autodesk 3ds Max or Maya. The default models that come with ZBrush can be accessed through the LightBox browser which is located at the top of the canvas, refer to Figure 3-1. ZBrush also contains a library of primitives such as cube, sphere, cone, and so on. These primitives can be accessed from the flyout that is displayed on choosing the Current Tool button in the **Tool** palette, refer to Figure 3-2.

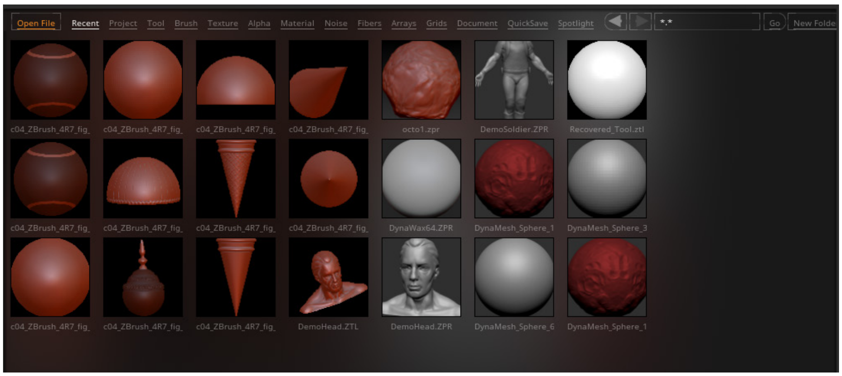

Figure 3-1 *The LightBox browser*

Figure 3-2 *The primitives accessed through the flyout*

Use of Symmetry in Digital Sculpting

The symmetry feature in ZBrush allows you to quickly sculpt symmetrical objects such as face. The symmetry can be activated by choosing the **Activate Symmetry** button located in the **Transform** palette, as shown in Figure 3-3.

Figure 3-3 The ***Activate Symmetry*** *button in the* ***Transform*** *palette*

Symmetry can be activated along all the three axes. As the **>X<** button is chosen by default, on choosing the **Active Symmetry** button, the symmetry is activated along the X-axis. To deactivate symmetry along X-axis, you need to choose the **>X<** button. To activate symmetry along other axes, you need to choose the corresponding buttons such as **>Y<** and **>Z<** located below the **Active Symmetry** button. When you activate symmetry, the modifications you make on one side will be reflected on the other side as well, depending on the axis chosen, refer to Figure 3-4. In Figure 3-4, the symmetry has been activated along X-axis and the pattern drawn on the plane is mirrored on the other side as well. ZBrush also has an option that enables you to create radial patterns on a circular surface. To activate radial symmetry, choose the **(R)** button located below the **Activate Symmetry** button, refer to Figure 3-3. The **RadialCount** slider located next to the **(R)** button enables you to decide the number of times a pattern will be mirrored across the selected axis. In Figure 3-5, the radial symmetry has been activated along Z-axis and the value of **RadialCount** is equal to 8. The pattern in Figure 3-5 has been drawn by using the **Standard** brush.

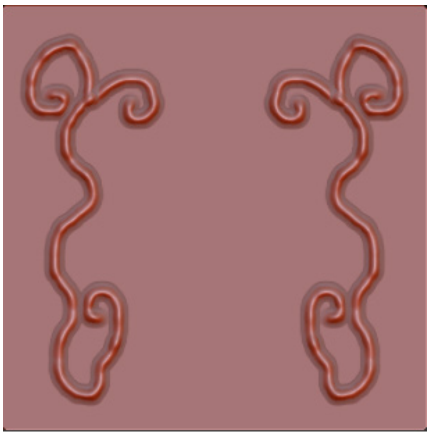

Figure 3-4 *Pattern drawn with the symmetry activated along X axis*

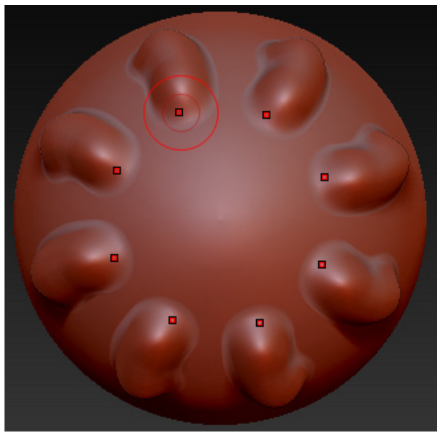

Figure 3-5 *Radial pattern drawn with the symmetry activated along Z axis*

Use of Alpha in Digital Sculpting

Alpha images are patterns that determine the shape of brush that will be used in painting and sculpting. ZBrush has a library of grey scale alpha images. These images can be accessed from the flyout displayed on choosing the Current Alpha button located in the left shelf, refer to Figure 3-6. Alpha images are most commonly used with clay brushes and the **Deco1** brush.

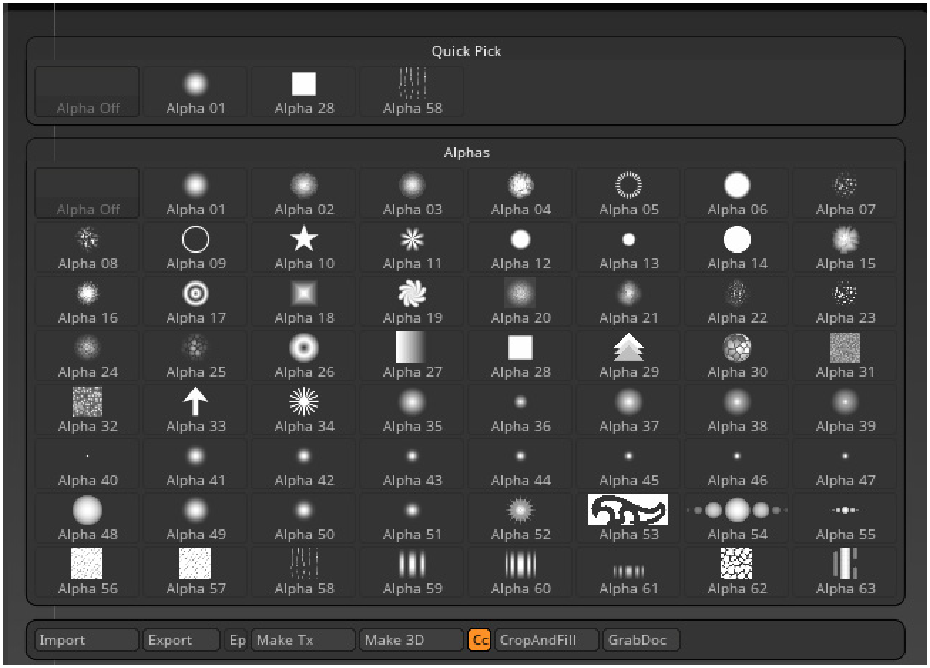

Figure 3-6 *The alpha patterns*

The flyout displayed on choosing the Current Alpha button consists of two main areas: **Quick Pick** and **Alphas**. The **Quick Pick** area consists of the most commonly used alphas. The **Alphas** area consists of all the alpha images available in ZBrush.

There are some buttons available at the bottom of the flyout, namely **Import**, **Export**, **Ep**, **Make Tx**, **Make 3D**, **Cc**, **CropAndFill**, and **GrabDoc**, refer to Figure 3-6. These buttons are discussed next.

Import

The **Import** button is used to import images that can be used as alphas. These images can be the PSD or bitmap images.

Export

The **Export** button saves an alpha as an image file, and this file can be used in other software applications.

Ep

Ep stands for Export Processed Alpha. This button is used to export an alpha that has been modified by using different settings in the **Alpha** palette. If this button is not chosen, then the alpha would be exported unchanged.

Make Tx

The **Make Tx** button is used to convert an alpha image into a texture.

Make 3D
The **Make 3D** button is used to convert a selected alpha image into a 3D object. On choosing this button, the selected alpha will be displayed as a 3D object in the canvas.

Cc
Cc stands for clear color. If this button is chosen along with the **CropAndFill** button, then the color applied on the object will disappear. The **CropAndFill** button is discussed next.

CropAndFill
The **CropAndFill** button crops an object in the canvas according to the dimensions of the selected alpha and fills it with the alpha image. On choosing this button, a warning message will be displayed asking whether you want to continue with this operation or not, refer to Figure 3-7. If you choose the **Yes** button, the object will be cropped and filled with the alpha, refer to Figure 3-8. You can also modify the pattern of the alpha using different strokes. The library of different strokes can be accessed either through the **Stroke** palette located at the top of the interface or from the left shelf.

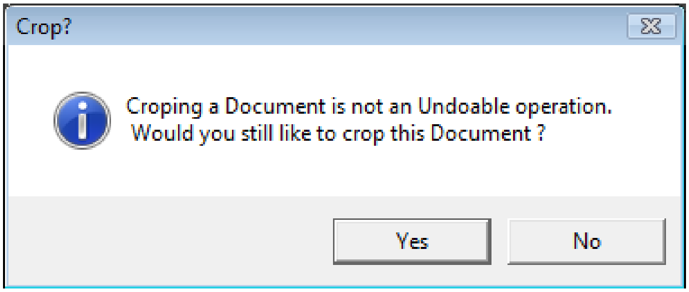

***Figure 3-7** The warning message displayed on choosing the **CropAndFill** button*

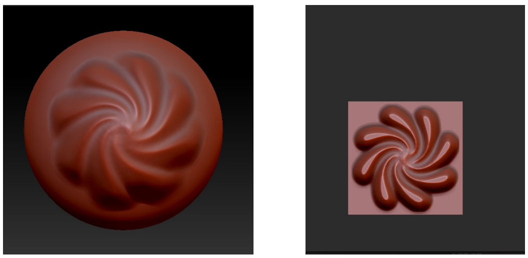

***Figure 3-8** Object cropped by using the **CropAndFill** button*

GrabDoc
The **GrabDoc** button is used to capture a screenshot of the canvas as an alpha. This button enables you to create your own alphas using different brushes and then take a capture of that alpha. The alpha created can be used later in sculpting.

Tool Palette
The **Tool** palette is one of the most important palettes in ZBrush. It consists of all the tools required for modeling and sculpting. The **Tool** palette is divided into a number of subpalettes.

These subpalettes appear when you choose a primitive from the flyout displayed on choosing the Current Tool button, refer to Figure 3-9. These subpalettes are also displayed when you load a model from the LightBox browser into the canvas. On expanding a subpalette, various settings are displayed in it. The most commonly used subpalettes in the **Tool** palette are discussed next.

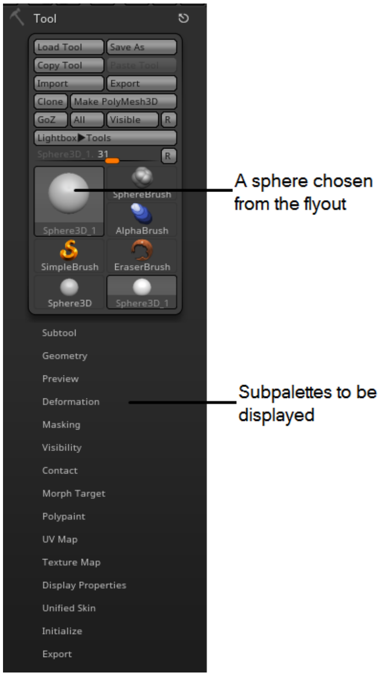

Figure 3-9 *Subpalettes displayed on choosing a primitive*

SubTool

In ZBrush, a 3D object is also known as a ZTool. A ZTool comprises of different 3D objects and it can be split into subtools. For instance, if a face and eyeballs are modeled separately, they will be displayed in the **SubTool** subpalettes as two different entities. You can select a subtool by pressing the ALT key and then clicking on that subtool in the canvas. Once a particular subtool is active, it can be edited without affecting the other subtools. The subtools will be discussed in detail in the later chapters.

Geometry

The **Geometry** subpalette comprises the option that are used to modify the polygons in a ZTool. Every ZTool in ZBrush consists of polygons which can be viewed by choosing the **PolyF** button located in the right shelf. In ZBrush, you can work on a ZTool that comprises of millions of polygons. To achieve a high level of detail on a ZTool, you need to have larger number of polygons. When you create a ZTool in the canvas, it has less number of polygons. You can change the number of polygons by using the **Geometry** subpalette. In addition to this, you can manage the flow of polygons in a ZTool using this subpalette.

The settings in the **Geometry** subpalette vary depending on the ZTool that has been created in the canvas. If you create a primitive 3D model, the settings in the **Geometry** subpalette will be displayed, as shown in Figure 3-10. When you convert a primitive model into a polymesh by choosing the **Make PolyMesh3D** button in the **Tool** palette, the settings will be displayed as shown in Figure 3-11. If you create a ZSphere in the canvas, the settings will be displayed as shown in Figure 3-12.

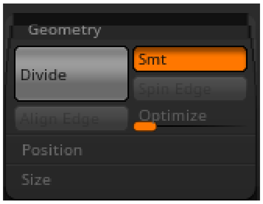

***Figure 3-10** The **Geometry** subpalette displayed on creating a primitive model*

***Figure 3-11** The **Geometry** subpalette displayed on converting a primitive model into a polymesh*

The **Geometry** subpalette is mostly used when a primitive model has been converted into a polymesh. Some of the major tools in the **Geometry** subpalette corresponding to a polymesh are discussed next.

***Figure 3-12** The **Geometry** subpalette displayed on creating a ZSphere*

Lower Res

The **Lower Res** button is used to display the ZTool at its lower subdivision level so that you can move back and forth between the low poly and subdivided ZTools.

Higher Res

The **Higher Res** button is used to switch to the ZTool at higher subdivision levels so that you can move back and forth between the low poly ZTool and the subdivided ZTool. At lower subdivisions, you can sculpt major details in a ZTool and at higher subdivisions you can add subtle details. For example, if you are sculpting a face in ZBrush, you can add nose, eye sockets, and lip area at the lower subdivision levels. After adding the major details, you can move to the higher subdivision levels and add further details, such as pores, wrinkles, and face cuts.

SDiv

The **SDiv** slider is used to scroll through all the subdivision levels. You can press D to move to a higher subdivision level and press SHIFT+D to move to a lower subdivision level. Each time you subdivide the ZTool using the **Divide** button, the **SDiv** slider should be at its highest subdivision level. Alternatively, you can press CTRL+D to move to a higher subdivision level. If it is not at its highest subdivision level, a message box will be displayed, as shown in Figure 3-13.

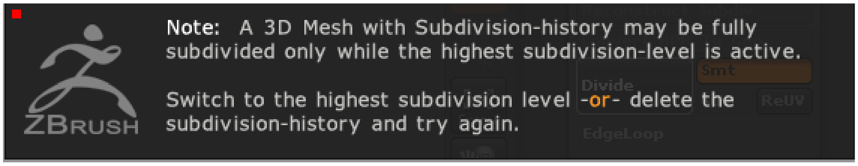

Figure 3-13 *A message box displayed when the **SDiv** slider is not at its highest subdivision level*

Cage
The **Cage** button is used to retain the shape and placement of the polygons even if the geometry is divided a number of times. If this button is not chosen and the geometry is divided, the shape and placement of the polygons at the lower subdivision levels changes. This button is deactivated when the object is at its highest subdivision level.

Rstr
The **Rstr** button is used to restore the geometry to higher subdivision levels by avoiding the changes that have been made at the lower subdivision levels.

Del Lower
The **Del Lower** button is used to delete all subdivision levels below the current **SDiv** value.

Del Higher
The **Del Higher** button is used to remove all subdivision levels above the current **SDiv** value.

Freeze SubDivision Levels
The **Freeze Subdivision Levels** button is used to store all subdivision levels and display the ZTool at the lowest subdivision level. This button enables you to make changes in the geometry of a ZTool at its lowest subdivision level.

Reconstruct Subdiv
The **Reconstruct Subdiv** button is used to decrease the subdivision levels in a ZTool. On choosing this button, a low resolution model having a low number of polygons will be displayed.

Convert BPR to Geo
The **Convert BPR to Geo** button is used to convert a **FiberMesh** into an editable geometry. The **FiberMesh** will be discussed in detail in the later chapters.

Divide
The **Divide** button is used to increase the number of polygons in the ZTool. ZBrush gives you an option to switch to the lower subdivision level model so that you can move back and forth between the low poly ZTool and the subdivided ZTool. At lower subdivisions, you can sculpt the major details in a model, and at higher subdivisions, you can add fine details.

Smt

The **Smt** button located next to the **Divide** button is activated by default. As a result, the ZTool is smoothened each time you click on the **Divide** button. If this button is not chosen, the hard edges of the model will be visible even if you subdivide the ZTool.

Suv

The **Suv** button is used to smoothen the UV coordinates of a ZTool when the geometry is subdivided. This button will be discussed in detail in the later chapters.

Layers

The **Layers** subpalette, as shown in Figure 3-14, is used to manage a complex ZBrush scene in such a way that different stages of the scene development are saved in different layers, thus enabling you to modify different stages independently. You can add detail to each layer separately and the intensity of the depth created can be changed by moving the sliders below each layer. You can rename or delete any layer by choosing the **Delete** or **Rename Layer** button, respectively. In the **Layers** palette, you can create sixteen different layers. New layers can be created by choosing the **New** button in the **Layers** subpalette. The **Bake All** button is used to bake all layers and transfer the results of all those layers to the ZTool in the canvas.

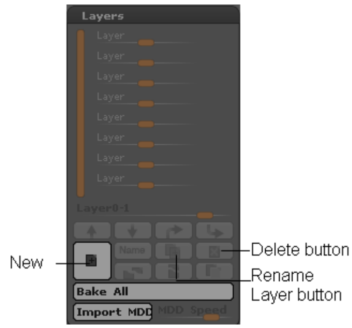

Figure 3-14 *The **Layers** subpalette*

FiberMesh

The **FiberMesh** subpalette is used to create hair or fiber on the surface of an existing object. This subpalette consists of different settings that are used to modify the geometry of the fibers. These settings enable you to create different hairstyles. The **FiberMesh** will be discussed in detail in the later chapters.

Geometry HD

The **Geometry HD** subpalette is used to add additional level of high definition subdivisions in a model. After adding subdivisions to the model, you cannot add or delete the standard subdivision levels. This subpalette enables you to add a higher level of detail to a model that cannot be achieved by subdividing the geometry in the **Geometry** subpalette.

Preview

The **Preview** subpalette enables you to view and change the orientation of the 3D object on the canvas. It consists of a small preview area in which the 3D object will be visible, refer to Figure 3-15. You can move the object inside the preview area. The changes made in the orientation of the object inside the preview area are reflected in the canvas as well.

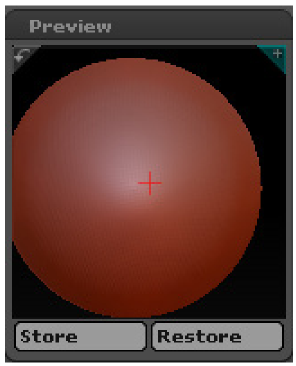

Figure 3-15 *The preview area in the **Preview** subpalette*

Surface

The **Surface** subpalette, as shown in Figure 3-16, is used to add noise to a ZTool. To add noise to a ZTool, choose the **Noise** button in the **Surface** subpalette; the **NoiseMaker** window containing the preview of the object will be displayed, refer to Figure 3-17. You can change the magnitude of the noise by dragging the **Scale** slider, refer to Figure 3-17. After adjusting the magnitude of the noise, choose the **OK** button; the noise will be applied to the ZTool in the canvas.

*Figure 3-16 The **Surface** subpalette*

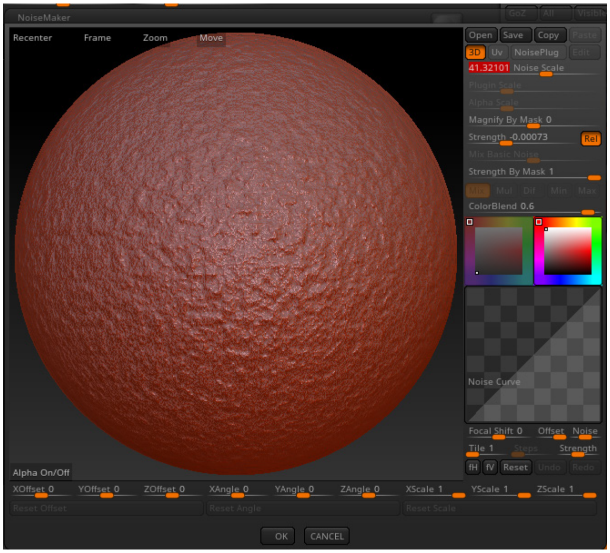

*Figure 3-17 The **NoiseMaker** window*

Deformation

The **Deformation** subpalette is used to change specifications such as orientation, angle of rotation, and size of a ZTool. It also contains various options such as **Bend**, **Skew**, **Flatten**, **Twist**, **Taper**, **Squeeze**, **Inflate**, and **Gravity**, refer to Figure 3-18. These options enable you to modify a ZTool as required.

Masking

The **Masking** subpalette is used with the mask brushes. The settings in this subpalette enable you to invert, blur, sharpen, clear, or clear a mask created on the surface of an object. You can also apply the mask on the surface of an object by color or alpha.

Visibility

The **Visibility** subpalette is used with the mask brushes. The settings in this subpalette enable you to grow, shrink, hide, and show a mask created on the surface of an object.

Contact

The **Contact** subpalette is used to establish points of contact between different subtools. These contact points will enable movement of a subtool with respect to another subtool. This palette is mainly used for the posing of the ZTools. For instance, if you model a face and eyeballs separately, then on moving the face, the eyeballs will remain stationary. Now, if you establish a point of contact between the face subtool and the eyeballs subtools, the eyeballs will move along with the face.

Morph Target

The **Morph Target** subpalette is used to save the current state of a ZTool before making any further changes so that you can switch back and forth between the saved geometry and the changed geometry.

Polypaint

The **Polypaint** subpalette is used to paint colors on a ZTool. The colors can be selected using the color picker. The palette consists of two buttons, namely **Colorize** and **Grd**, refer to Figure 3-19. The **Colorize** button is used to paint colors directly into the polygons of an object and the **Grad** button is used to add a gradient to the ZTool.

*Figure 3-18 The **Deformation** subpalette*

*Figure 3-19 The **Polypaint** subpalette*

UV Map

The **UV Map** subpalette is used to unwrap a ZTool. The ZTool can be unwrapped only when it is at its lowest subdivision level. This subpalette will be discussed in detail in the later chapters.

Texture Map

The **Texture Map** subpalette is used to select and assign texture to a ZTool. ZBrush has an inbuilt library of textures. This subpalette also gives you an option to import textures from other locations.

Unified Skin

The **Unified Skin** subpalette is used to create a new ZTool when it is applied to an existing ZTool. The new ZTool thus created will have smooth edges between different parts and the polygons in it will be distributed uniformly. To create a new ZTool, choose the **Make Unified Skin** button from this palette, as shown in Figure 3-20. The new ZTool will appear in the tool library with the term Skin prefixed before the name of the actual ZTool. If you choose the new ZTool from the library, it will appear on the canvas. The new ZTool will have a large number of polygons as compared to the actual ZTool, refer to Figure 3-21.

***Figure 3-20** The **Make Unified Skin** button in the **Unified Skin** subpalette*

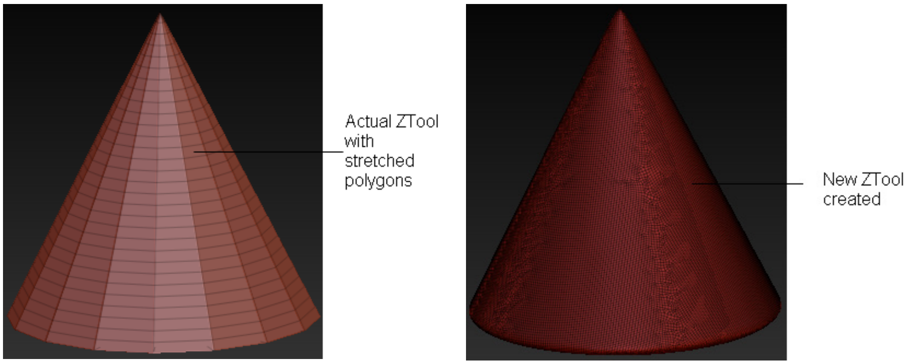

***Figure 3-21** The ZTool created after choosing the **Make Unified Skin** button*

The **Resolution** slider in this palette is used to change the number of polygons in the new ZTool. Its value ranges from 16 to 1024. By default, its value is 128. The **Smooth** slider is used to change the smoothness of the new ZTool. Its value ranges from 0 to 100.

Initialize

The **Initialize** subpalette is used to change the dimensions of the ZTool as required, refer to Figure 3-22. The **Initialize** subpalette is only available when a ZTool is in primitive mode. After converting a primitive into polymesh, the **Initialize** subpalette is not displayed.

Note

*When you convert a primitive model into a polymesh by choosing the **Make Polymesh 3D** button from the **Tool** palette, the **Import** subplaette is displayed in place of the **Initialize** subpalette.*

Export

The **Export** subpalette is used to export a ZTool to other locations. This subpalette consists of two buttons namely, **Qud** and **Tri**, refer to Figure 3-23. These buttons determine whether the polygons in the exported ZTool will be in the shape of quadrilaterals or triangles.

***Figure 3-22** The **Initialize** subpalette*

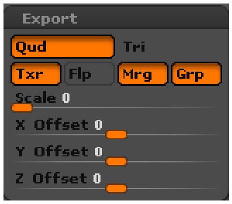

***Figure 3-23** The **Export** subpalette*

Projection Master

The **Projection Master** button is used to add details to a 3D model by temporarily converting it into a 2.5D image. The **Projection Master** button can be accessed either from the **Zplugin** palette or by pressing the G key. It enables you to sculpt and texture the visible portion of a ZTool. After choosing the **Projection Master** button, the visible portion of a 3D model is converted into a 2.5D illustration on the canvas. The 3D model is temporarily removed from the canvas and you can add detail to the 2.5D representation of the model.

To add details to a model using the **Projection Master**, you have to make sure that the model has been subdivided properly and is at its highest subdivision level. Next, choose the **Projection Master** button from the **Zplugin** palette, refer to Figure 3-24; the **Projection Master** dialog box will be displayed, as shown in Figure 3-25. The options in this dialog box are discussed next.

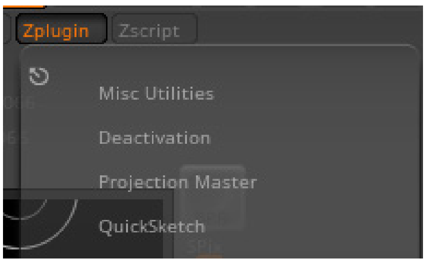

***Figure 3-24** The **Projection Master** button in the **Zplugin** palette*

***Figure 3-25** The **Projection Master** dialog box*

Colors

This check box is used to paint color on a portion of the 3D model. By default, the **Color** check box is selected. As a result, when you choose the **DROP NOW** button, a message box will be displayed, refer to Figure 3-26. Choose the **Activate Polypainting** button from this message box; the 3D model will be converted into its 2.5D illustration and you can color only the portion that is visible in the canvas. Next, you need to select the colors from the color swatch and then paint the desired colors on the visible area of the 2.5D illustration, refer to Figure 3-27. After painting the model, choose the **Projection Master** button from the **Zplugin** palette; the **Projection Master** dialog box will be displayed again, refer to Figure 3-28. Choose the **PICKUP NOW** button from this dialog box; the illustration will be again converted into a 3D model, with the color applied on it.

Similar to applying colors, you can also apply depth to the model by using the **Z Add** button located in the top shelf.

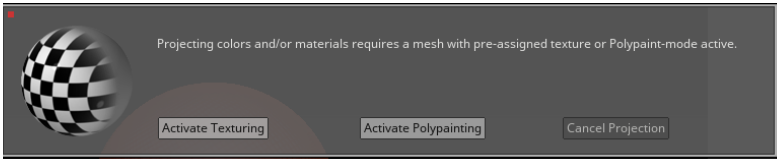

Figure 3-26 *Message box displayed on choosing the* ***DROP NOW*** *button*

Figure 3-27 *Colors painted on the 2D illustration*

Shaded

The **Shaded** check box is used to add different attributes such as lights, shadows, and reflectivity to a ZTool. You need to select this check box along with the **Colors** check box. After selecting the **Colors** and **Shaded** check boxes from the **Projection Master** dialog box, choose the **DROP NOW** button. Next, start painting on the 2.5D illustration of the 3D model, refer to Figure 3-29. After painting on the visible surface, choose the **Projection Master** button again. Now, in the **Projection Master** dialog box, choose the **PICKUP NOW** button; the 2.5D illustration will be converted into a 3D model and shading will be applied to the surface that was visible while painting, refer to Figure 3-30.

Figure 3-28 *The* ***PICKUP NOW*** *button in the* ***Projection Master*** *dialog box*

Figure 3-29 *The 2.5D illustration of the model painted*

Figure 3-30 *Shading applied on the visible portion of the model*

Material

The **Material** check box enables you to paint materials on the surface of a ZTool. To do so, choose the **Material** check box from the **Projection Master** and then choose the **DROP NOW** button; a dialog box will be displayed. Choose the **Activate Polypainting** button from this dialog box; the 3D model will be converted into its 2.5D illustration. Now, you need to choose the materials from the flyout displayed on choosing the Current Material button from the left shelf, refer to Figure 3-31. Next, paint the desired materials on the visible area of the 2.5D illustration. After painting the materials on the model, choose the **Projection Master** button from the **Zplugin** palette; the **Projection Master** dialog box will be displayed again. Choose the **PICKUP NOW** button from this dialog box; the illustration will be again converted into a 3D model, containing the materials applied on the 2.5D illustration, refer to Figure 3-32.

Figure 3-31 The flyout displayed

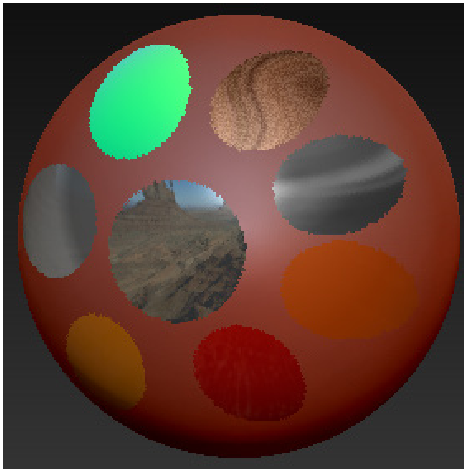

Figure 3-32 The 3D model with painted materials

Double Sided

The **Double Sided** check box is used to replicate the painting on the opposite side of the ZTool. Before selecting this check box, make sure that the ZTool has not been converted into a polymesh. Figure 3-33 shows colors painted on the 2D illustration of a sphere as the **Double Sided** check box is selected in the **Projection Master** dialog box and Figure 3-34 shows the painted colors replicated on the back side of the sphere.

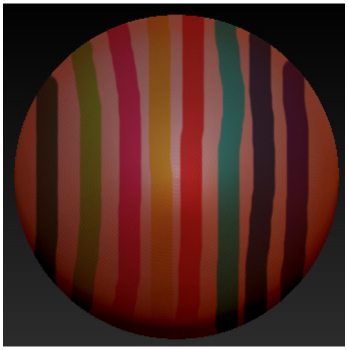

Figure 3-33 Different colors painted on the 2D illustration

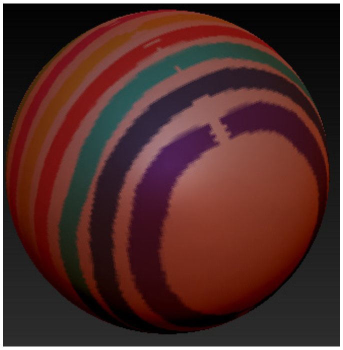

Figure 3-34 Painted colors replicated on the backside of the sphere

Fade

The **Fade** check box is used to fade the color in those areas of the model that are not perpendicular to the screen. By default, the **Fade** check box is selected. The effect of the **Fade** option will be less at the areas perpendicular to the screen. Figure 3-35 shows the 2D illustration of a painted sphere with the **Fade** check box selected in the **Projection Master** dialog box and Figure 3-36 shows the fade effect on the sphere.

*Figure 3-35 The 2D illustration of a sphere painted with the **Fade** check box selected*

*Figure 3-36 Effect after selecting the **Fade** check box on the sphere*

Deformation

The **Deformation** check box is used to sculpt finer details on the surface of a model, which cannot be achieved in the normal 3D mode. When the **Projection Master** button is chosen, new stroke types are added to the flyout displayed on choosing the Current Stroke button, refer to Figure 3-37. These strokes along with the alphas enable you to sculpt different patterns on the surface of the model. But before selecting this check box, you have to make sure that the primitive object has been converted into a polymesh and is subdivided. If you use this option on a primitive object, a message box will be displayed, as shown in Figure 3-38.

Figure 3-37 New stroke types added in the Stroke flyout

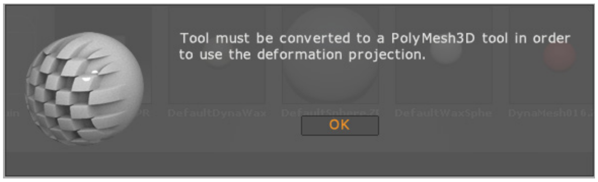

*Figure 3-38 The message displayed on selecting the **Deformation** check box for a primitive object*

The **Line** stroke enables you to sculpt straight lines on the surface of an object, which cannot be achieved in the normal 3D mode. The depth of the sculpting can be controlled by adjusting the value in the **Zadd** slider. On selecting the **Deformation** and **Color** check boxes together, you can add desired colors to the sculpted areas.

Figure 3-39 shows different patterns created on the surface of a sphere by using different strokes and alphas with the **Deformation** check box selected in the **Projection Master** dialog box.

The patterns created on the surface can be moved, scaled, or rotated by using the **Move**, **Scale**, and **Rotate** buttons, respectively. To move the last pattern created on the surface, choose the **Move** button; a gyro will be displayed. For moving the object upward, click on the pink arc and drag the cursor upward, and for moving the object toward left, click on the cyan arc and drag the cursor toward left, refer to Figure 3-40.

For sculpting using the **Deformation** check box, you can choose different types of 2.5D brushes available in the flyout that is displayed on choosing the Current Tool button located in the **Tool** palette, refer to Figure 3-41. This flyout contains about 32 different brushes. You can choose any of these brushes, depending on the sculpting to be done.

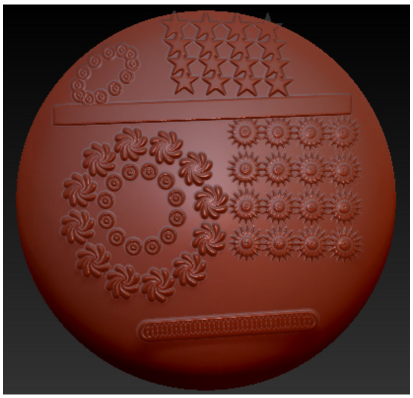

Figure 3-39 Different patterns created using different strokes and alphas

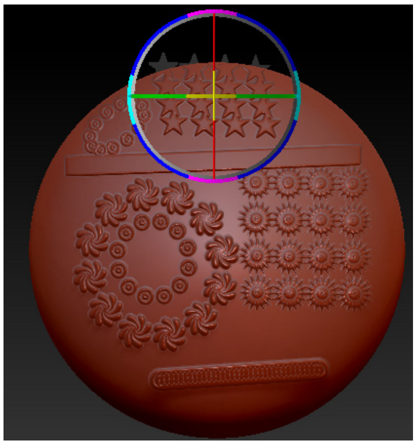

Figure 3-40 Moving a pattern toward left

***Figure 3-41** The 2.5D brushes in the **Tool** flyout*

Figure 3-42 shows different types of sculpting done on the sphere by using different 2.5D brushes.

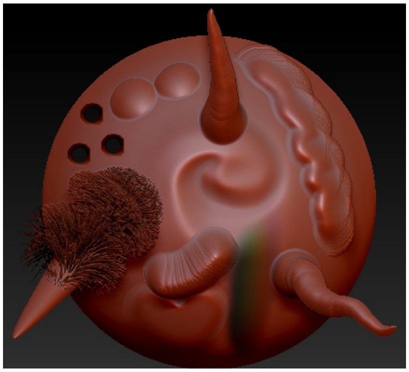

***Figure 3-42** Different types of sculpting done by using different 2.5D brushes*

Normalized

The **Normalized** check box is used along with the **Deformation** check box. On selecting this check box, the deformation occurred on the model will be projected at right angles to the surface of the ZTool. This check box is mostly used when the depth of deformation is significantly large. If this check box is not selected, the deformation will occur towards the screen facing the canvas.

DROP NOW

The **DROP NOW** button is used to convert a 3D model into a 2.5D illustration. After choosing this button, you cannot move, rotate, or scale the model.

PICKUP NOW

The **PICKUP NOW** button is used to pick up the sculpting and texturing pattern from the 2.5D illustration and transfer it to the 3D model. On choosing this button, the 2.5D illustration will be converted back to the 3D model.

TUTORIALS

Before you start the tutorials of this chapter, you need to browse to the *Documents* folder and then create a new folder with the name *ZBrushprojects*. In the *ZBrushprojects* folder, create another folder with the name *c03*.

Tutorial 1

In this tutorial, you will create a turtle shell using a sphere and different sculpting brushes. The final output of the model is shown in Figure 3-43. **(Expected time: 20 min)**

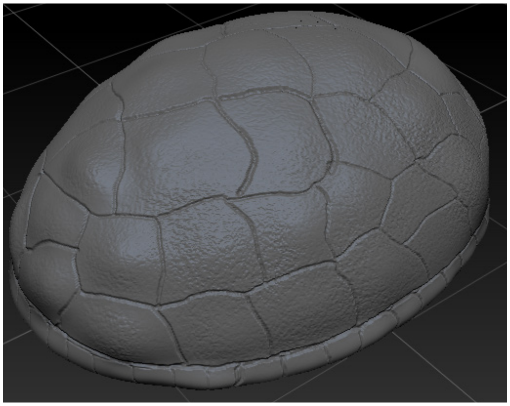

Figure 3-43 *The turtle shell*

The following steps are required to complete this tutorial:

a. Create the basic shape of the turtle shell.
b. Create divisions in the shell.
c. Add details to the shell.
d. Save the model.

Creating the Basic Shape of the Turtle Shell

In this section, you will create the basic shape of the turtle shell using the *DynaMesh_Sphere_3.ZPR* file located in the LightBox browser.

1. Before starting this tutorial, you have to initialize ZBrush to its default state. Choose the **Init ZBrush** button from the **Preferences** palette; ZBrush is initialized to its default state.

2. Double-click on **DynaMesh_Sphere_3.ZPR** in the **Project** tab of the LightBox browser, refer to Figure 3-44. The sphere is created on the canvas, as shown in Figure 3-45.

   In the **DynaMesh_Sphere_3.ZPR** file, the symmetry will be activated in the X-axis by default. As a result, the sculpting done will be mirrored along the X-axis.

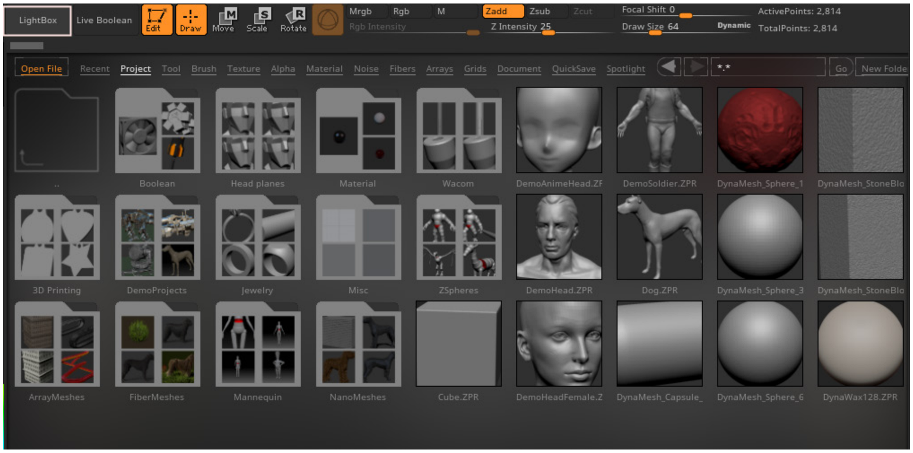

Figure 3-44 *The* ***DefaultSphere.ZPR*** *file chosen from the LightBox browser*

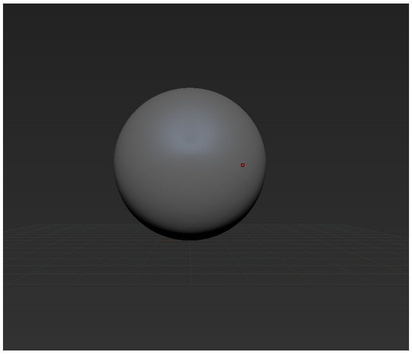

Figure 3-45 *The* ***DynaMesh_Sphere_3*** *model created on the canvas*

Note

If the LightBox browser does not appear on opening the ZBrush window, it can be displayed by choosing the ***LightBox*** *button located in the top shelf, refer to Figure 3-46.*

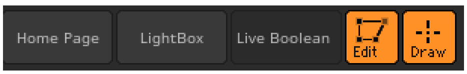

Figure 3-46 *The* ***LightBox*** *button in the top shelf*

3. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **ClipRect** brush from this flyout, as shown in Figure 3-47; a message box is displayed prompting you to press CTRL+SHIFT keys to activate this brush, refer to Figure 3-48. Choose the **OK** button to close this dialog box.

Figure 3-47 Choosing the **ClipRect** brush from the flyout

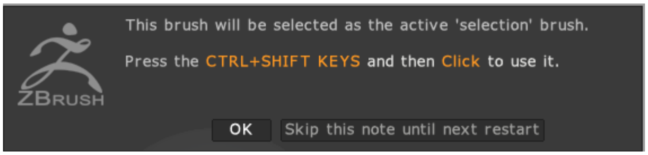

Figure 3-48 Message box displayed on choosing the **ClipRect** brush

4. Press CTRL+SHIFT keys and then press and hold the left mouse button. Next, drag the cursor over the sphere; a rectangular marquee selection appears. Select the upper half of the sphere, refer to Figure 3-49. Now, release the left mouse button; the lower half of the sphere is deleted, refer to Figure 3-50.

5. Expand the **Deformation** subpalette in the **Tool** palette, refer to Figure 3-51. You need to increase the size of the sphere along the Z-axis using the **Size** slider.

6. Deactivate the x and y options corresponding to the **Size** slider by choosing the **x** and **y** buttons located on the right side of the slider, refer to Figure 3-52.

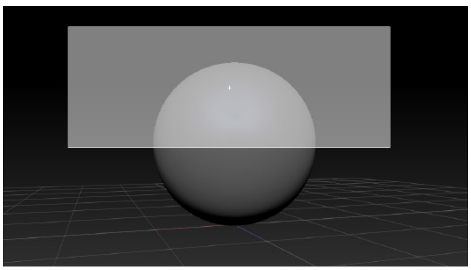

Figure 3-49 Upper part of sphere selected using the marquee selection

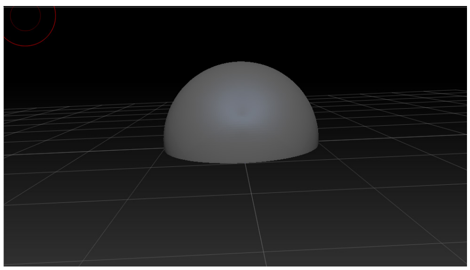

Figure 3-50 Lower half of the sphere deleted

7. Set the value of the **Size** slider to **20** by dragging the slider toward right; the sphere is elongated along the Z-axis. Alternatively, you can enter the value **20** in the edit box displayed on clicking on the slider, refer to Figure 3-53.

Figure 3-51 The ***Deformation*** *subpalette expanded*

Figure 3-52 The ***x*** *and* ***y*** *options deactivated*

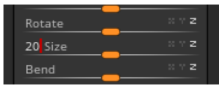

Figure 3-53 Value entered in the edit box

8. Expand the **SubTool** subpalette in the **Tool** palette. Next, in this subpalette, choose the **Rename** button; the **Please enter subtool title** window consisting of a text box is displayed. Enter **turtle shell** in this text box and press ENTER; the sphere primitive is renamed as *turtle shell*.

9. To view the elongated *turtle shell*, you need to switch to its top view. To do so, press and hold the left mouse button, and drag the cursor downward in the canvas area; the view is rotated and the top view of the *turtle shell* is displayed, refer to Figure 3-54.

10. Rotate the view of the canvas such that you can view the side view of *turtle shell*. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **Standard** brush from this flyout if not already chosen, as shown in Figure 3-55. Make sure that the **Zadd** button is chosen in the top shelf. Set the value of **Z Intensity** slider to **20** and the value of **Draw Size** slider to **60**, as shown in Figure 3-56.

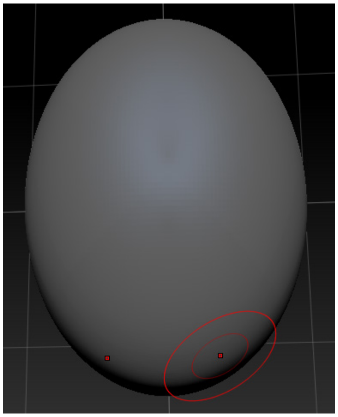

Figure 3-54 *Top view of the turtle shell*

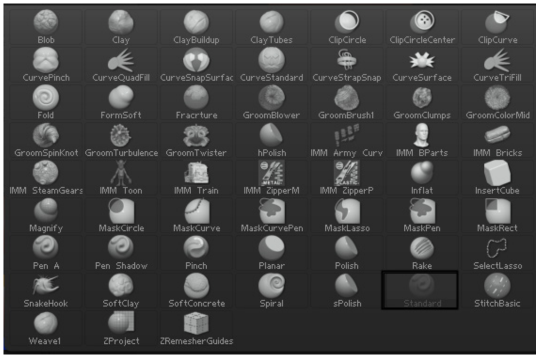

Figure 3-55 *The **Standard** brush chosen from the flyout*

11. Press and hold the left mouse button and drag the cursor on the lower part of the *turtle shell*; the depth is added to the lower part of the shell, as shown in Figure 3-57.

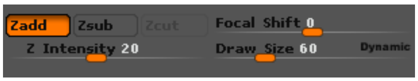

Figure 3-56 *Settings for the **Standard** brush for adding depth*

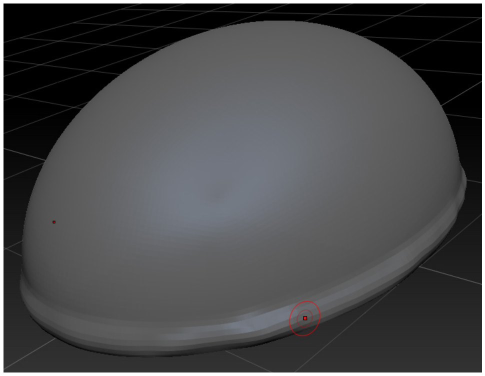

Figure 3-57 *Depth added to the lower part of the turtle shell using the **Standard** brush*

12. Expand the **Geometry** subpalette in the **Tool** palette. In this subpalette, click twice on the **Divide** button; the value of the **SDiv** slider becomes equal to **5**, refer to Figure 3-58, and the *turtle shell* becomes smoother.

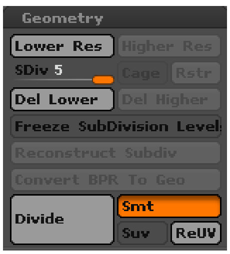

Figure 3-58 *Choosing the **Divide** button from the **Geometry** subpalette*

Creating Patterns on the Turtle Shell

In this section, you will create a pattern on the *turtle shell* using the **Standard** brush.

1. Make sure the **Standard** brush is chosen. Next, choose the **Zsub** button from the top shelf. Set the value of **Z Intensity** slider to **95** and the **Draw Size** slider to **8**, as shown in Figure 3-59.

2. Press the X key to deactivate symmetry in the X-axis.

3. Choose the Current Stroke button from the left shelf; a flyout containing different types of strokes is displayed. Choose the **FreeHand** stroke from this flyout.

4. Press and hold the left mouse button and drag the cursor on the upper part of the *turtle shell* to create a pattern, as shown in Figure 3-60.

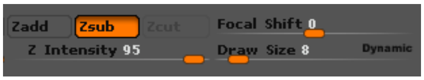

*Figure 3-59 Settings for the **Standard** brush for creating pattern*

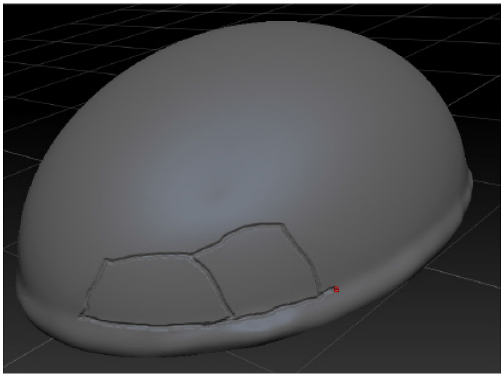

*Figure 3-60 A pattern created on the upper part of the turtle shell using the **Standard** brush*

5. Continue creating the pattern on the entire upper part of the *turtle shell* using the same settings of the brush, refer to Figure 3-61.

6. Press and hold the left mouse button and drag the cursor to create another pattern on the lower part of the *turtle shell* using the brush settings mentioned above, refer to Figure 3-62.

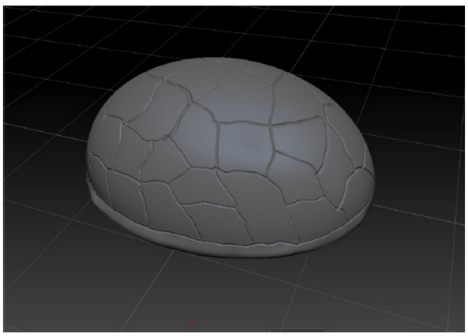

Figure 3-61 Pattern created on the entire upper part of the turtle shell

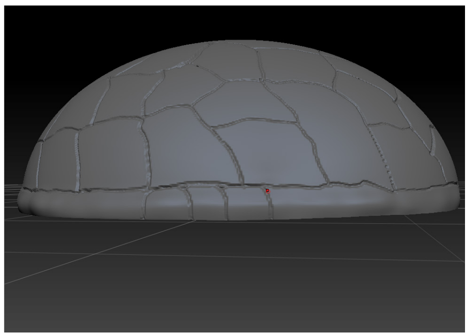

*Figure 3-62 Pattern created on the lower part of the turtle shell using the **Standard** brush*

7. Continue creating pattern on the lower part of the *turtle shell*, refer to Figure 3-63.

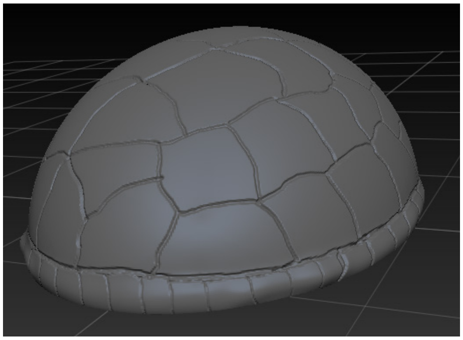

Figure 3-63 *Pattern created on the entire lower part of the turtle shell*

Adding Detail to the Turtle Shell

In this section, you will add detail to the *turtle shell* created in the previous section.

1. Make sure the **Standard** brush is chosen. Choose the **Zadd** button from the top shelf. Set the value of the **Z Intensity** slider to **8** and the **Draw Size** slider to **80**.

   Next, you will add depth to *turtle shell* to create a slightly uneven surface.

2. Press and hold the left mouse button and drag the cursor on the pattern created earlier; a depth is added to the pattern, refer to Figure 3-64.

3. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **Fracture** brush from this flyout, as shown in Figure 3-65.

4. Set the value of the **Z Intensity** slider to **15** and the **Draw Size** slider to **80**.

5. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose the **Alpha 07** alpha image from this flyout.

6. Press and hold the left mouse button and drag the cursor on the surface of the *turtle shell*; the final output is created, as shown in Figure 3-66.

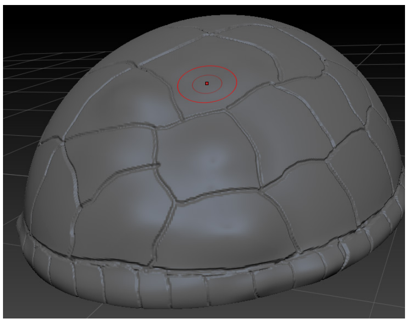

Figure 3-64 *Depth added to the pattern using the **Standard** brush*

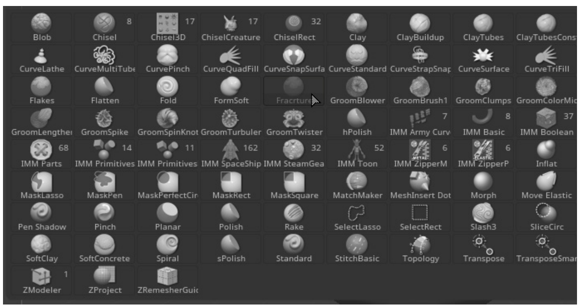

Figure 3-65 *The **Fracture** brush chosen*

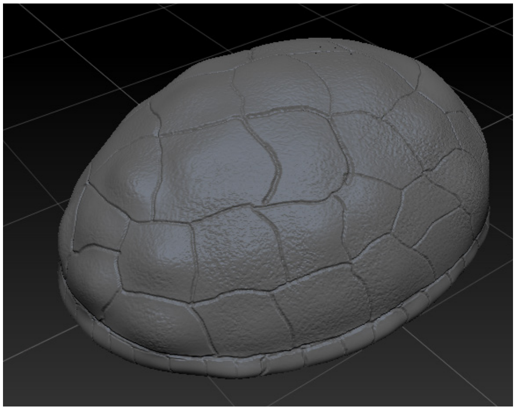

Figure 3-66 *The final output*

Saving the Model

In this section, you will save the file using the steps given next.

1. Choose the **Save As** button from the **Tool** palette; the **Save ZTool** dialog box is displayed. In this dialog box, browse to the location *\Documents\ZBrushprojects\c03*.

2. Enter **c03tut1** in the **File name** edit box and then choose the **Save** button.

Tutorial 2

In this tutorial, you will create a flower vase using radial symmetry. The final output of the flower vase is shown in Figure 3-67. **(Expected time: 20 min)**

Figure 3-67 *The flower vase*

The following steps are required to complete this tutorial:

a. Create the basic shape of flower vase.
b. Add decorative patterns to the flower vase.
c. Save the model.

Creating the Basic Shape of the Flower Vase

In this section, you will create the basic shape of a flower vase using the cylinder primitive and radial symmetry.

1. Choose the **Init ZBrush** button from the **Preferences** palette; ZBrush is initialized to its default state.

2. Choose the Current Tool button from the **Tool** palette; a flyout is displayed. Choose the **Cylinder3D** primitive from this flyout, refer to Figure 3-68.

***Figure 3-68 Cylinder3D** chosen from the flyout*

3. Press and hold the left mouse button and drag the cursor on the canvas; a cylinder is created in the canvas, as shown in Figure 3-69.

4. Choose the **Edit** button from the top shelf, as shown in Figure 3-70.

5. Press and hold the left mouse button and drag the cursor upward in such a way that the cylinder is rotated and stands vertical, as shown in Figure 3-71. While dragging the cursor, press the SHIFT key; the cylinder is snapped at a right angle to the canvas.

6. Choose the **Make PolyMesh3D** button from the **Tool** palette to convert the primitive cylinder into a polymesh, refer to Figure 3-72.

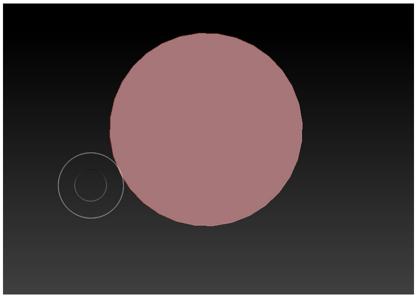

Figure 3-69 The cylinder created in the canvas

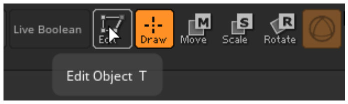

*Figure 3-70 The **Edit** button chosen from the top shelf*

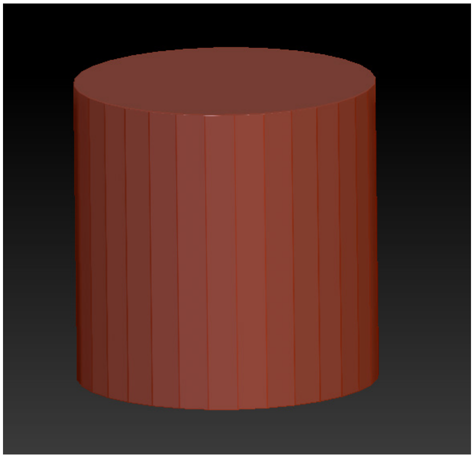

Figure 3-71 The cylinder rotated

After converting the cylinder into a polymesh, you need to subdivide the geometry such that the number of polygons in the cylinder increases making the cylinder smoother.

7. Expand the **Geometry** subpalette in the **Tool** palette. In this subpalette, click four times on the **Divide** button; the value of **SDiv** slider becomes equal to **5**, refer to Figure 3-73.

8. Expand the **SubTool** subpalette in the **Tool** palette. Next, in this subpalette, choose the **Rename** button; the **Please enter subtool title** window consisting of a text box is displayed. Enter **flower vase** in this text box and press ENTER; the sphere primitive is renamed as *flower vase*.

9. Expand the **Deformation** subpalette in the **Tool** palette.

   You need to increase the height of the sphere along the Z-axis using the **Size** slider.

10. Deactivate the x and y options corresponding to the **Size** slider by choosing the **x** and **y** buttons located on the right side of the slider.

*Figure 3-72 The **Make PolyMesh3D** button chosen from the **Tool** palette*

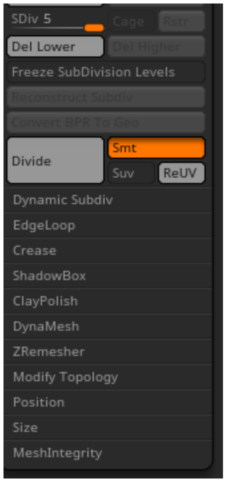

*Figure 3-73 Choosing the **Divide** button from the **Geometry** subpalette*

11. Set the value of the **Size** slider to **20** by dragging the slider toward right; the height of the cylinder increases along the Z-axis, refer to Figure 3-74. Alternatively, you can enter the value **20** in the edit box displayed on clicking on the slider.

12. Expand the **Transform** palette. In this palette, choose the **Activate Symmetry** button, refer to Figure 3-75. Next, choose the **(R)** button; the **RadialCount** slider is activated. By default, the **>X<** button is chosen. To deactivate this button, choose it again. Next, choose the **>Z<** button; the radial symmetry in the Z-axis is activated. In the **RadialCount** edit box, enter the value **40**; the radial symmetry is activated in the Z-axis in canvas, refer to Figure 3-76.

The **Radial Count** edit box is displayed when you click on the **RadialCount** slider.

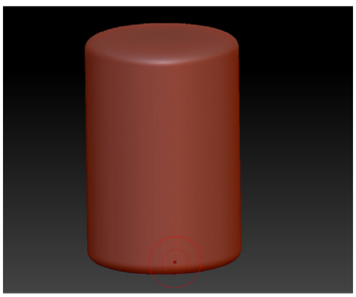

Figure 3-74 Height of the cylinder increased

*Figure 3-75 The **Activate Symmetry** button chosen in the **Transform** palette*

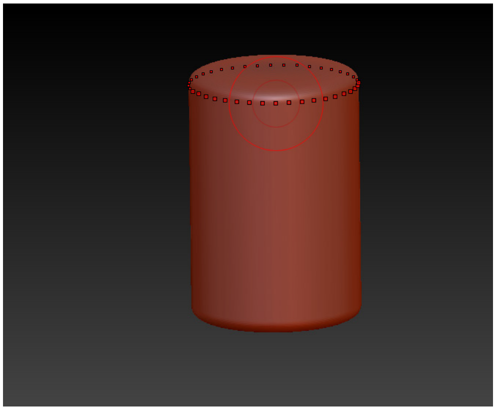

Figure 3-76 *Radial symmetry activated in the Z-axis*

13. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **Move** brush from this flyout, as shown in Figure 3-77.

14. Set the value of the **Draw Size** slider to **450** by entering the value in the edit box or by moving the **Draw Size** slider toward right, refer to Figure 3-78.

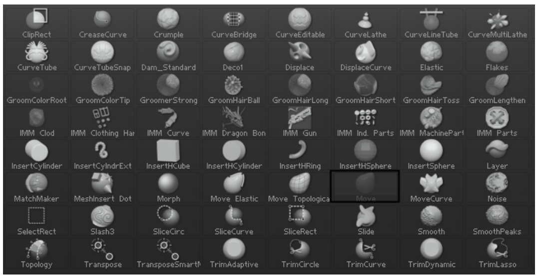

Figure 3-77 *The **Move** brush chosen*

Figure 3-78 *The value of the **Draw Size** slider set to **450***

15. Press and hold the left mouse button, drag the cursor inward, and then drag it to the upward direction to form a new shape, as shown in Figure 3-79.

16. Set the value of the **Draw Size** slider to **550** so that the size of the **Move** brush increases. After increasing the size of the brush, move the upper part of the *flower vase* inward to create a neck for the *flower vase*, as shown in Figure 3-80.

17. Set the value of the **Draw Size** slider to **580** and then, using the **Move** brush, give a round shape to the *flower vase*, as shown in Figure 3-81.

Figure 3-79 *Top area of the cylinder dragged upward*

Figure 3-80 *Neck of the flower vase formed by using the* ***Move*** *brush*

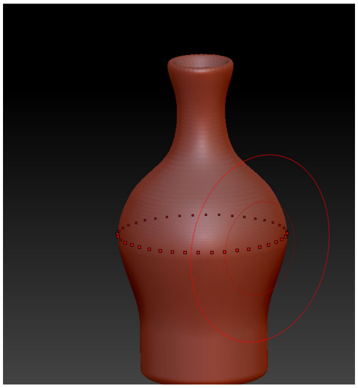

Figure 3-81 *Round shape given to the flower vase*

18. Refine the shape of the *flower vase* using the **Move** brush, as shown in Figure 3-82.

Figure 3-82 *Shape of the flower vase refined by using the* ***Move*** *brush*

Adding Decorative Patterns to the Flower Vase

In this section, you will add decorative patterns to the *flower vase* using different alpha images.

1. Expand the **Geometry** subpalette in the **Tool** palette. In this subpalette, click twice on the **Divide** button; the value of the **SDiv** slider becomes equal to **7**.

2. In the **Transform** palette, enter the value **18** in the **RadialCount** edit box.

3. Set the value of the **Draw Size** slider in the top shelf to **75**.

4. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **Layer** brush from this flyout.

5. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose the **Alpha 28** alpha image from this flyout, refer to Figure 3-83.

Figure 3-83 *The* ***Alpha 28*** *alpha image chosen from the flyout*

6. Choose the Current Stroke button from the left shelf; a flyout containing different types of strokes is displayed. Choose the **FreeHand** stroke from this flyout, refer to Figure 3-84. Create a pattern on the top of the neck area of the *flower vase* using the **Layer** brush, as shown in Figure 3-85.

Figure 3-84 *The **FreeHand** stroke chosen from the flyout*

Figure 3-85 *Pattern created on the neck area*

7. Similarly, create the same pattern on the other parts of the *flower vase*, as shown in Figure 3-86.

8. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **Standard** brush from this flyout.

9. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose **Alpha 34** from this flyout, refer to Figure 3-87.

10. Choose the **Zsub** button from the top shelf and set the value of the **Z Intensity** slider to **20**.

11. Choose the Current Stroke button from the left shelf; a flyout containing different types of strokes is displayed. Choose the **DargRect** stroke from this flyout. Set the value **Draw Size** slider to **167** and create a pattern using **Alpha 34**, as shown in Figure 3-88.

Figure 3-86 *Pattern created on the other parts of the flower vase*

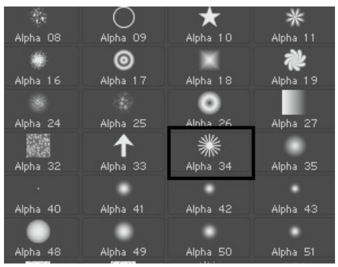

Figure 3-87 ***Alpha 34*** *chosen from the Alpha palette*

12. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose **Alpha 05** from this flyout, refer to Figure 3-89. Next, set the value of the **Draw Size** slider to **40**. Create a pattern on the previously applied pattern, refer to Figure 3-90.

Figure 3-88 *The pattern created using* ***Alpha 34***

Figure 3-89 Alpha 05 *chosen from the flyout*

13. Create different patterns on the *flower vase* using different alpha images so that the final model is created, as shown in Figure 3-91.

Figure 3-90 *The pattern created using* ***Alpha 05***

Figure 3-91 *The final model of the flower vase*

Saving the Model

In this section, you will save the file using the steps given next.

1. Choose the **Save As** button from the **Tool** palette; the **Save ZTool** dialog box is displayed. In this dialog box, browse to the location *\Documents\ZBrushprojects\c03*.

2. Enter **c03tut2** in the **File name** edit box and then choose the **Save** button.

Tutorial 3

In this tutorial, you will create an ornamental door using different types of alpha images and the **Projection Master** dialog box. The final output of the model is shown in Figure 3-92.

(Expected time: 30 min)

Figure 3-92 *Final model of the door*

The following steps are required to complete this tutorial:

a. Create the basic shape of door.
b. Add details to the door using the **Projection Master**.
c. Add details to the door outside.
d. Save the model.

Creating the Basic Shape of Door

In this section, you will create the basic shape of the door using a plane.

1. Choose the **Init ZBrush** button from the **Preferences** palette; the message box is displayed. Choose the **Yes** button from the message box; ZBrush is initialized to its default state.

2. Choose the Current Tool button from the **Tool** palette; a flyout is displayed. Choose the **Plane3D** primitive from this flyout. Press and hold the left mouse button and drag the cursor on the canvas; a plane is created in the canvas, refer to Figure 3-93. Next, choose the **Edit** button from the top shelf to switch to the edit mode.

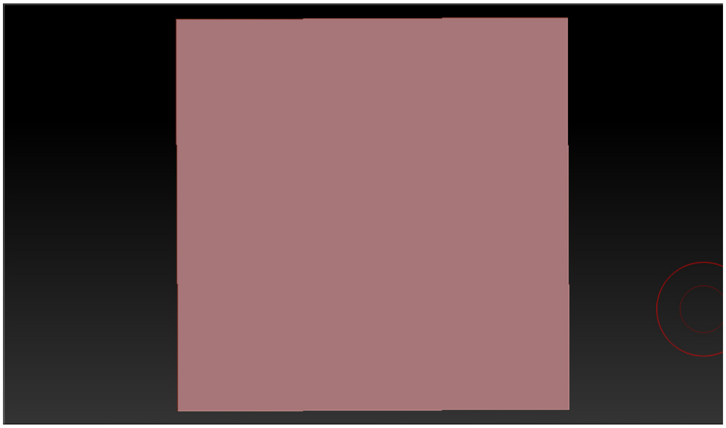

Figure 3-93 *The **Plane3D** primitive created on the canvas*

3. Expand the **Initialize** subpalette in the **Tool** palette. In this subpalette, set the value of **H Radius** slider to **66**, refer to Figure 3-94; the shape of plane changes, as shown in Figure 3-95.

4. Choose the **Make PolyMesh3D** button from the **Tool** palette to convert the primitive into a polymesh.

   After converting the plane into a polymesh, you need to subdivide the geometry so that the number of polygons in the plane increases, thus making it smoother.

5. Set the value of the **SDiv** slider in the **Geometry** subpalette to **5** by clicking on the **Divide** button four times.

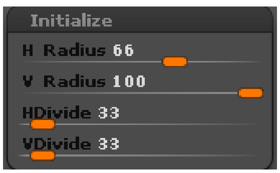

Figure 3-94 *The value of **H Radius** slider changed to **66***

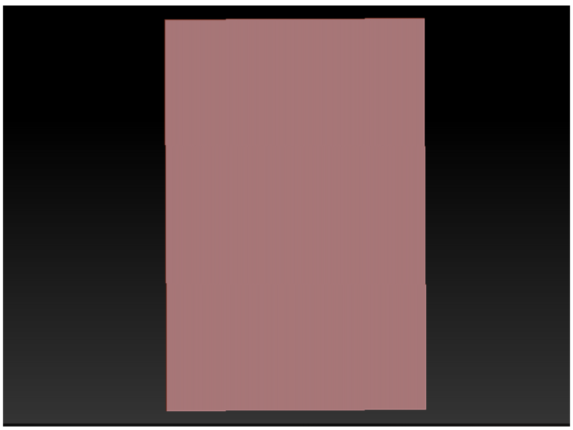

Figure 3-95 *Shape of the plane changed*

6. Expand the **SubTool** subpalette in the **Tool** palette. Next, in this subpalette, choose the **Rename** button; the **Please enter subtool title** window consisting of a text box is displayed. Enter **door** in this text box and press ENTER; the sphere primitive is renamed as *door*.

Adding Details to the Door Using the Projection Master

In this section, you will add details to *door* using the **Projection Master** dialog box.

1. Choose the **Projection Master** button from the **Zplugin** palette; the **Projection Master** dialog box is displayed.

Note

*When the **Projection Master** dialog box is displayed, choose the **Reset** button to initialize different settings in this dialog box. If this button is not chosen, **Projection Master** will retain the last used settings.*

2. Select the **Deformation** check box from the **Projection Master** dialog box and make sure other check boxes are not selected, refer to Figure 3-96. Next, choose the **DROP NOW** button from this dialog box; a message box is displayed. Choose the **Activate Polypainting** button from this message box; the 3D plane is converted into its 2.5D illustration.

3. Choose the Current Stroke button from the left shelf; a flyout containing different types of strokes is displayed. Choose the **Line** stroke from this flyout, refer to Figure 3-97.

*Figure 3-96 The **Deformation** check box selected*

*Figure 3-97 The **Line** stroke chosen in the flyout*

4. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose the **Alpha 28** alpha image from this flyout.

5. Make sure that the Zadd button is chosen in the top shelf. Next, set the value of the **Draw Size** slider to **10**. Press and hold the left mouse button and draw a line on the left side of the *door*, as shown in Figure 3-98. While drawing the line, press and hold the SHIFT key to create straight strokes.

6. Draw two more lines on the top and right side of the *door* to create the frame, as shown in Figure 3-99.

Figure 3-98 *Line drawn on the left side of the door*

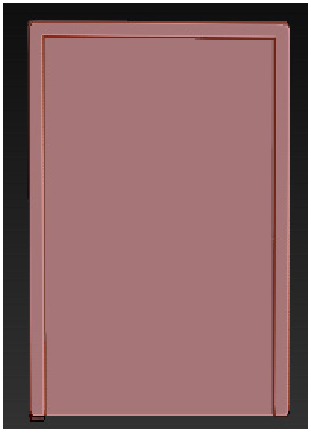

Figure 3-99 *Frame created for the door*

7. Create another frame for the door, as shown in Figure 3-100.

8. Choose the Current Stroke button from the left shelf; a flyout containing different types of strokes is displayed. Choose the **LineII** stroke from this flyout.

9. Set the value of the **Draw Size** slider to **15** and the value of the **Z Intensity** slider to **10**. Press and hold the left mouse button and draw a vertical line in the middle of the *door* to create a vertical partition, as shown in Figure 3-101.

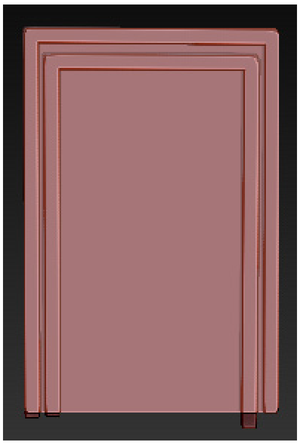

Figure 3-100 *Another frame created for the door*

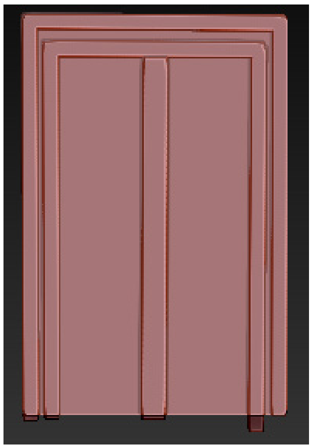

Figure 3-101 *A vertical partition created in the middle of the door*

10. Draw a horizontal line in the middle of the *door* to create a horizontal partition, as shown in Figure 3-102.

11. Choose the **Zsub** button from the top shelf. Next, set the value of the **Draw Size** slider to **2**. Press and hold the left mouse button, and draw vertical and horizontal lines on the partitions, as shown in Figure 3-103.

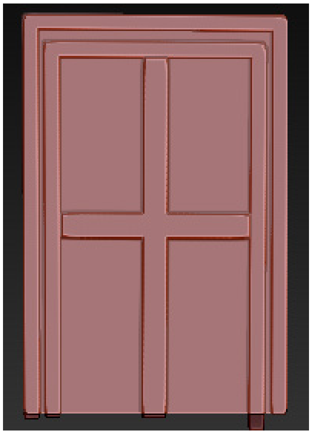

Figure 3-102 *A horizontal partition created in the middle of the door*

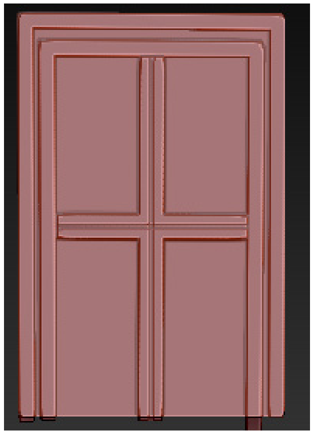

Figure 3-103 *The vertical and horizontal lines created on the partitions*

12. Choose the **Projection Master** button from the top shelf, the **Projection Master** dialog box is displayed. Choose the **PICKUP NOW** button from this dialog box; the 3D model is again displayed in the canvas.

Adding Details to the Door Outside

In this section, you will add decorative patterns to the door outside using different alpha images and the **Standard** brush.

1. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **Standard** brush from this flyout, if not already chosen.

2. Make sure the **Zadd** button is chosen in the top shelf. Next, set the parameters in the top shelf as given below:

   Z Intensity: **100** Draw Size: **17**

3. Choose the Current Stroke button from the left shelf; a flyout containing different types of strokes is displayed. Choose the **DragRect** stroke from this flyout.

4. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose the **Alpha 52** alpha image from this flyout, refer to Figure 3-104. This alpha will help you to create a knob for the door.

5. Press and hold the left mouse button and drag the cursor in the middle of the *door* to create a knob, as shown in Figure 3-105.

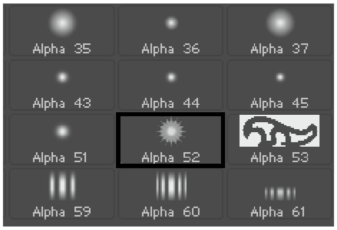

Figure 3-104 Alpha 52 *chosen in the flyout*

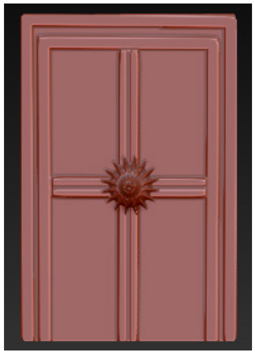

Figure 3-105 *Knob created for the door*

6. Expand the **Transform** palette. In this palette, choose the **Activate Symmetry** button; the **>X<** button is chosen by default. Next, choose the **>Y<** button, refer to Figure 3-106.

7. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose the **Alpha 19** alpha image from this flyout.

8. Make sure the **Zadd** button is chosen in the top shelf. Next, set the parameters in top shelf as given below:

   Z Intensity: **40** Draw Size: **35**

9. Press and hold the left mouse button and drag the cursor to create a pattern on any panel of the *door*; the pattern is replicated on the remaining panels, refer to Figure 3-107.

10. Choose the Current Alpha button from the left shelf; a flyout containing different alpha images is displayed. Choose the **Alpha 05** alpha image from this flyout. Next, press and hold the left mouse button and drag the cursor to create a border for the existing pattern; the final door model is created, as shown in Figure 3-108.

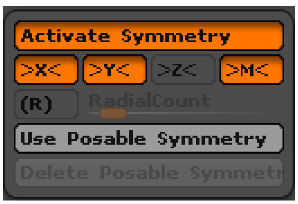

Figure 3-106 *Symmetry activated along X and Y axes*

Figure 3-107 Alpha 19 *applied to the door panels*

Figure 3-108 *Final model of the door*

Saving the Model

After completing the tutorial, you will save the file using the steps given next.

1. Choose the **Save As** button from the **Tool** palette, the **Save ZTool** dialog box is displayed. In this dialog box, browse to the location *\Documents\ZBrushprojects\c03*.

2. Enter **c03tut3** in the **File name** edit box and then choose the **Save** button.

Tutorial 4

In this tutorial, you will create a sailing boat using the **ZMODELER** brush. The final output of the model is shown in Figure 3-109. **(Expected time: 30 min)**

The following steps are required to complete this tutorial:

a. Create the basic shape of the boat.
b. Adding details to the boat using the ZModeler brush.
c. Creating the sail cloth of the boat.
d. Designing the boat
e. Save the model.

Creating the Basic Shape of the Boat

In this section, you will create the basic shape of the boat using a sphere.

1. Choose the **Init ZBrush** button from the **Preferences** palette; the message box is displayed. Choose the **Yes** button from the message box; ZBrush is initialized to its default state.

2. Choose the Current Tool button from the **Tool** palette; a flyout is displayed. Choose the **Sphere3D** primitive from this flyout. Press and hold the left mouse button and drag the cursor on the canvas; a sphere is created in the canvas, refer to Figure 3-110. Next, choose the **Edit** button from the top shelf to switch to the edit mode.

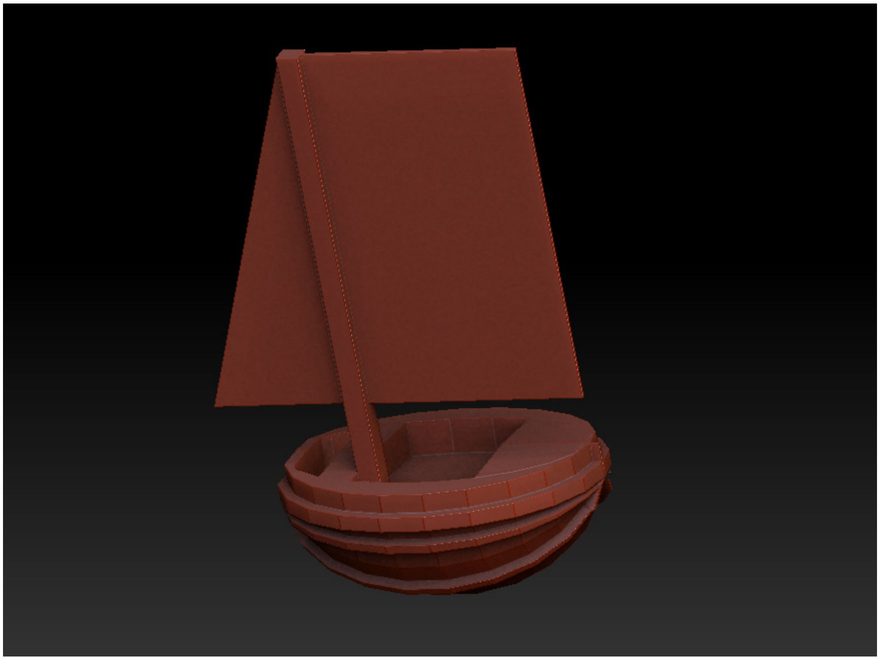

Figure 3-109 *The boat model*

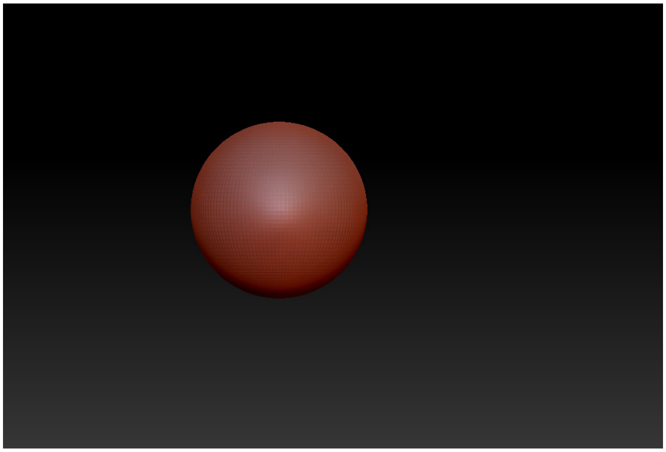

Figure 3-110 *The **Sphere3D** primitive created on the canvas*

3. Expand the **Initialize** subpalette in the **Tool** palette. In this subpalette, set the value of the **HDivide** slider to **10** and the **VDivide** slider to **12**, refer to Figure 3-94; the shape of the sphere changes, as shown in Figure 3-111.

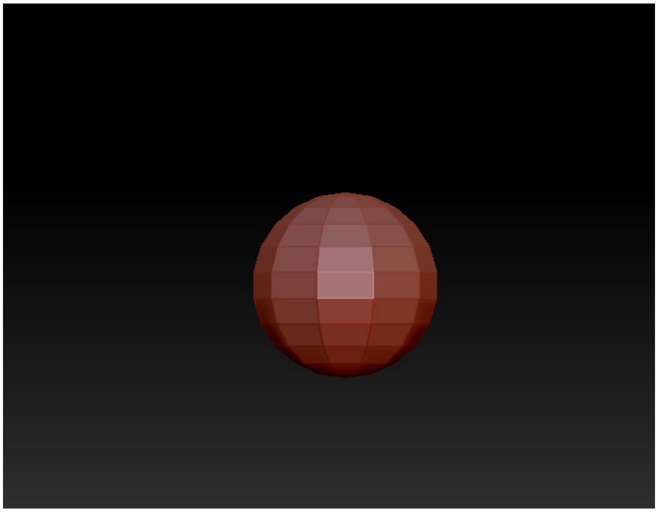

Figure 3-111 *Shape of the sphere changed*

4. In the **Initialize** subpalette of the **Tool** palette, set the value of the **X Size** slider to **36** and the **Coverage** slider to **180**. Figure 3-112 shows the changed shape of sphere.

5. Choose the **PolyF** button from the right shelf; the segments of the sphere are displayed.

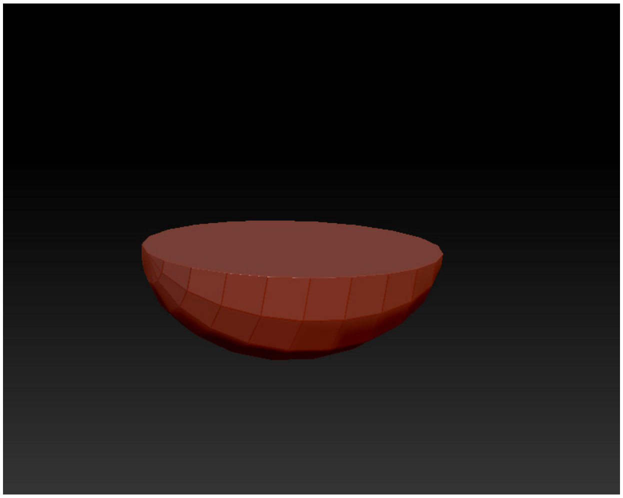

Figure 3-112 *Shape of the sphere changed*

Adding Details to the Boat Using the ZModeler Brush

In this section, you will add detail to the boat using **ZModeler** brush.

1. Choose the **Make PolyMesh3D** button from the **Tool** palette to convert the primitive into a polymesh.

2. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes is displayed. Choose the **ZModeler** brush from this flyout.

3. Hover the cursor over the edge and click; the edge loop is created, as shown in Figure 3-113.

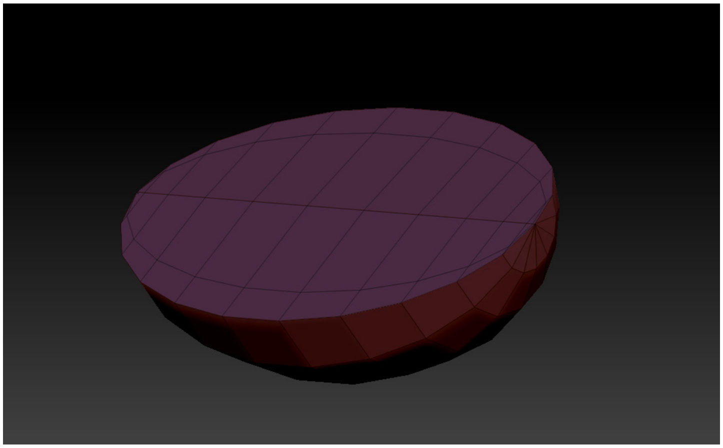

Figure 3-113 *The edge loop created*

4. Hover the cursor over the bottom-most point, hold the ALT key and click; the point is deleted and the shape of the sphere is changed, as shown in Figure 3-114.

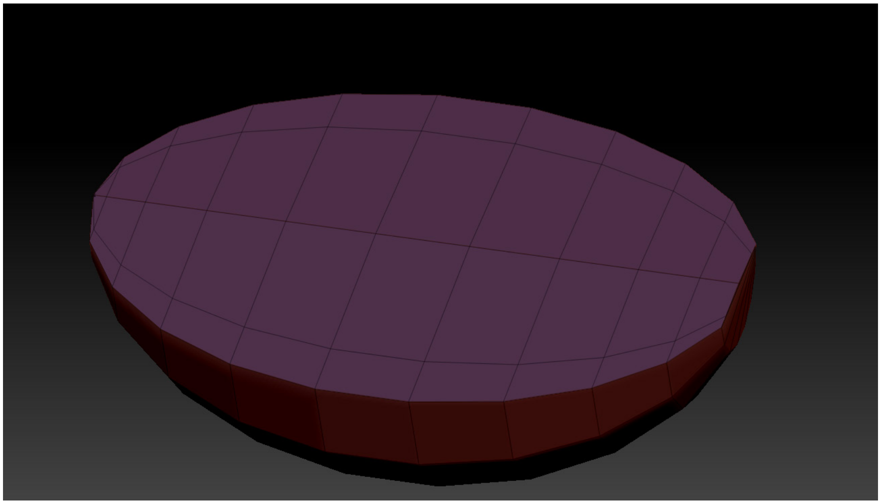

Figure 3-114 *The point deleted*

Next, you will extrude the polygon of sphere.

5. Click on the bottom center of the edge; an edge loop is created, as shown in Figure 3-115.

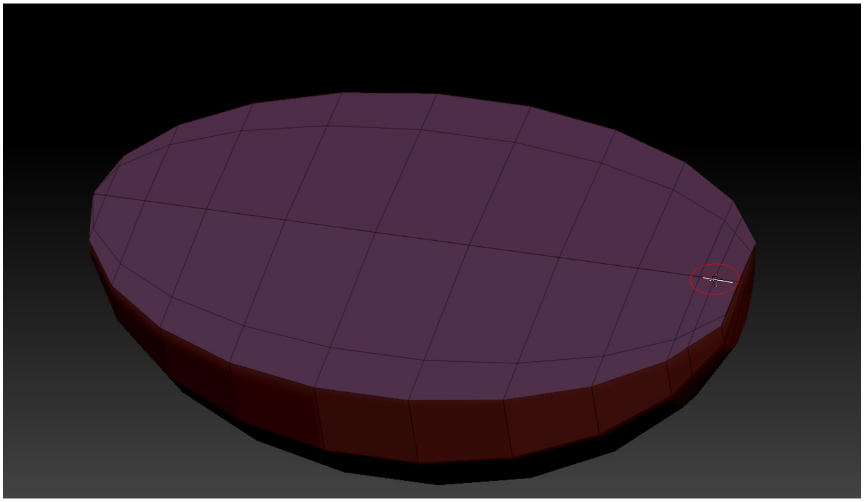

Figure 3-115 The edge loop created

6. Hover the cursor on the polygon of the sphere and then right-click; the **ZMODELER** window is displayed. Next, choose **Extrude** from the **Polygon Actions** area. Make sure the **A Single Poly** option is chosen in the **Target** area. Expand the **SubTool** subpalette of the **Tool** palette and choose the **Rename** button; the **Please enter subtool tile** text box is displayed. Now, enter **boat** in the text box.

7. Hold the ALT key, select the corners of the polygon of the boat, and move the corners upward, as shown in Figure 3-116.

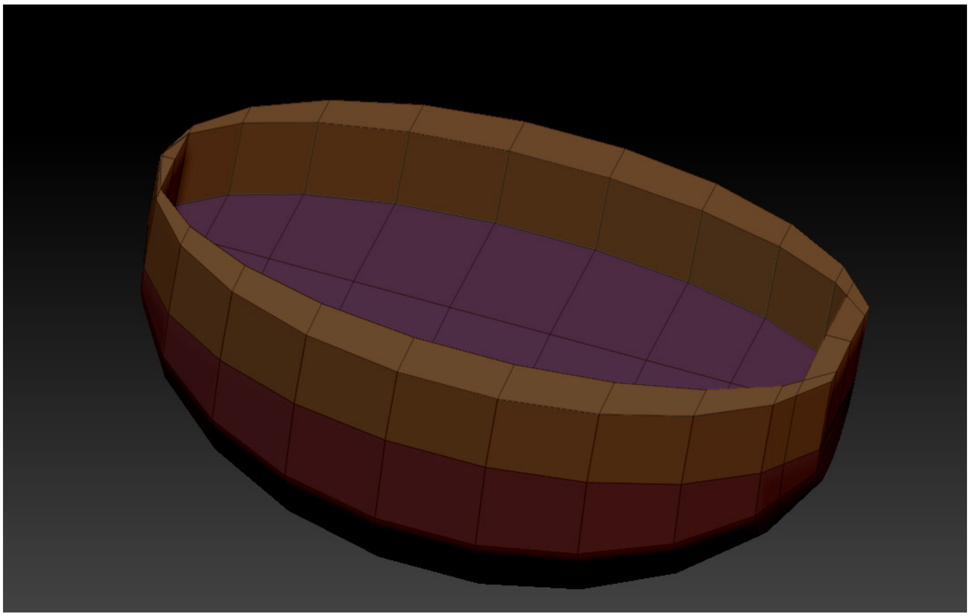

Figure 3-116 The extruded polygon

8. Select the polygons using the ALT key, as shown in Figure 3-117, and drag the cursor upward; the polygons are extruded, as shown in Figure 3-118 .

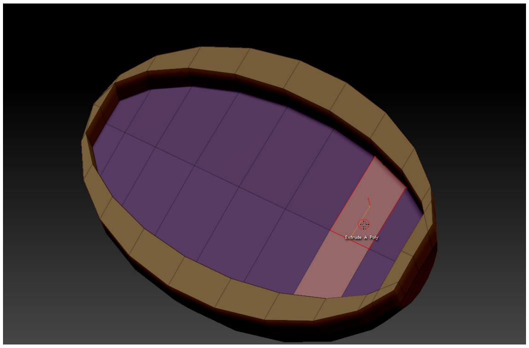

Figure 3-117 *The selected polygons*

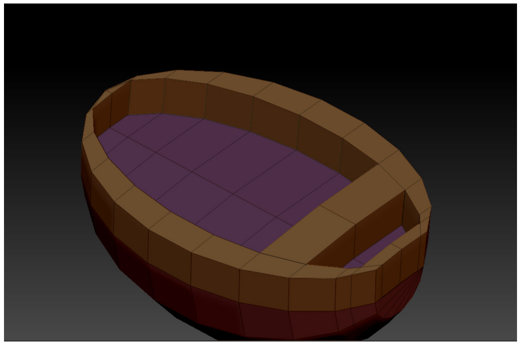

Figure 3-118 *The polygons extruded*

9. Select the polygons of the *boat* and move them upward; the polygons are extruded, as shown in Figure 3-119.

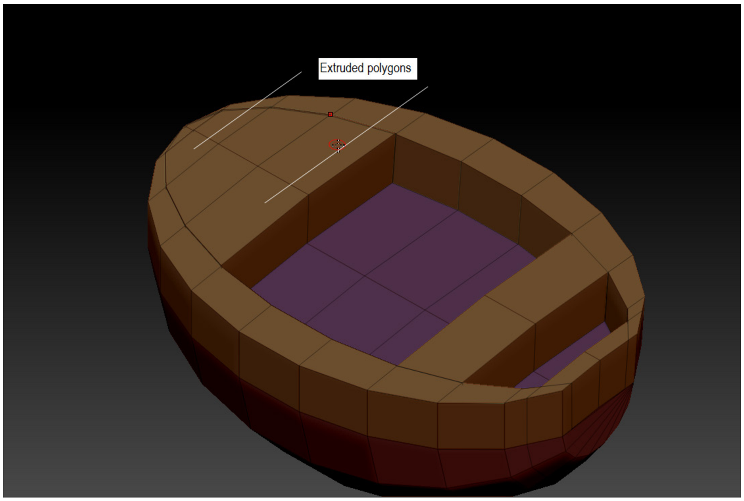

Figure 3-119 *The extruded polygons*

Next, to smoothen the mesh, add edges in the sphere.

10. Hover the cursor on the edge and click; the edge loop is added, as shown in Figure 3-120. Similarly, add more edges on the boat model, as shown in Figure 3-121.

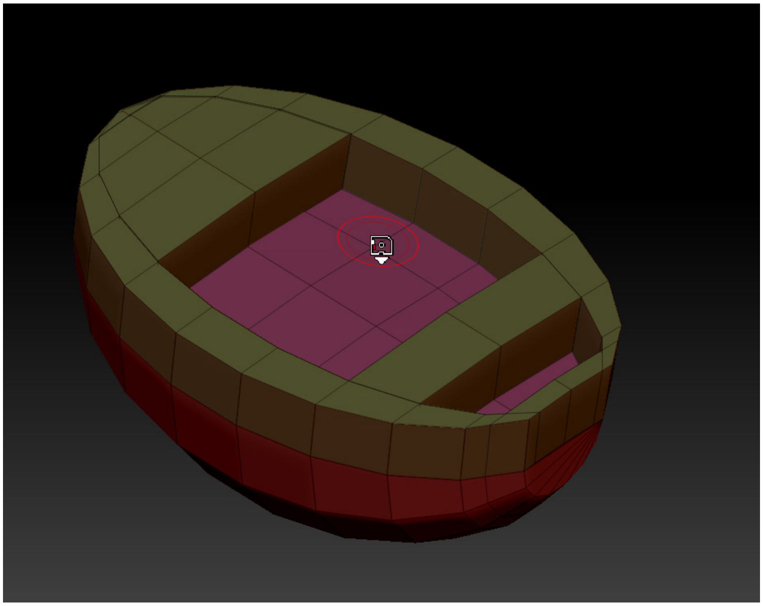

Figure 3-120 *The edge loop added*

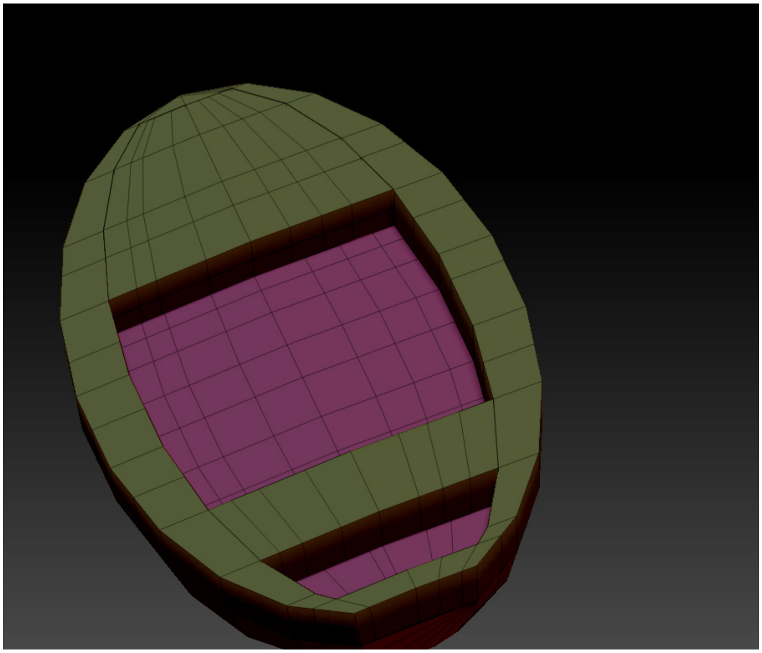

Figure 3-121 *The edge loops created*

11. Hover the cursor on any polygon of the *boat* and then right-click; the **ZMODELER** window is displayed. In this window, make sure the **Extrude** option in the **POLYGON ACTIONS** area and the **A Single Poly** option in the **Target** area is chosen.

12. Select the polygon of the sphere, as shown in Figure 3-122 and drag the cursor upward; the polygon is extruded, as shown in Figure 3-123 .

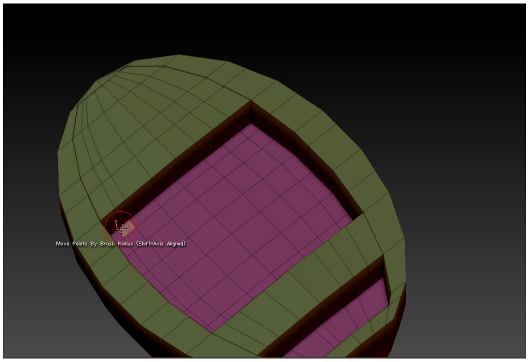

Figure 3-122 *Selected polygon*

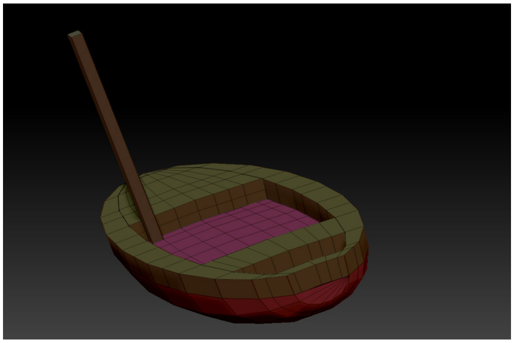

Figure 3-123 *The extruded polygon*

Creating the Sail Cloth of the Boat

In this section, you will create the sail cloth of the boat.

1. Hover the cursor on the edge and click; the edge loop is added, as shown in Figure 3-124. Similarly add more edges, as shown in Figure 3-125.

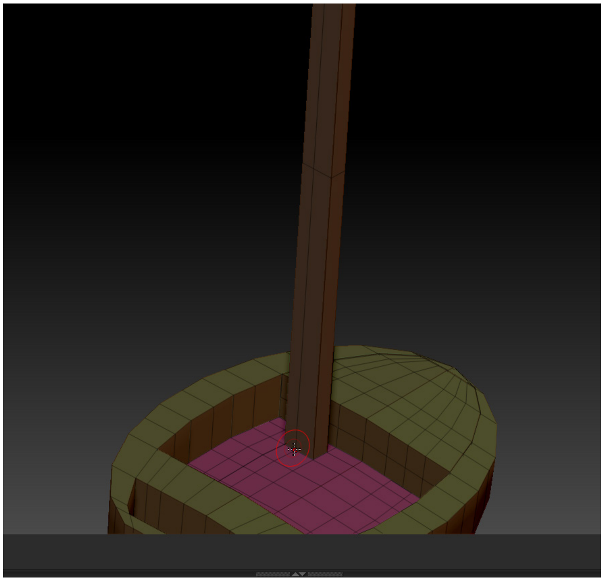

Figure 3-124 *The edge loop added*

2. Hover the cursor on the polygon of the boat model and then right-click; the **ZMODELER** window is displayed. In this window, make sure the **Extrude** option in the **POLYGON ACTIONS** area and the **A Single Poly** option in the **Target** area is chosen.

3. Select the polygon of the *boat*, as shown in Figure 3-126, and extrude. Similarly, extrude the polygon on the opposite side, as shown in Figure 3-127.

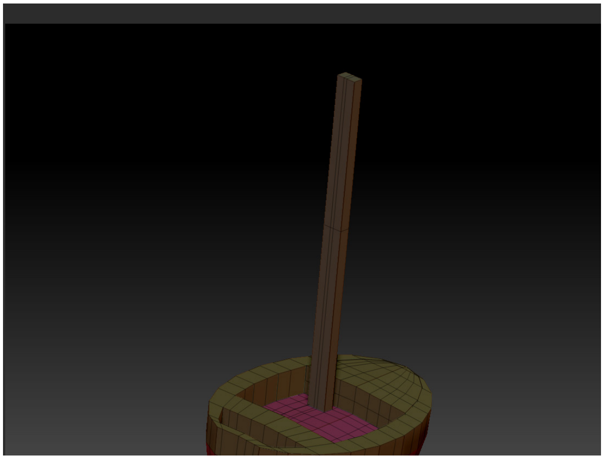

Figure 3-125 *Added edge loops*

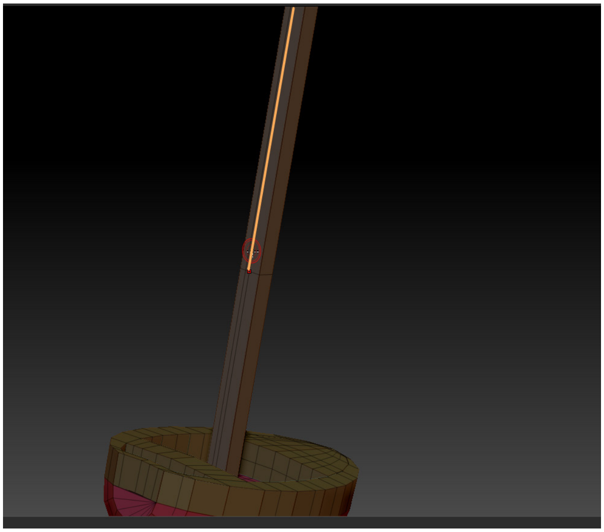

Figure 3-126 *Selected polygon*

4. Hover the cursor on the point of the sailing cloth and right-click; the **ZMODELER** window is displayed. Next, choose the **Delete** option from the **POINT ACTION** area, as shown in Figure 3-128.

5. Hover the cursor on the point and click; the point is deleted and the shape of the sail cloth is changed. Similarly, delete the opposite point. Figure 3-129 shows the deleted points of the sail cloth.

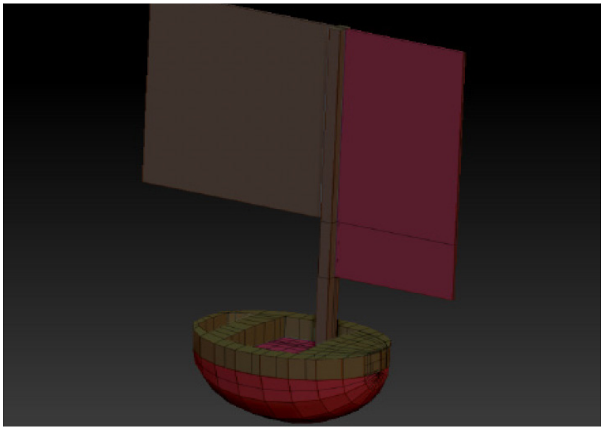

Figure 3-127 *Polygons extruded*

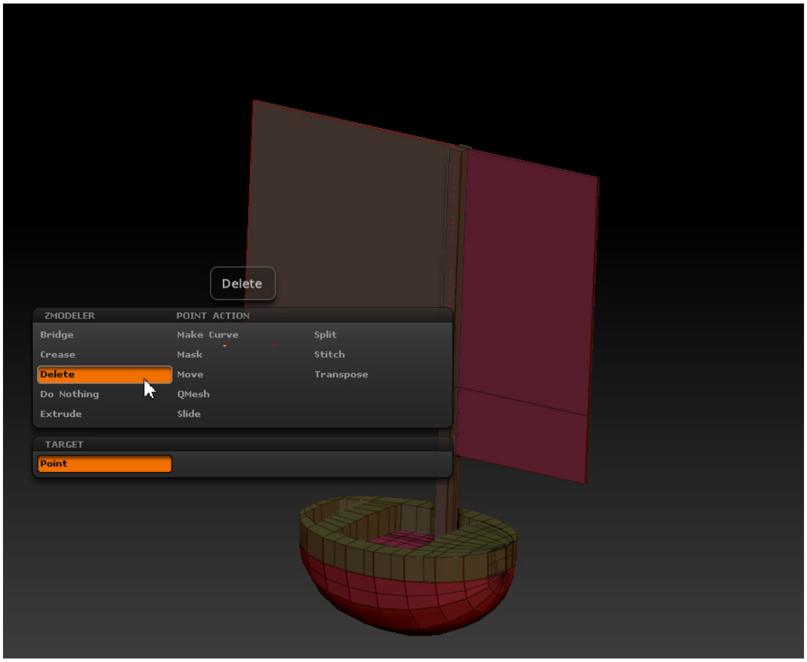

Figure 3-128 *Choosing the* ***Delete*** *option*

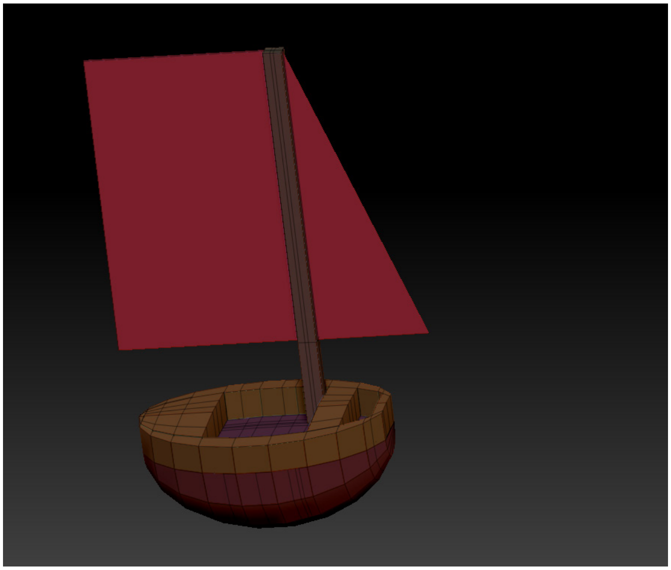

Figure 3-129 Deleted points

Designing the Boat

In this section, you will design the boat.

1. Hover the cursor over the boat edge and then right-click; the **ZMODELER** window is displayed. Next, make sure the **Insert** option in the **EDGE ACTIONS** area and the **Single EdgeLoop** option in the **TARGET** area is chosen. Now, click on the edge of the boat; the edge loop is created in the *boat*, as shown in Figure 3-130.

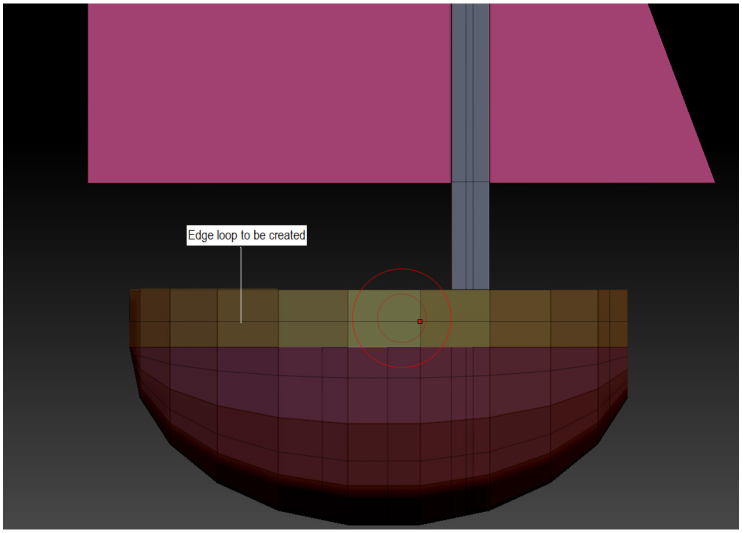

Figure 3-130 Edge loop is created

2. Similarly, add more edges in the *boat*, as shown in Figure 3-131.

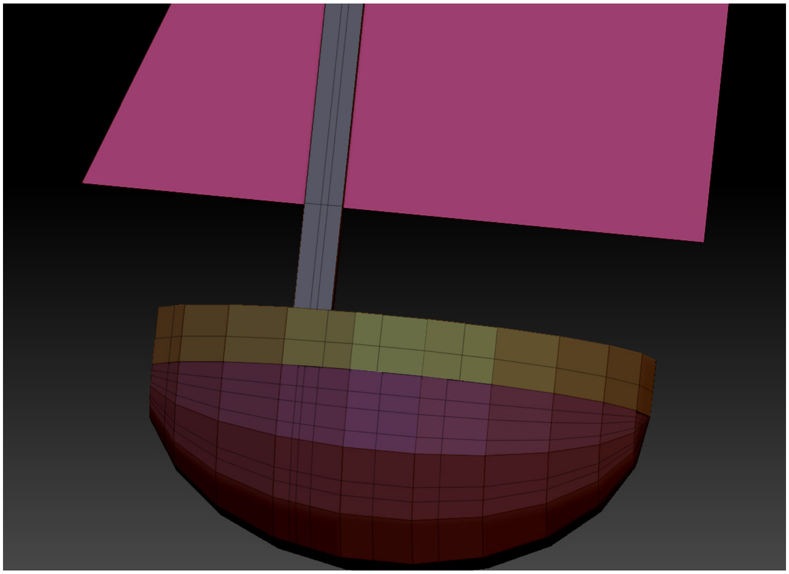

Figure 3-131 *The edge loops are added*

3. Select polygons of the boat model using the ALT key, as shown in Figure 3-132. Right-click on the selected polygons; the **ZMODELER** window is displayed. Make sure the **Extrude** option in the **POLYGON ACTIONS** area and **A Single Poly** option in the **TARGET** area is chosen.

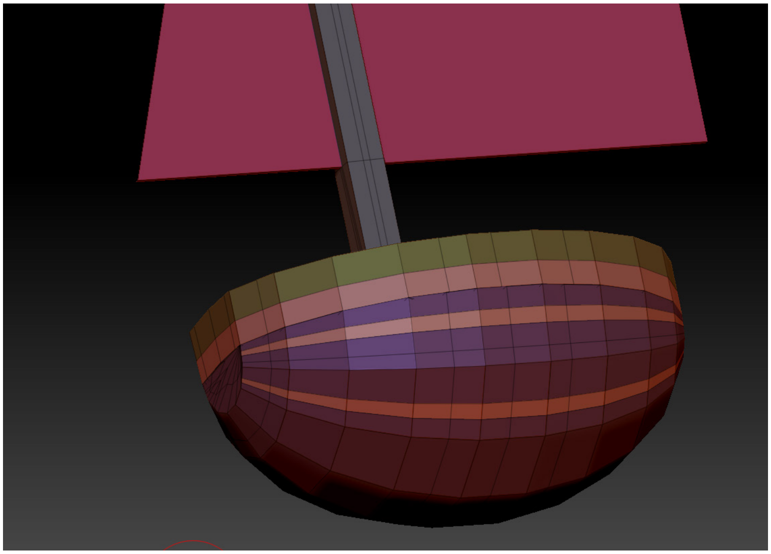

Figure 3-132 *The edges are added*

4. Now, drag the cursor on the selected polygons; the polygons are extruded, as shown in Figure 3-133.

Figure 3-133 *The polygons extruded*

Saving the Model

In this section, you will save the file using the steps given next.

1. Choose the **Save As** button from the **Tool** palette; the **Save ZTool** dialog box is displayed. In this dialog box, browse to the location *\Documents\ZBrushprojects\c03*.

2. Enter **c03tut4** in the **File name** edit box and then choose the **Save** button.

Self-Evaluation Test

Answer the following questions and then compare them to those given at the end of this chapter:

1. Which of the following buttons is used to capture a screenshot of the canvas as an alpha?

(a) **Ep** (b) **GrabDoc**
(c) **Make 3D** (d) **CropAndFill**

2. Which of the following buttons in the **Geometry** subpalette is used to retain the shape and placement of the polygons even if the geometry is divided a number of times?

(a) **Rstr** (b) **Cage**
(c) **Reconstruct Subdiv** (d) **Suv**

3. The **Deformation** subpalette is located in the __________ palette.

4. You can increase the number of polygons in the ZTool by choosing the __________ button in the **Geometry** subpalette.

5. The __________ button is used to convert a primitive object into a polymesh.

6. The **Normalized** check box in the **Projection Master** dialog box is selected along with the __________ check box.

7. The **FreeHand** brush stroke is located in the **Brush** palette. (T/F)

8. The symmetry along X-axis can be activated by pressing the S key on your keyboard. (T/F)

9. The **DROP NOW** button in the **Projection Master** dialog box is used to convert a 2.5D illustration into a 3D model. (T/F)

10. The **Material** check box in the **Projection Master** dialog box is used to add different attributes such as lights, shadows, and reflectivity to a ZTool. (T/F)

Review Questions

Answer the following questions:

1. Which of the following combination of shortcut keys is used to activate the **ClipRect** brush?

   (a) CTRL+ALT (b) CTRL+SHIFT
   (c) CTRL (d) SHIFT

2. In Which of the following subpalettes is the **Size** slider located?

   (a) **Deformation** (b) **Geometry**
   (c) **Surface** (d) **Initialize**

3. In Which of the following palettes is the **Save As** button located?

   (a) **Draw** (b) **Picker**
   (c) **Render** (d) **Tool**

4. The __________ subpalette in the **Tool** palette is displayed only when a ZTool is in the primitive mode.

5. The **RadialCount** slider is located in the __________ palette.

6. The **SDiv** slider is located in the __________ subpalette of the **Tool** palette.

7. The **Deformation** check box in the **Projection Master** dialog box is used to sculpt finer details on the surface of a model which cannot be achieved in normal 3D mode. (T/F)

8. The **Morph Target** subpalette is used to establish points of contact between different subtools. (T/F)

9. The **Geometry HD** subpalette is used to create a new mesh on the surface of an already existing object. (T/F)

10. The **Surface** subpalette is used to add noise to a ZTool. (T/F)

EXERCISES

The output of the models used in the following exercises can be accessed by downloading the *c03_ZBrush_4R8_exr.zip* file from *www.cadcim.com*. The path of the file is as follows: *Textbooks > Animation and Visual Effects > ZBrush > ZBrush 4R8: A Comprehensive Guide*.

Exercise 1

Create the model of a table lamp using radial symmetry, as shown in Figure 3-134.

(Expected time: 15 min)

Figure 3-134 *Model of a table lamp*

Exercise 2

Create the model of a photo frame using the **Projection Master** dialog box, as shown in Figure 3-135. **(Expected time: 30 min)**

Figure 3-135 *Model of a photo frame*

Answers to Self-Evaluation Test

1. b, **2.** b, **3. Tool**, **4. Divide**, **5. Make PolyMesh3D**, **6. Deformation**, **7.** F, **8.** F, **9.** F, **10.** F