

Chapter 2

Sculpting Brushes

Learning Objectives

After completing this chapter, you will be able to:

- *Understand digital sculpting*
- *Work with different types of sculpting brushes*



INTRODUCTION

Digital sculpting in ZBrush offers a very efficient and artistic way to create models. It allows you to add subtle details to 3D models which help in achieving photorealistic and hyperrealistic outputs. In this chapter, you will learn about the use of different brushes in sculpting.

Sculpting Brushes

The sculpting brushes are used to modify the shape of a 3D model. These brushes push, pull, smoothen, grab, and pinch a 3D model depending on the type of brush chosen. ZBrush contains an extensive library of brushes. Before using these brushes, you need to create a 3D primitive object or load a model from the LightBox browser. After creating a 3D primitive object or loading a model, you need to choose the **Edit** button in the top shelf. If this button is not chosen, then ZBrush will be in the paint mode and drawing on the canvas will simply create copies of the 3D model in the canvas.

The different brushes in ZBrush can either be accessed from the **Brush** palette located at the top of the interface or from the left shelf, refer to Figures 2-1 and 2-2. Before using any brush, you can change its settings in the **Brush** palette. In addition to this, you can also modify the brush size and depth by using the settings in the top shelf, refer to Figure 2-3.



*Figure 2-1 Partial view of the **Brush** palette in the top shelf*



Figure 2-2 The brushes accessed from the left shelf on choosing the Current Brush button

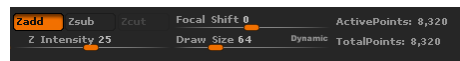


Figure 2-3 The different brush settings in the top shelf

After creating a 3D primitive object in the canvas, it should be converted into a polymesh. Polymesh is a collection of polygons or faces that form the surface of a mesh. When you drag a brush on a 3D primitive object, a message box will be displayed, prompting you to convert the 3D primitive object into polymesh, refer to Figure 2-4. You can also import 3D models created in external software applications. These 3D models are imported as polymeshes. The sculpting, texturing, and mapping can only be done on the polymeshes. To convert a 3D primitive object into a polymesh, choose the **Make PolyMesh3D** button from the **Tool** palette, refer to Figure 2-5. After converting a 3D primitive object into polymesh, you can increase the number of polygons so that you can sculpt easily at different resolutions. The various sculpting brushes in ZBrush are discussed next.

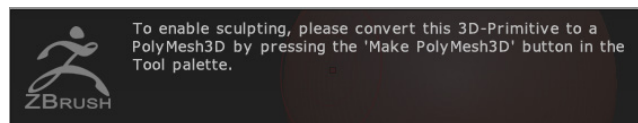


Figure 2-4 Message box displayed on using a brush on a 3D primitive object

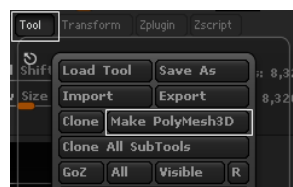


Figure 2-5 The Make PolyMesh3D button in the Tool palette



Note

Before using the brushes on a polymesh, it is recommended to increase the number of polygons in the object. For achieving a greater level of detail on the object, you need to have larger number of polygons. When you place an object on the canvas, it has lower number of polygons. If you

start sculpting on low poly objects, the output will not carry a high level of detail. To increase the number of polygons in the object, expand the **Geometry** subpalette in the **Tool** palette, and then choose the **Divide** button.

Blob Brush



The **Blob** brush is used to add organic details to an object. This brush is ideal for creating fungus on the surface of an object. To sculpt using this brush, first create a 3D primitive object in the canvas. To do so, choose the Current Tool button from the **Tool** palette; a flyout will be displayed, refer to Figure 2-6. Choose the **Sphere3D** primitive from this flyout. Next, press and hold the left mouse button and drag the cursor on the canvas to create a sphere. After creating the sphere, choose the **Edit** button from the top shelf and then choose the **Make PolyMesh3D** button from the **Tool** palette; the primitive object will be converted into a polymesh. Next, expand the **Geometry** subpalette in the **Tool** palette, and then click thrice on the **Divide** button; the sphere will become smoother as more polygons are added, refer to Figure 2-7.

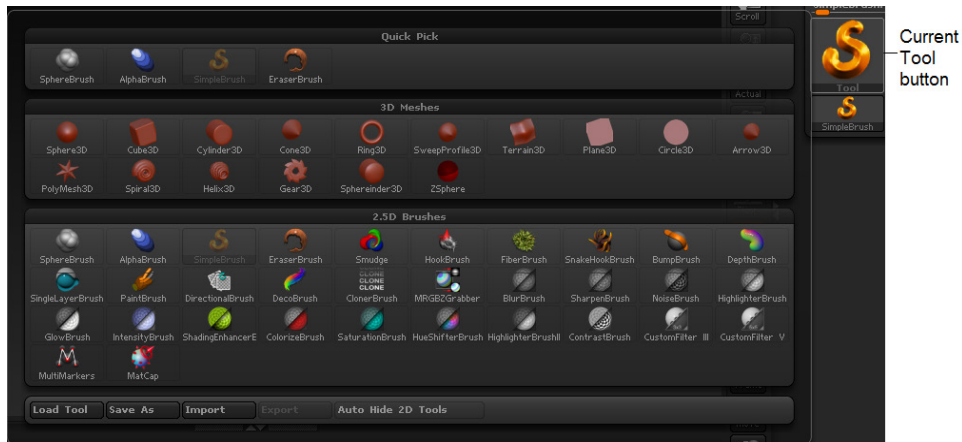


Figure 2-6 Flyout displayed on choosing the Current Tool button

Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **Blob** brush from this flyout. If required, adjust the size of the brush using the [or] keys. Next, press and hold the left mouse button, and drag the cursor on the surface of the sphere; the shape of the sphere will be modified and will become blobby, refer to Figure 2-8.

Clay Brushes

There are three types of Clay brushes, namely **Clay**, **ClayBuildup**, and **ClayTubes**, as shown in Figure 2-9. These brushes are discussed next.

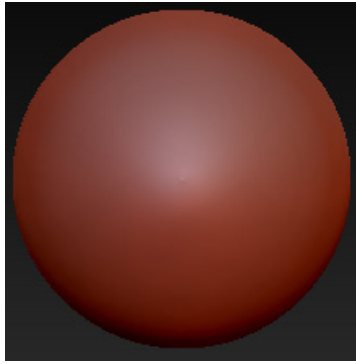
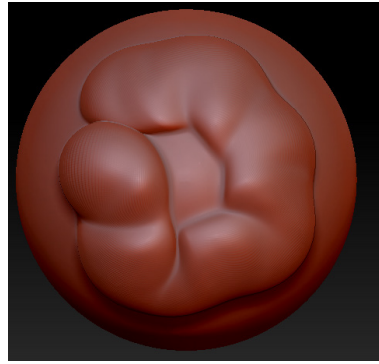


Figure 2-7 The sphere smoothened



*Figure 2-8 Shape of the sphere modified using the **Blob** brush*

Clay Brush

The **Clay** brush is used to add detail and depth to an object by using different alphas, refer to Figure 2-10. On choosing the **Zadd** button, the lump of clay will be created on a sculpture and on an effect will be created as if the sculpture has been scooped on the clay has been taken off, choosing the **Zsub** button.

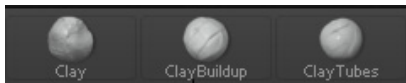


Figure 2-9 The clay brushes



Figure 2-10 Patterns created using different alphas

ClayBuildup Brush

The **ClayBuildup** brush is used to increase the volume of an object significantly. On choosing this brush, a rectangular alpha gets automatically assigned to it. You can also choose other alpha images from the flyout displayed on choosing the Current Alpha button from the left shelf. To increase the volume of an object using this brush, press and hold the left mouse button and drag the cursor continuously on the surface of the object, refer to Figure 2-11.

ClayTubes Brush

The **ClayTubes** brush is similar to the **ClayBuildup** brush with the only difference that it does not produce displacement in the surface of the object, refer to Figure 2-12. On choosing this brush, a rectangular alpha gets automatically assigned to it. It gives an effect similar to an effect produced when a wooden tool is used on the surface of a wet lump of clay.

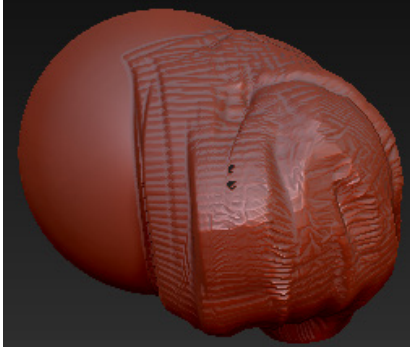


Figure 2-11 Volume of the sphere increased using the **ClayBuildup** brush

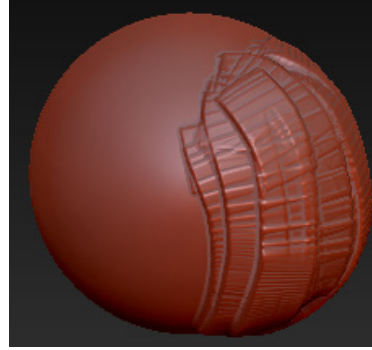


Figure 2-12 Volume of the sphere increased using the **ClayTubes** brush

Clip Brushes

The Clip brushes are used to slice a particular area of a 3D model, without deleting the polygons in that model. Instead, these brushes squash and squeeze the polygons, without affecting the number of polygons in an object. There are four types of Clip brushes, namely **ClipCircle**, **ClipCircleCenter**, **ClipCurve**, and **ClipRect**, refer to Figure 2-13. These brushes are discussed next.

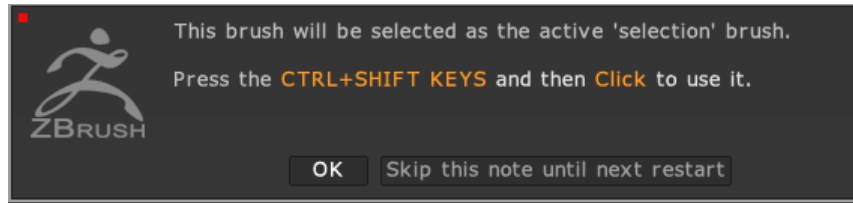


Figure 2-13 The Clip brushes

ClipCircle Brush

The **ClipCircle** brush uses a circular or elliptical stroke as a mask to squeeze the polygons. By using this brush, all the polygons that lie outside of the mask will be pushed to the border of the mask. The resulting object will have hard edges.

To squeeze the polygons of the 3D model, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **ClipCircle** brush from this flyout; a message box prompting you to press CTRL+SHIFT to use this brush will be displayed, refer to Figure 2-14. Choose the **OK** button in this message box. Press and hold CTRL+SHIFT and then drag the cursor on the surface of the sphere; a marquee selection will be displayed, refer to Figure 2-15. Next, release the left mouse button; the shape of the sphere will be modified, as shown in Figure 2-16.



*Figure 2-14 The message box displayed on choosing the **ClipCircle** brush*

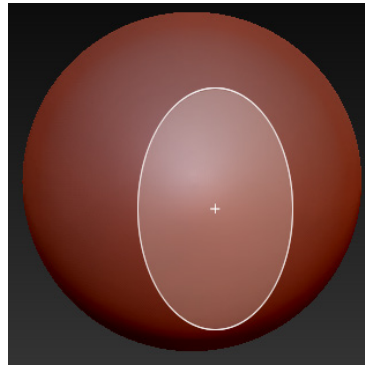


Figure 2-15 A elliptical marquee selection displayed

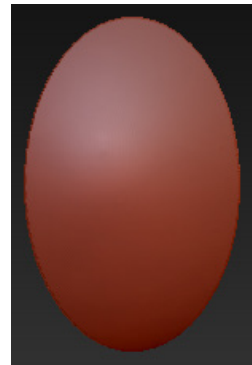


Figure 2-16 The shape of the sphere modified

ClipCircleCenter Brush

The **ClipCircleCenter** brush is similar to the **ClipCircle** brush, with the only difference that the brush stroke creates a perfect circular marquee selection as a mask, with its center point originating from the position where you first clicked and began dragging the cursor; refer to Figure 2-17. Figure 2-18 shows the shape of the sphere modified by using this brush.

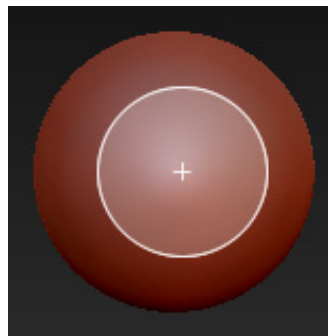


Figure 2-17 A circular marquee selection displayed

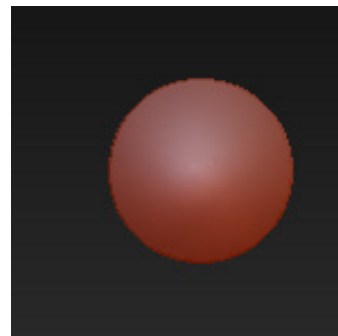


Figure 2-18 The shape of the sphere modified

ClipCurve Brush

The **ClipCurve** brush uses curves or straight lines to squeeze in the polygons. To invoke this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **ClipCurve** brush from this flyout; a message box prompting you to press CTRL+SHIFT to use this brush will be displayed.

Choose the **OK** button in this message box. Press and hold CTRL+SHIFT and then drag the cursor on the surface of the sphere starting from top to bottom; a straight line with grey highlighted area around it will be displayed on the surface of the sphere, refer to Figure 2-19. Release the left mouse button; the shape of the sphere will be modified, as shown in Figure 2-20.

You can change the position of the line by pressing SPACEBAR along with CTRL+SHIFT. In Figure 2-20, you will notice that the polygons in the direction of the grey highlighted area will be squeezed toward the line. On pressing the ALT key along with CTRL+SHIFT, a curved line will be created instead of the straight line, refer to Figure 2-21. On releasing the left mouse button, the polygons that are not in the direction of the grey highlighted area will be squeezed in, refer to Figure 2-22.

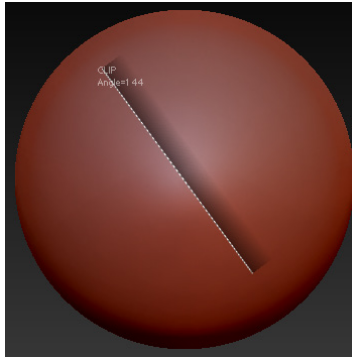


Figure 2-19 A straight line displayed on the surface of the sphere

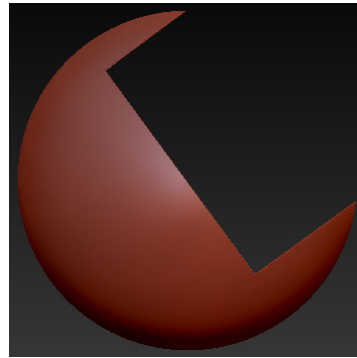


Figure 2-20 Shape modified by the ClipCurve brush

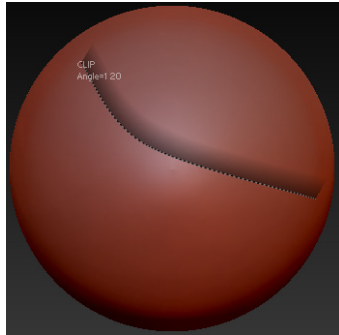


Figure 2-21 A curved line displayed on the surface of the sphere

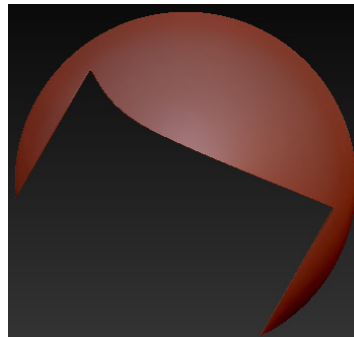


Figure 2-22 Shape modified by using the ClipCurve brush along with ALT

ClipRect Brush

The **ClipRect** brush works similar to **ClipCircle** brush with the only difference that it uses a rectangular marquee selection to squeeze in the polygons, refer to Figures 2-23 and 2-24.

CreaseCurve



The **CreaseCurve** brush uses straight lines to create a creased edge on the surface of the 3D object. To invoke this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CreaseCurve** brush from this flyout; a message box prompting you to press CTRL+SHIFT to use this brush will be displayed. Choose the **OK** button in this message box. Press and hold CTRL+SHIFT and then drag the cursor on the surface of the sphere starting from left to right; a straight line with grey highlighted area around it will be displayed on the surface of the sphere, refer to Figure 2-25. Release the left mouse button; the creased edge will be created, refer to Figure 2-26.

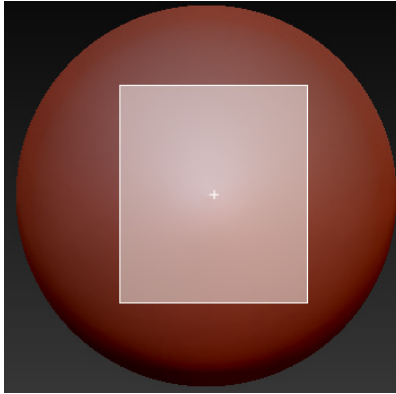


Figure 2-23 A rectangular marquee selection displayed

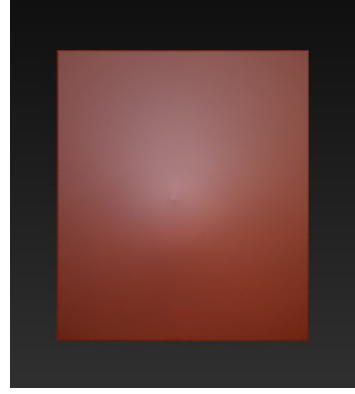


Figure 2-24 The shape of the sphere modified

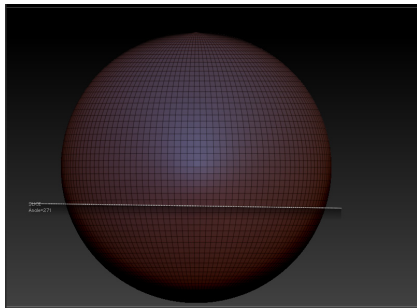


Figure 2-25 A straight line with grey area

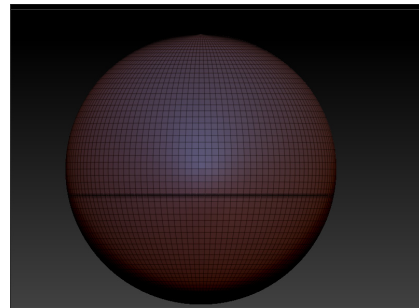


Figure 2-26 The creased edge created on the sphere

Crumple



The **Crumple** brush is used to create creases on the surface of a 3D object, as shown in Figure 2-27. This brush can be used to create wrinkles on skin or clothes.

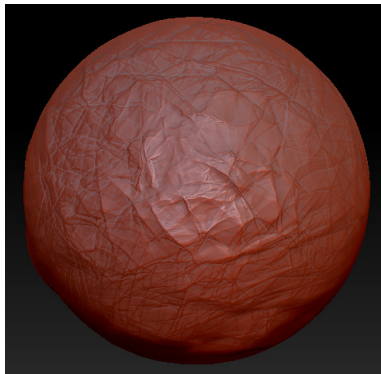


Figure 2-27 A pattern created using the **Crumple** brush

Curve Brushes

There are fifteen types of Curve brushes available in ZBrush, as shown in Figure 2-28. The Curve brushes are used to create different curve patterns on a mesh. These brushes are discussed next.

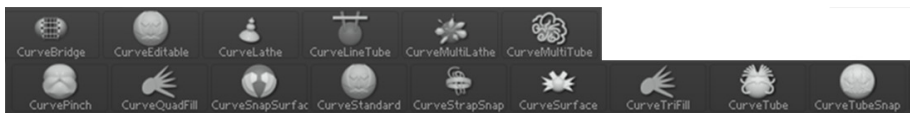


Figure 2-28 The Curve brushes



Note

Before using some of the curve brushes, you need to freeze the subdivision levels of the object. This can be done by choosing the **Del Lower** button from the **Geometry** subpalette of the **Tool** palette.

CurveBridge Brush

The **CurveBridge** brush is used to create a bridge geometry between two curves. To sculpt using this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CurveBridge** brush from this flyout. Create a curve on the first sphere and then another curve create on the second sphere; the bridge geometry will be created between two curves on the surface of the spheres, as shown in Figure 2-29.

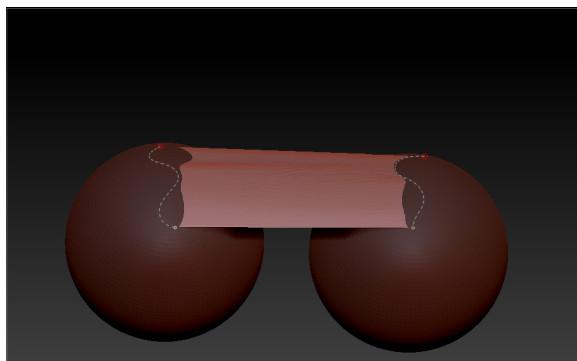


Figure 2-29 The bridge geometry created between two curves

CurveEditable Brush

The **CurveEditable** brush is used to add depth to the surface of an object along a predefined path. To add depth using this brush, press and hold the left mouse button, and drag the cursor on the surface of the object to create the shape of your choice; a curve indicating the path will be displayed, refer to Figure 2-30. After creating the path, hover the cursor on the surface of the path and click on it; a depth will be created along the path, as shown in Figure 2-31. You can modify the shape of the path either by moving the end points of the path created or by clicking on a point on the path or by clicking on a point on the curve and then dragging the cursor.

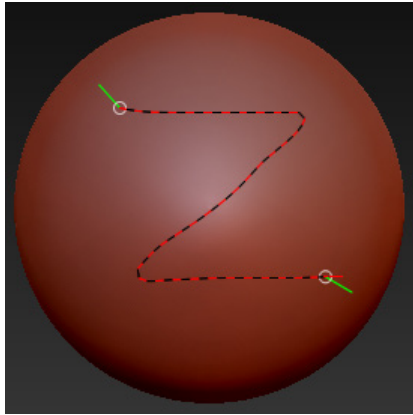


Figure 2-30 A path created on the surface of the object



Figure 2-31 Depth created along the path

CurveLathe Brush

The **CurveLathe** brush is used to create different shapes on the surface of the object. Before using this brush, make sure that the value of **SDiv** slider is set to 1 or the geometry has not been subdivided. If you use this brush on a mesh which has been subdivided, a message box will be displayed, as shown in Figure 2-32.

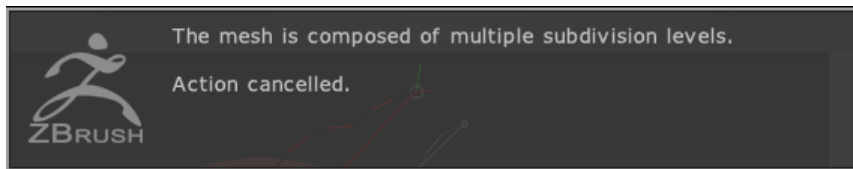


Figure 2-32 The message box displayed on using the **CurveLathe** brush on subdivided mesh

To use this brush, create a plane in the canvas and convert it into polymesh. Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CurveLathe** brush from this flyout. Next, press and hold the left mouse button, and drag the cursor on the surface of the object to create the shape of your choice; a profile curve indicating the shape of the new mesh will be displayed, refer to Figure 2-33. Now, release the left mouse button; a new mesh will be created on the surface, as shown in Figure 2-34.

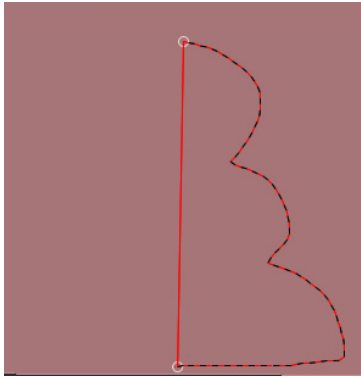


Figure 2-33 A profile curve created on the surface of plane

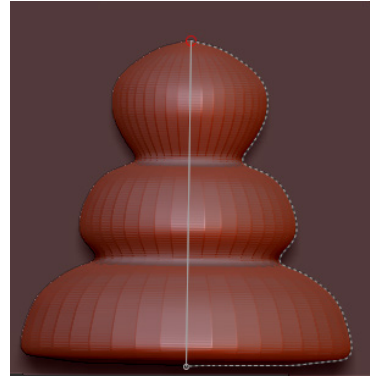


Figure 2-34 A new mesh created along the profile curve

You can move, scale, and rotate the newly created mesh by choosing the **Move**, **Scale**, and **Rotate** buttons, respectively from the top shelf. You can also create a duplicate copy of the mesh. To do so, choose the **Move** button from the top shelf. Press and hold the left mouse button and drag the cursor on the surface of the mesh and then release the left mouse button; a line with three circles will be displayed, refer to Figure 2-35. Press and hold the CTRL key and the left mouse button and hover the cursor over the middle circle. Next, drag the cursor toward right; a duplicate copy of the mesh will be created, refer to Figure 2-36.

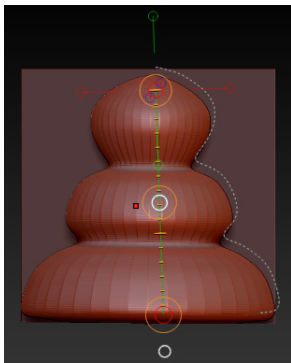


Figure 2-35 A line with three circles displayed

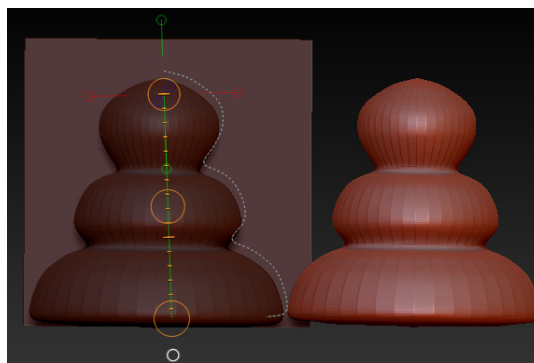


Figure 2-36 The duplicate copy of the mesh created

On creating a new mesh using this brush, you will notice that the color of the plane changes to grey and a mask is applied to it. To remove the mask, press and hold the CTRL key, and drag the cursor in the canvas area. After removing the mask, you cannot move, scale, or rotate the new mesh.

CurveLine Tube Brush

The **CurveLine Tube** brush is used to create a tube on the surface of an object along a straight line, refer to Figure 2-37. This brush does not work on the subdivided geometry.

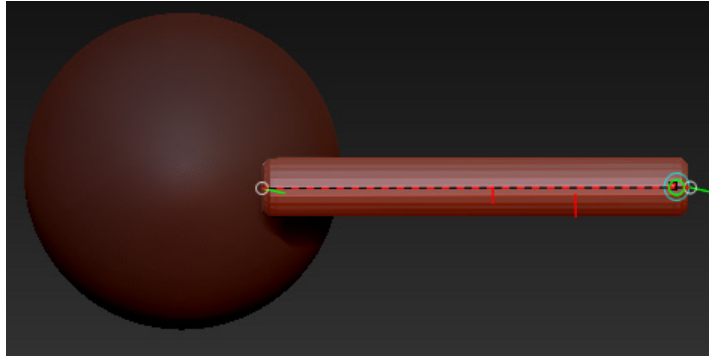


Figure 2-37 A tube created along the straight line

CurveMultiLathe Brush

The **CurveMultiLathe** brush is used to create multiple shapes on the surface of the object by drawing profile curves for different shapes, refer to Figure 2-38. Each of these shapes can be modified as required. This brush does not work on the subdivided geometry.

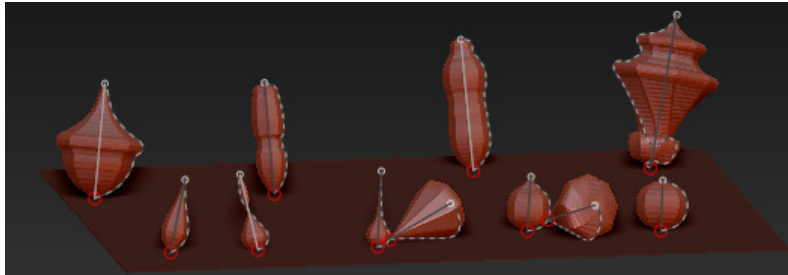


Figure 2-38 Multiple shapes created on the surface of a plane

CurveMultiTube Brush

The **CurveMultiTube** brush is similar to the **CurveTube** brush with the only difference that you can create multiple tubes on the surface of an object, refer to Figure 2-39. The shape of different tubes can be modified as required.

CurvePinch Brush

The **CurvePinch** brush is used to pinch the polygons of a mesh inward along the path defined by you. To sculpt using this brush, press and hold the left mouse button, and drag the cursor on the surface of the object to create the shape of your choice; a curve indicating the path will be displayed. After creating the path, hover the cursor on the surface of the path and click on it; the surface will be pinched along the path, as shown in Figure 2-40. You can modify the shape of the path either by moving the end points of the path created or by clicking on a point or by clicking on a point on the curve and then dragging the cursor.

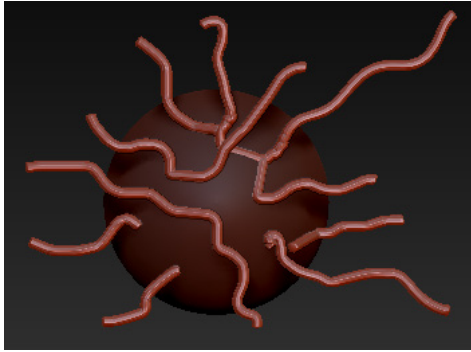


Figure 2-39 Multiple tubes created on the surface of a sphere

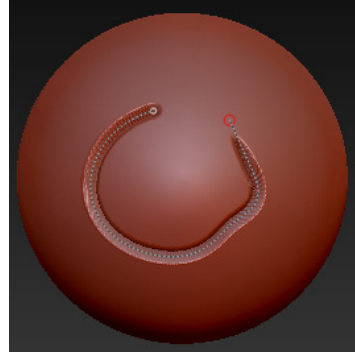


Figure 2-40 The polygons pinched along the path

CurveQuadFill Brush

The **CurveQuadFill** brush is used to create a planar mesh on the surface of an object. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CurveQuadFill** brush from this flyout. Next, press and hold the left mouse button and drag the cursor to draw an outline for the planar mesh that you want to create, refer to Figure 2-41. Next, release the left mouse button; the planar mesh will be created on the surface of the object, refer to Figure 2-42. The shape of the newly created mesh can be modified by moving different points of the path.

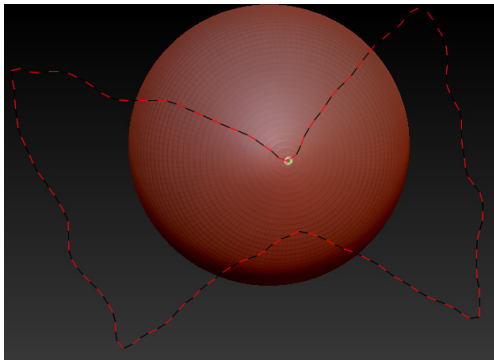


Figure 2-41 An outline drawn on the surface of the sphere

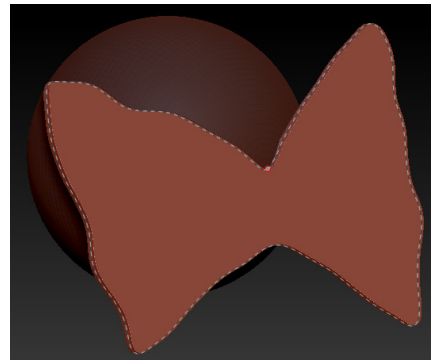


Figure 2-42 A planar mesh created on the surface of the sphere

CurveSnapSurface Brush

The **CurveSnapSurface** brush is used to create surfaces between multiple number of curves created on the surface of the object. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CurveSnapSurface** brush from this flyout. Next, press and hold the left mouse button and drag the cursor to draw a curve, refer to Figure 2-43. Draw another curve below the curve drawn previously, refer to Figure 2-44; a surface will be created between the two curves. Draw a third curve, refer to Figure 2-45; a surface will be created between the second and third curves. Continue drawing more curves to create the surface, as shown in Figure 2-46. The new surface can be moved by using the **Move** button at the top shelf.

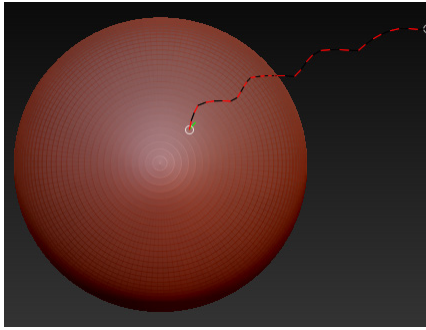


Figure 2-43 A curve drawn on the surface of the sphere

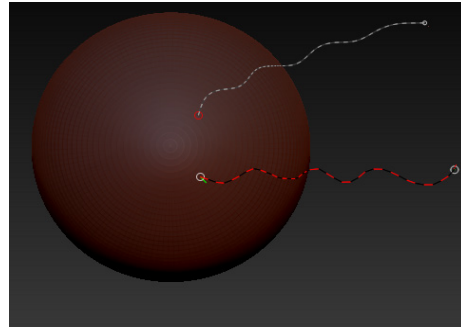


Figure 2-44 Second curve drawn below the curve drawn previously

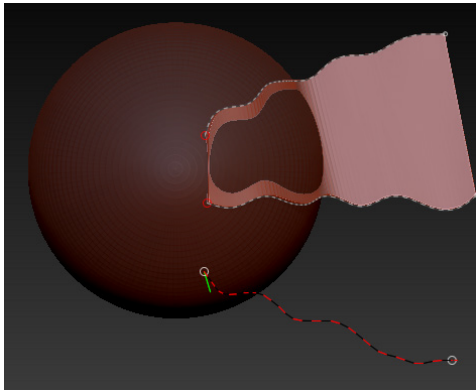


Figure 2-45 Third curve drawn below the second curve

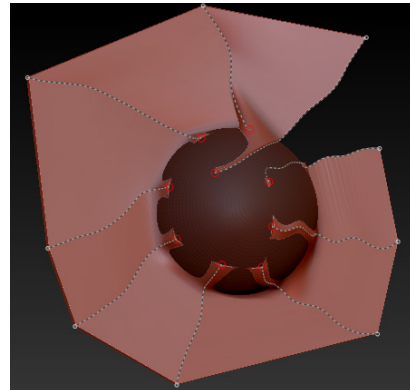


Figure 2-46 A surface created using the **CurveSnapSurface** brush

CurveStandard Brush

The **CurveStandard** brush is used to pull out the geometry of an object in a specified path. To sculpt using this brush, press and hold the left mouse button, and drag the cursor on the surface of the object to create the desired shape, refer to Figure 2-47. After creating the path, click on it; a depth will be created along the path, as shown in Figure 2-48.

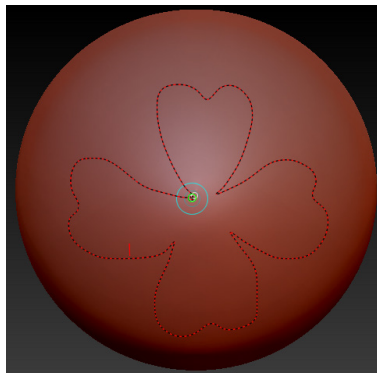


Figure 2-47 A path created on the surface of the sphere

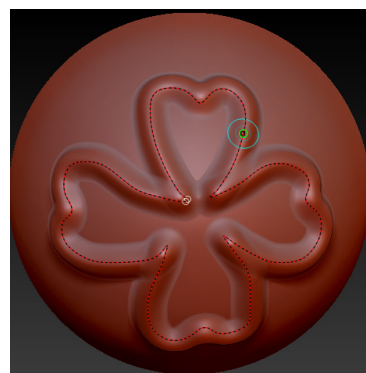


Figure 2-48 The depth created along the path

CurveStrapSnap Brush

The **CurveStrapSnap** brush is used to create a ribbon like curved surface on an object. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CurveStrapSnap** brush from this flyout. Next, press and hold the left mouse button and drag the cursor to draw a curve, refer to Figure 2-49. Release the left mouse button; a surface resembling a ribbon will be created along the curve, refer to Figure 2-50.

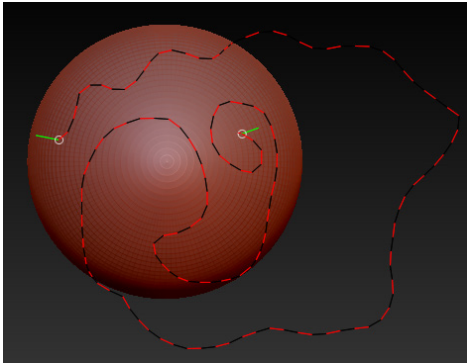


Figure 2-49 A curve created on the surface of the sphere

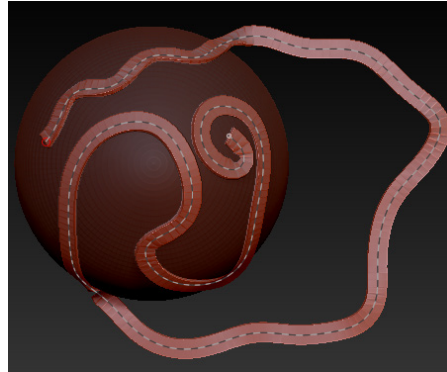


Figure 2-50 A surface resembling a ribbon created along the curve

CurveSurface Brush

The **CurveSurface** brush is used to create a new mesh on the surface of an object by drawing curves for the new mesh. This brush is ideal for creating a flowing cloth on the surface of an object or wings on a model. The thickness of the new mesh depends on the value of the **Draw Size** slider located in the top shelf. If the value of this slider is high, the mesh will be thicker. To use this brush on a cube converted into a polymesh, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **CurveSurface** brush from this flyout. Next, press and hold the left mouse button and drag the cursor to draw a curve, refer to Figure 2-51. Draw another curve on the right side of the curve drawn previously, refer to Figure 2-52; the two curves will be snapped, refer to Figure 2-53. Similarly, draw more curves on the surface of the cube; the new mesh will be created on the surface of the cube, refer to Figure 2-54.

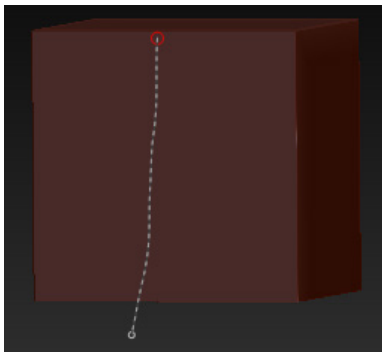


Figure 2-51 A curve drawn on the surface of the cube

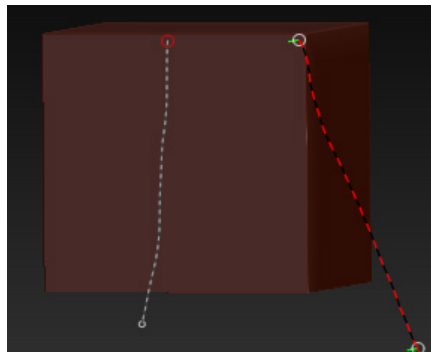


Figure 2-52 Second curve drawn on the right side of the curve drawn previously

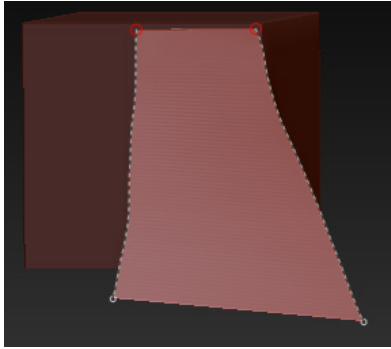


Figure 2-53 The two curves snapped

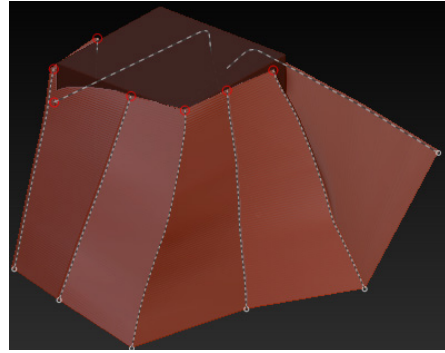


Figure 2-54 A new mesh created on the surface of the cube

CurveTriFill Brush

The **CurveTriFill** brush is used to create a planar surface by drawing an outline on the surface, refer to Figure 2-55.

CurveTube Brush

The **CurveTube** brush is used to create a curved tube on the surface of an object. The shape of the tube can be modified as required, refer to Figure 2-56.

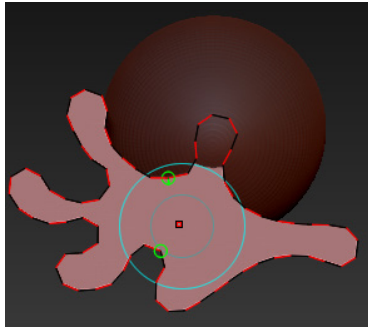


Figure 2-55 A planar surface created using the **CurveTriFill** brush

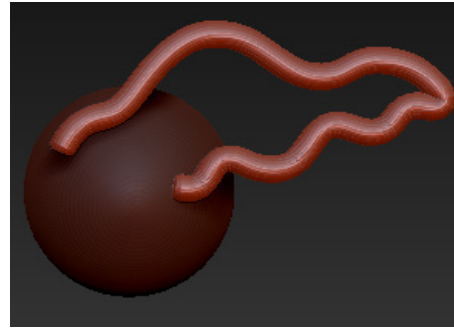


Figure 2-56 A curved tube created using the **CurveTube** brush

CurveTubeSnap Brush

The **CurveTubeSnap** brush is similar to the **CurveStrapSnap** brush with the only difference that instead of creating a ribbon like surface, it creates tubes.

DamStandard Brush



The **DamStandard** brush is used to create very subtle details like wrinkles, clothing seams, machined bevels, and so on. On choosing this brush, the **Zsub** button gets automatically chosen. To use this brush, press and hold the left mouse button, and drag the cursor on the surface of the object; a seam will be created on its surface, refer to Figure 2-57.

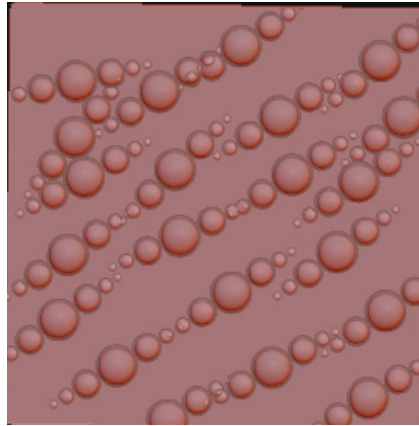
Deco1 Brush



The **Deco1** brush is used with different alphas to create detailed decorative designs on an object, refer to Figure 2-58. When this brush is chosen, an alpha gets automatically assigned to it. To sculpt using this brush on a smoothened plane, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **Deco1** brush from this flyout. Adjust the value of the **Draw Size** slider in the top shelf as required. Next, press and hold the left mouse button and drag the cursor slightly at different places on the surface of the plane; a pattern will be created on the surface of the plane, refer to Figure 2-58.



*Figure 2-57 A seam created in the sphere using the **DamStandard** brush*



*Figure 2-58 A pattern created on the surface of a plane using the **Deco1** brush*

Displace Brush



The **Displace** brush is used to pull or push the polygons in a direction perpendicular to the surface of an object. To sculpt using this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **Displace** brush from this flyout. Adjust the value of the **Draw Size** slider as required, and set the value of **Z Intensity** slider to **100**. Next, press and hold the left mouse button, and drag the cursor slightly at different places on the surface of the sphere; the polygons will be pulled out perpendicularly, refer to Figure 2-59. To push the polygons in, you need to choose the **Zsub** button from the top shelf and then drag the cursor at different places, refer to Figure 2-60.

DisplaceCurve Brush



The **DisplaceCurve** brush is used to pull or push the polygons in a direction specified by creating a path curve. To sculpt using this brush, adjust the value of the **Draw Size** slider as required, and set the value of the **Z Intensity** slider to **60**. Next, press and hold the left mouse button and drag the cursor on the surface of the object to create the path curve, refer to Figure 2-61. After creating the path curve, hover the cursor on the surface of the path and click on it; the polygons will be pulled out along the path curve, as shown in Figure 2-62.

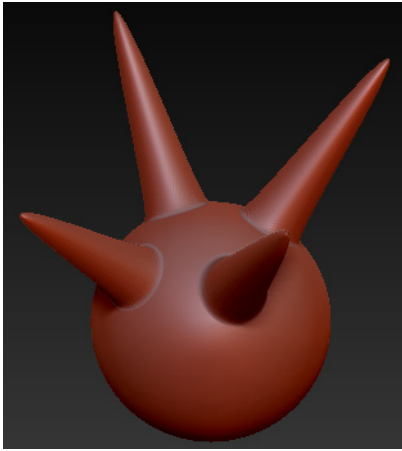


Figure 2-59 The polygons pulled out using the **Displace** brush

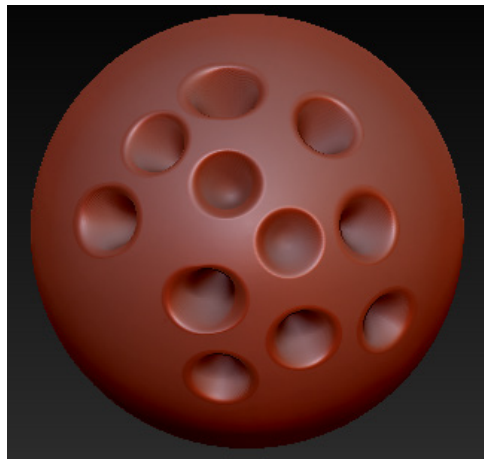


Figure 2-60 The polygons pushed in using the **Displace** brush

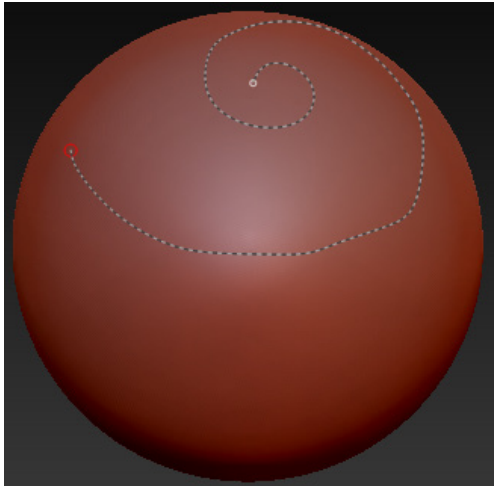


Figure 2-61 The path curve created on the surface of the sphere

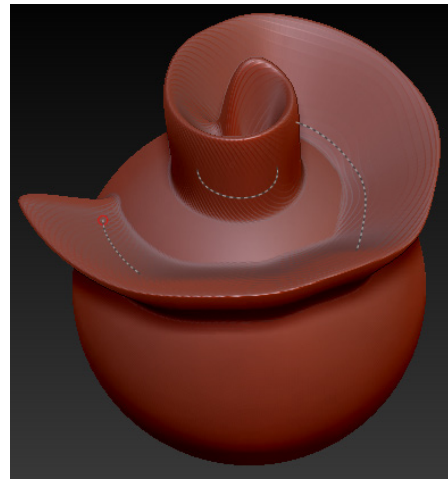


Figure 2-62 The polygons pulled out along the path curve

Elastic Brush



The **Elastic** brush is used to displace the polygons of the surface without changing the original shape of an object, refer to Figure 2-63. In Figure 2-63, you will notice that there is deformation in the surface but the original curves in the sphere are retained.

Flakes Brush



The **Flakes** brush is used to create roughness on the surface of an object. This brush can be used to create rust or flake like effect on a surface, refer to Figure 2-64.



Figure 2-63 The original shape of the sphere maintained

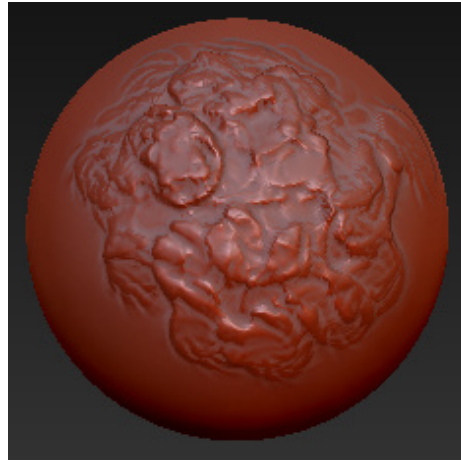


Figure 2-64 Flakes created on the surface of a sphere

Flatten Brush



The **Flatten** brush is used to flatten the displaced or extruded surface of an object. Figure 2-65 shows a surface on which the **Flakes** brush has been applied and Figure 2-66 shows the same surface flattened after using the **Flatten** brush on it.

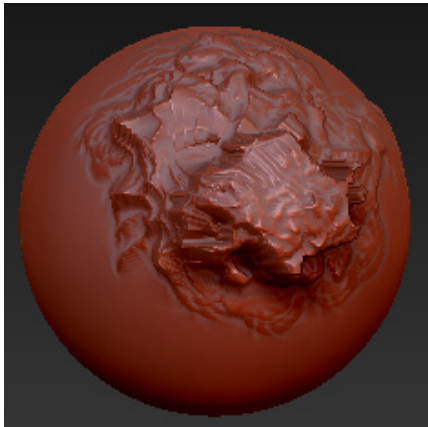


Figure 2-65 Flakes created on the surface of a sphere using the **Flakes** brush

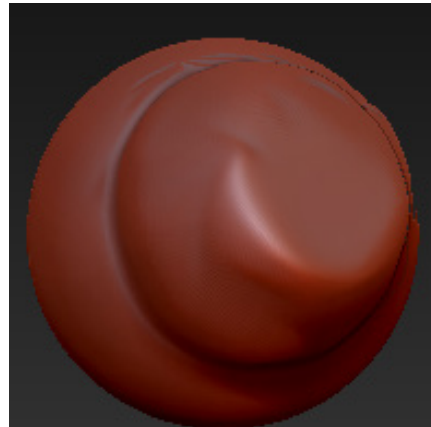


Figure 2-66 The surface of the sphere flattened using the **Flatten** brush

Fold Brush



The **Fold** brush is used to fold the polygons inward along the path on which you drag the cursor on the surface of an object, refer to Figure 2-67.

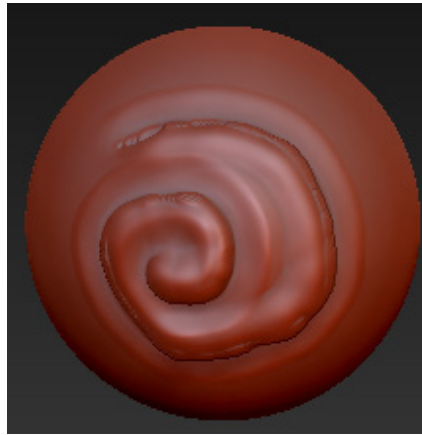


Figure 2-67 *Folds created on the surface of a sphere*

FormSoft Brush



The **FormSoft** brush is used to create smooth displacement in the surface of an object.

Fracture Brush



The **Fracture** brush is used to make the surface of an object disordered and uneven. This brush is best suited for creating rocky surfaces or crystals.

Groom Brushes

The Groom brushes are used to sculpt the **FiberMesh** in ZBrush. The **FiberMesh** is mainly used to create hair on the surface of an object. It is also used to generate different types of fibers, fur, plants, flowers, and so on. The **FiberMesh** option can be accessed from the **Tool** palette. The Groom brushes have been designed specifically for the **FiberMesh**. These brushes are used to edit fibers in the mesh to create different patterns and hairstyles. There are sixteen types of Groom Brushes, refer to Figure 2-68. These brushes will be discussed in detail in the later chapters.

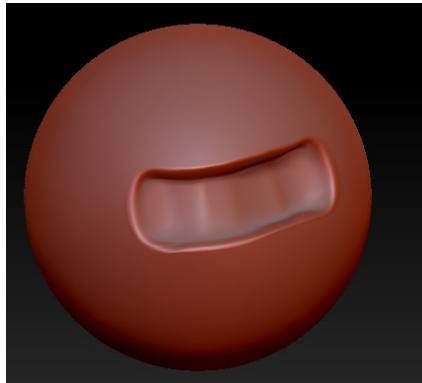


Figure 2-68 *The Groom brushes*

hPolish Brush



The term **hPolish** stands for hard polish. The **hPolish** brush is used to displace the surface of an object inward, so that the resulting surface has sharp and well defined edges, as shown in Figure 2-69.



*Figure 2-69 Surface of the sphere modified by using the **hPolish** brush*

IMM Brushes

The term IMM stands for Insert Multi Mesh. The IMM brushes are used to insert different types of objects into an already existing geometry. There are seventeen types of IMM brushes, refer to Figure 2-70. Figure 2-71 shows a sphere with different types of objects inserted into it using IMM brushes.



Figure 2-70 The IMM brushes



Note

Before using some of the **IMM** brushes, you need to freeze the subdivision levels of the object. This can be done by choosing the **Del Lower** button from the **Geometry** subpalette of the **Tool** palette.

Inflat Brush



The **Inflat** brush is used to expand the surface of an object by a significant amount by pulling the polygons in a direction perpendicular to the surface, refer to Figure 2-72.

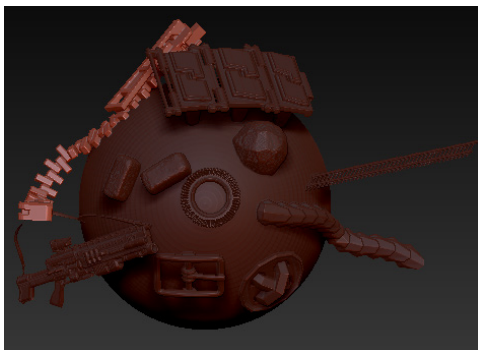
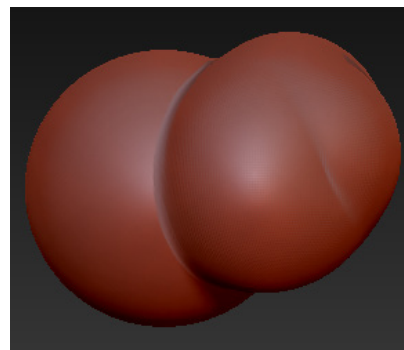


Figure 2-71 Different objects inserted into a sphere using IMM brushes



*Figure 2-72 Surface of the sphere expanded by using the **Inflat** brush*

Insert Brushes

The Insert brushes are used to insert different geometrical shapes like cube, sphere, cylinder, and so on, into an already existing geometry. There are eight types of Insert brushes, as shown in Figure 2-73. Figure 2-74 shows different shapes inserted into a sphere using these brushes. These brushes work only when the geometry has not been subdivided.

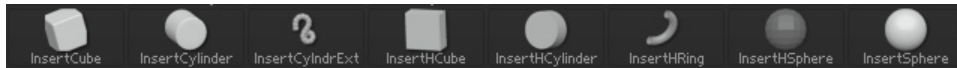


Figure 2-73 The Insert brushes

Layer Brush



The **Layer** brush raises or lowers the surface of an object by a fixed amount depending on the value of **Z Intensity**. Using this brush, the depth of displacement remains constant throughout the surface of an object, without any overlapping strokes, refer to Figure 2-75.

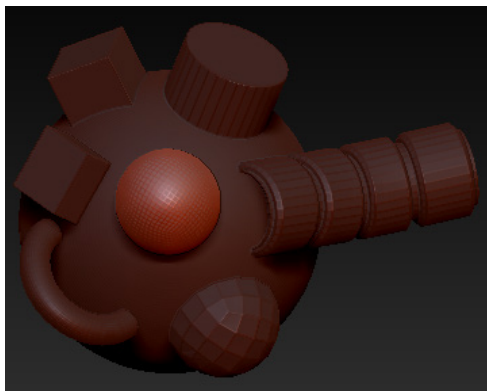
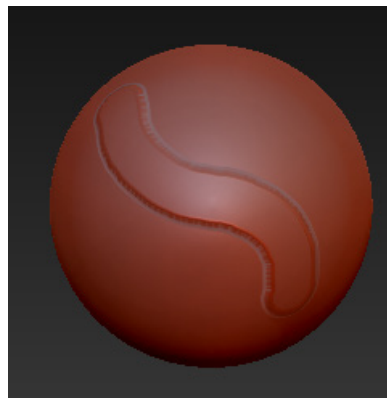


Figure 2-74 Different shapes inserted into a sphere using the insert brushes

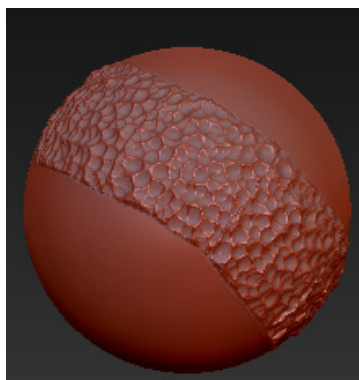


*Figure 2-75 Constant displacement created using the **Layer** brush*

LayeredPattern Brush



The **LayeredPattern** brush is used to create different patterns on the surface of an object, refer to Figure 2-76. On choosing this brush, an alpha is automatically assigned to it. The depth of the pattern created on the surface remains constant throughout the surface.



*Figure 2-76 A pattern created using the **LayeredPattern** brush*

Magnify Brush



The **Magnify** brush produces significant displacement on the surface of an object. The amount of magnification is determined by the value of the **Z Intensity** slider.

Mask Brushes

The Mask brushes are used to isolate a certain region of an object. If a particular area is masked on a surface, you cannot make any changes in that area. The unmasked area can be modified without affecting the masked area. There are six types of Mask brushes, namely **MaskCircle**, **MaskCurve**, **MaskCurvePen**, **MaskLasso**, **MaskPen**, and **MaskRect**, refer to Figure 2-77.

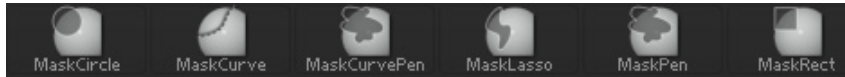
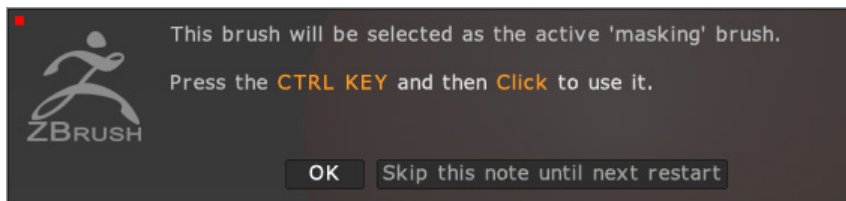


Figure 2-77 The mask brushes

The '**MaskCircle**' brush uses a circular stroke to create a mask. The circular area that comes under the mask cannot be sculpted or modified. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **MaskCircle** brush from the flyout; a message box will be displayed prompting you to press the CTRL key to use this brush, refer to Figure 2-78. Choose the **OK** button to close this message box. Next, press and hold the CTRL key and drag the cursor on the surface of the sphere; a marquee selection will be displayed, refer to Figure 2-79. Next, release the left mouse button; a grey colored circular mask will be created on the surface of the sphere, as shown in Figure 2-80. You can also invert the mask by pressing CTRL+I.



*Figure 2-78 The message box displayed on choosing the **MaskCircle** brush*

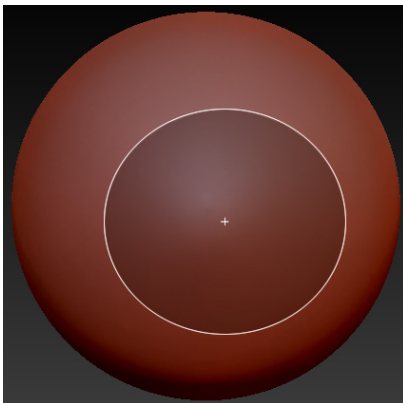


Figure 2-79 A circular marquee selection displayed

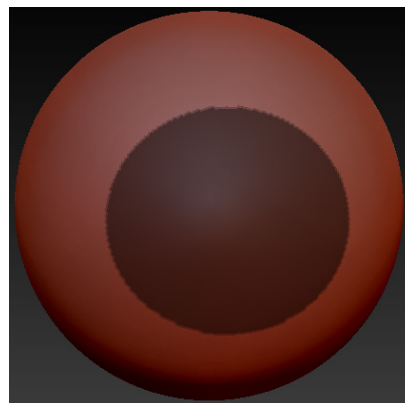


Figure 2-80 A circular mask created on the surface of the sphere

The **MaskCurve** brush uses curves or straight lines to create a mask on the surface of an object. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **MaskCurve** brush from this flyout; a message box will be displayed prompting you to press the CTRL key to use this brush. Choose the **OK** button in this message box. Next, press and hold the CTRL key and then drag the cursor on the surface of the sphere starting from top to bottom; a straight line with grey highlighted area will be displayed on the surface of the sphere, refer to Figure 2-81. Next, release the left mouse button; a mask will be created on the surface of the sphere, as shown in Figure 2-82.

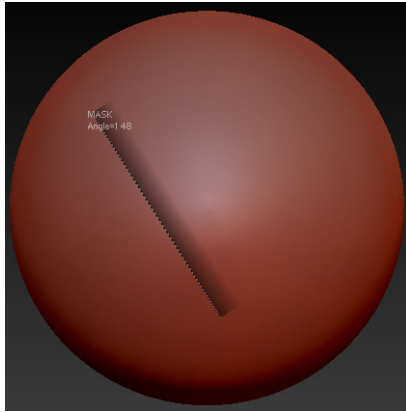


Figure 2-81 A straight line displayed on the surface of the sphere

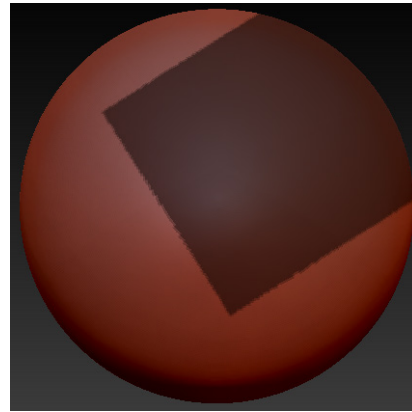


Figure 2-82 A mask created on the surface of the sphere

The **MaskCurvePen** brush is used to create a mask along the curve path. To sculpt using this brush, press and hold the CTRL key and drag the cursor on the surface of the sphere to create a curve path of your choice, refer to Figure 2-83. After creating the path, make sure the CTRL key is pressed, and then click on the path; a mask will be created along the path, as shown in Figure 2-84.

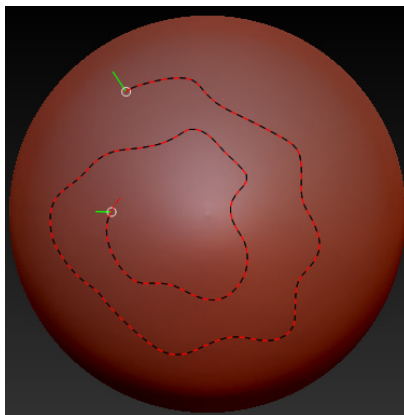


Figure 2-83 A path curve created on the surface of the sphere

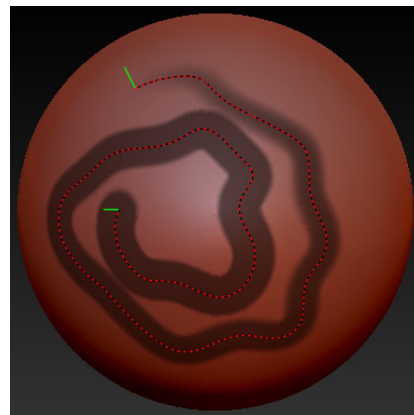


Figure 2-84 A mask created along the path curve

The **MaskLasso** brush is used to create freeform masks on the surface of an object using a mask overlay, refer to Figure 2-85. The **MaskPen** brush is used to draw a mask of any desired shape using a free hand, refer to Figure 2-86. It gives you the feel of working with a pen. The **MaskRect** brush is similar to **MaskCircle** brush with the only difference that it uses a rectangular stroke as a mask.

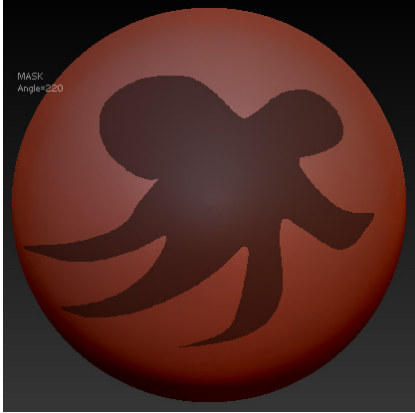


Figure 2-85 A freeform mask created using the mask overlay



Figure 2-86 A mask drawn with freehand using the **MaskPen** brush

You can remove a mask from a particular area of the mask by pressing CTRL+ALT and then by dragging the cursor on that particular area, refer to Figures 2-87 and 2-88. To remove the entire mask from a surface, press and hold the CTRL key and then drag the cursor on the canvas area. You can also use different alpha images to create masks on the surface of an object.

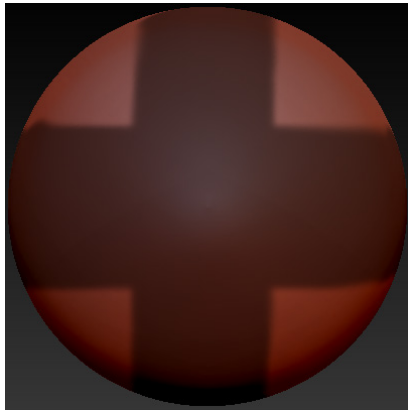


Figure 2-87 A mask created using the **MaskPen** brush



Figure 2-88 An area of the mask removed

MatchMaker Brush

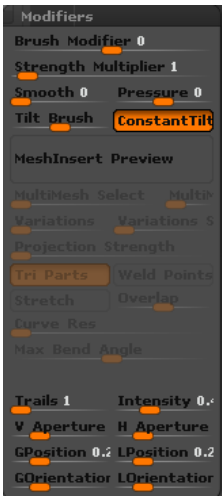


The **MatchMaker** brush is used to fit one mesh into the contours of another mesh. For example, if you have modelled a human face and a mask separately, then you can fit the mask into the contours of face by pressing and holding the left mouse button and by dragging the cursor on the surface of the mask.

MeshInsertDot Brush



The **MeshInsertDot** brush is used to insert one 3D object into another. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **MeshInsertDot** brush from the flyout. Next, choose the **Brush** palette to expand it. In this palette, choose the **Modifiers** subpalette, refer to Figure 2-89. Next, choose the **MeshInsert Preview** button; a flyout will be displayed, refer to Figure 2-90. From the **3D Meshes** area of this flyout, choose the required primitive. Next, press and hold the left mouse button and drag the cursor on the surface of the sphere; the chosen primitive will be created on the surface of the sphere, refer to Figure 2-91. You can insert more primitives into the sphere by choosing the **MeshInsert Preview** button again, refer to Figure 2-92.



Note

Before using the **MeshInsertDot** brush, make sure that the value of the **SDiv** slider is 1. This can be done by choosing the **Del Lower** button from the **Geometry** subpalette of the **Tool** palette.

Figure 2-89 The **Modifiers** subpalette in the **Brush** palette



Figure 2-90 The flyout displayed on choosing the **MeshInsert Preview** button

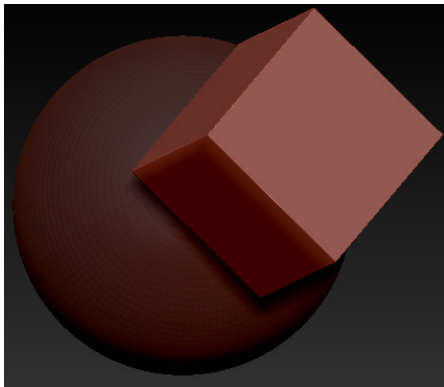


Figure 2-91 A cube created on the surface of the sphere

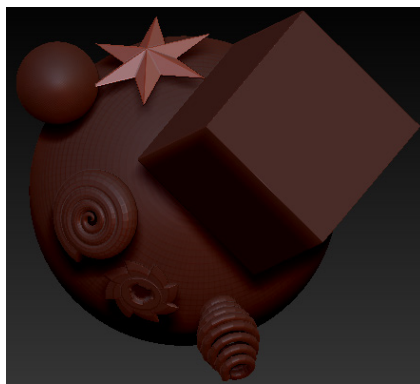


Figure 2-92 Different types of primitives inserted on the surface of the sphere

Morph Brush



The **Morph** brush is used to apply the saved modification to a 3D object. This modified state of the model is known as morph. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **ClayBuildup** brush from this flyout. Press and hold the left mouse button and drag the cursor on the surface of the sphere to create a pattern of your choice, refer to Figure 2-93. Next, in the **Tool** palette, expand the **Morph Target** subpalette, refer to Figure 2-94. Now, choose the **StoreMT** button in this subpalette; the current state of the sphere will be stored.

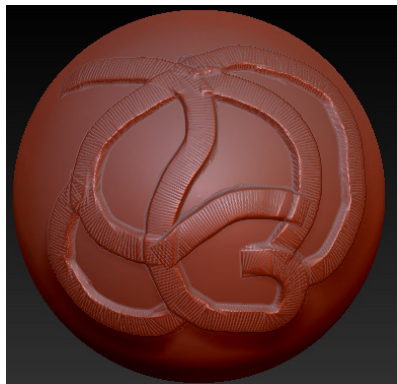


Figure 2-93 A pattern created using the **ClayBuildup** brush



Figure 2-94 Morph Target subpalette in the Tool palette

Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **ClayTubes** brush from this flyout, and then press and hold the left mouse button and drag the cursor on the surface of the sphere to create another pattern on the existing pattern, refer to Figure 2-95. Next, choose the **Morph** brush and then press and hold the left mouse button, and drag the cursor on the surface of the sphere, refer to Figure 2-96; the pattern created earlier will be displayed again and the new pattern will disappear.

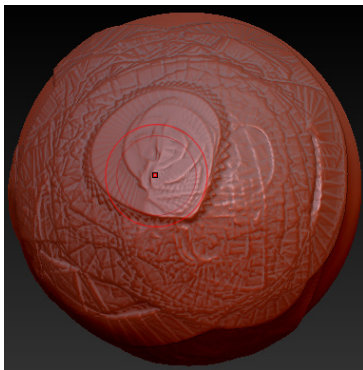


Figure 2-95 A pattern created on the existing pattern

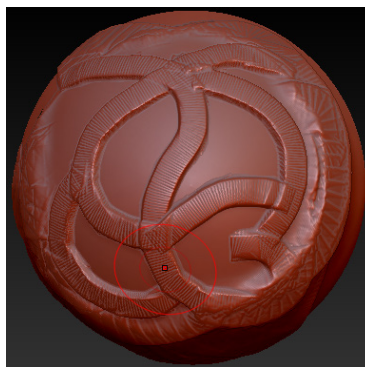


Figure 2-96 Cursor dragged on the surface of the sphere

Move Brushes

There are four types of Move brushes, namely **Move Elastic**, **Move Topological**, **Move**, and **MoveCurve**, as shown in Figure 2-97.

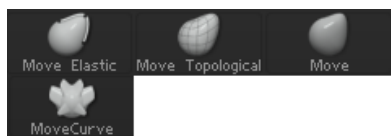


Figure 2-97 The move brushes

The **Move Elastic** brush is used to deform a 3D object by moving its polygons but less amount of stretching is made in the polygons. The **Move Topological** brush is used to modify areas where the cursor is dragged, without affecting the surrounding geometry. This brush can be used to modify facial expressions. For instance with the help of this brush, you can move the eyelid of a character without affecting the other areas of the eye. The **Move** brush is the most commonly used brush in ZBrush. It is used to form the basic shape of your model, refer to Figure 2-98. The **MoveCurve** brush is used to move the polygons of an object along the path curve, refer to Figure 2-99. The working of this brush is similar to the **DisplaceCurve** brush.

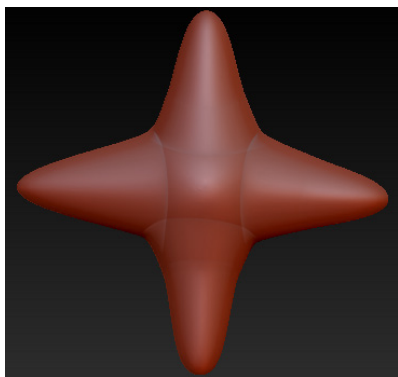


Figure 2-98 Shape of the sphere modified using the **Move** brush

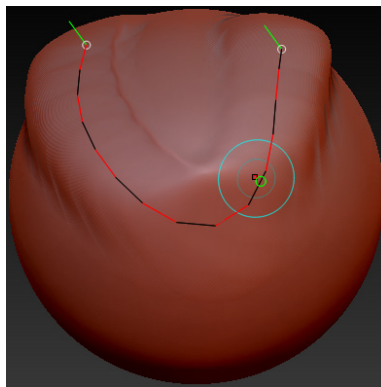


Figure 2-99 The polygons moved along the path curve

Noise Brush



The **Noise** brush adds noise to a surface, thus making it rough. In Figure 2-100, the noise pattern has been created by dragging the cursor on the surface of the sphere continuously. This brush can be used to sculpt rocky surfaces. At very low value of the **Z Intensity** slider, this brush can also be used to add pores to the nose of a human face.

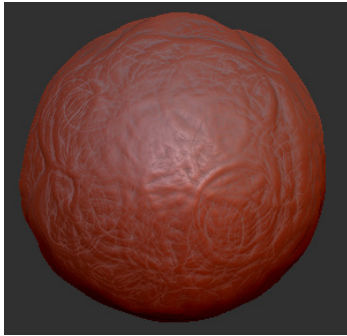
Nudge Brush



The **Nudge** brush moves the polygons in the direction of brush stroke. You can change the geometry of an object using this brush.

Pen Brushes

The Pen brushes are used in the **Quick Sketch** mode or painting on the polygons. There are two types of Pen brushes, namely **Pen A** and **Pen Shadow**, refer to Figure 2-101. Each of the pen brush creates different types of strokes. The **Pen A** brush creates a simple paint stroke, whereas the **Pen Shadow** brush creates an embossed stroke.



*Figure 2-100 Fractal noise added using the **Noise** brush*

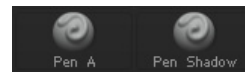


Figure 2-101 The pen brushes

Pinch Brush



The **Pinch** brush is used to pinch the vertices of an object. This brush is useful in adding subtle details like dimples and cuts to a human face.

Planar Brush



The **Planar** brush is used to flatten the surface of an object, refer to Figure 2-102. This brush converts an elevated surface into a planar surface.

Polish Brush



The **Polish** brush is used to flatten and smoothen the surface of an object to make it look like a metallic object.

Rake Brush



The **Rake** brush is used to produce scratch like effect on the surface of an object, refer to Figure 2-103.



Figure 2-102 The surface of the sphere flattened

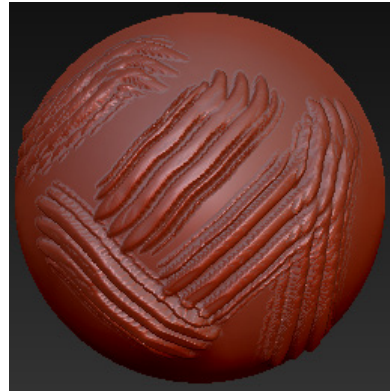


Figure 2-103 Scratches created on the surface of a sphere

Select Brushes

There are two types of Select brushes namely the **SelectLasso** and **SelectRect**, as shown in Figure 2-104. These brushes are used to select and modify a particular area of an object. The **SelectLasso** brush enables you to draw the desired shape and the **SelectRect** brush uses rectangular stroke to select an area. To use this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **SelectLasso** brush from this flyout; a message box will be displayed prompting you to press CTRL+SHIFT to activate this brush, refer to Figure 2-105.

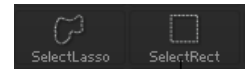


Figure 2-104 The select brushes

Press CTRL+SHIFT, and then press and hold the left mouse button. Next, drag the cursor on the surface of the sphere to create a selection area on the sphere; a green colored selection mask will be displayed, refer to Figure 2-106. Release the left mouse button; the selected area of the sphere will be displayed on the canvas, refer to Figure 2-107. Next, sculpt the selected area using different brushes, refer to Figure 2-108. In this figure, the **Standard** brush and the **ClayBuildup** brush have been used to sculpt the selected area. After sculpting the selected area, press and hold the CTRL+SHIFT key and the left mouse button, and then click on the canvas area; the complete model of the sphere along with the modified selection area will be displayed in the canvas area, refer to Figure 2-109.

The working of **SelectRect** brush is similar to **SelectLasso** brush with the only difference that a rectangular selection mask is created using this brush, refer to Figures 2-110 and 2-111.

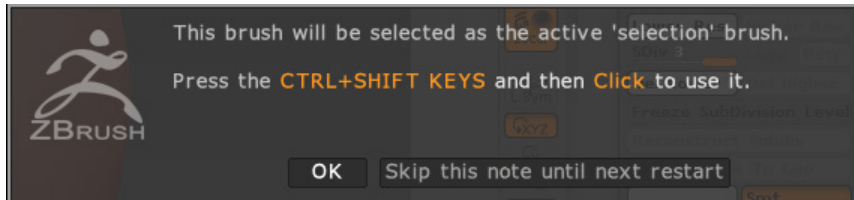


Figure 2-105 The message box displayed on choosing the *SelectLasso* brush

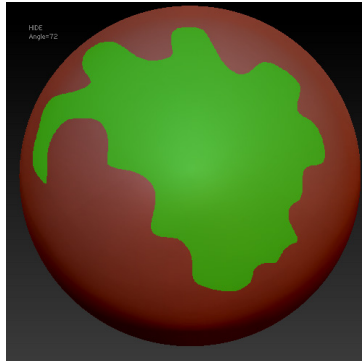


Figure 2-106 Green selection mask displayed on the surface



Figure 2-107 The selected area displayed in the canvas

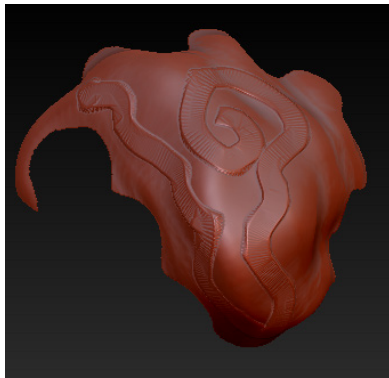


Figure 2-108 The selected area sculpted using different brushes

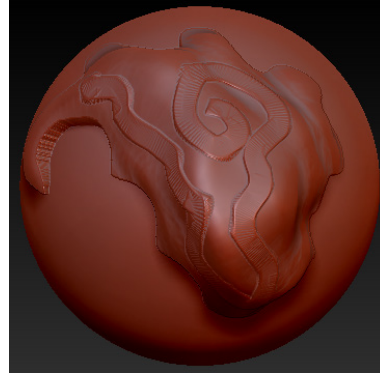


Figure 2-109 The complete sphere displayed in the canvas

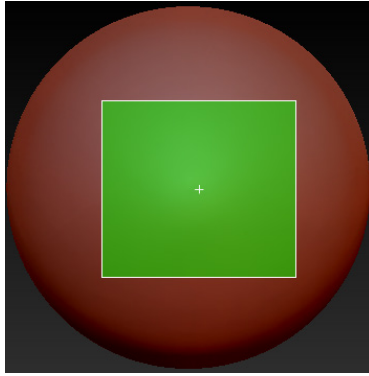


Figure 2-110 The green colored rectangular selection displayed

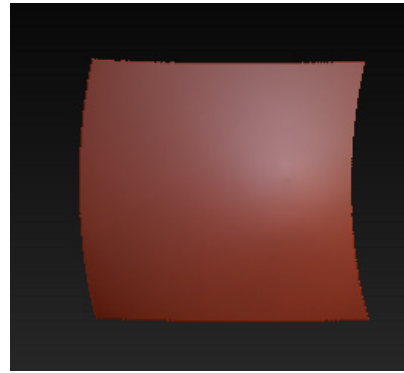


Figure 2-111 The selected area of the sphere displayed in the canvas

Slash3 Brush



The **Slash3** brush is used to produce an effect resembling a pattern produced if a soft surface is cut by a knife, refer to Figures 2-112 and 2-113.



Figure 2-112 Pattern produced using the **Slash3** brush



Figure 2-113 Pattern produced using the **Slash3** brush

Slice Brushes

There are three types of Slice brushes, namely the **SliceCirc**, **SliceCurve**, and **SliceRect**, as shown in Figure 2-114. Before using these brushes, you need to make sure that the geometry is not subdivided.

The **SliceCirc** brush is used to divide an object into a number of parts using a circular selection area, such that each part can be modified individually. To understand the working of this brush, create a sphere in the canvas and convert it into polymesh. Next, choose the **PolyF** button from the right shelf to view the polygon distribution of the sphere, refer to Figure 2-115.



Figure 2-114 The slice brushes

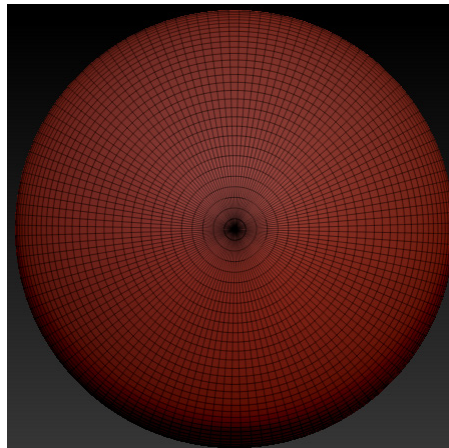


Figure 2-115 The polygons of the sphere displayed

Choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **SliceCirc** brush from this flyout; a message box will be displayed prompting you to press CTRL+SHIFT to activate this brush, refer to Figure 2-116. Press CTRL+SHIFT and then drag the cursor on the surface of the sphere; a circular selection mask will be displayed, refer to Figure 2-117. Release the left mouse button; the color of the selected area will change and it will be split into a separate group, refer to Figure 2-118. Press the CTRL+SHIFT key and then click on the split area; it will be displayed in the canvas and rest of the sphere will disappear, refer to Figure 2-119. Next, sculpt the selected area using the **Standard** brush, refer to Figure 2-120. After sculpting the selected area, press and hold the CTRL+SHIFT key and then click on the canvas area; the complete model of the sphere along with the modified selection area will be displayed in the canvas area, refer to Figure 2-121.

The **SliceCurve** brush uses curves or straight lines to split an object into separate groups, refer to Figure 2-122. The **SliceRect** brush works similar to the **SliceCirc** brush with the only difference that instead of creating a circular selection area, it creates a rectangular selection area, refer to Figure 2-123.

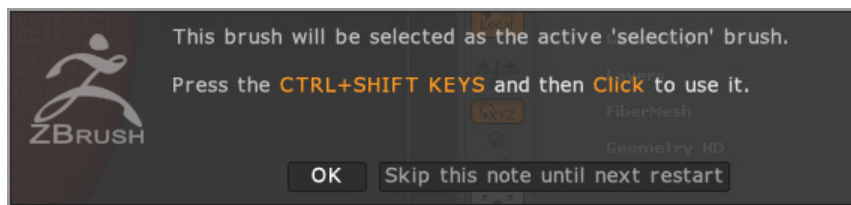


Figure 2-116 The message box displayed on choosing the **SliceCirc** button

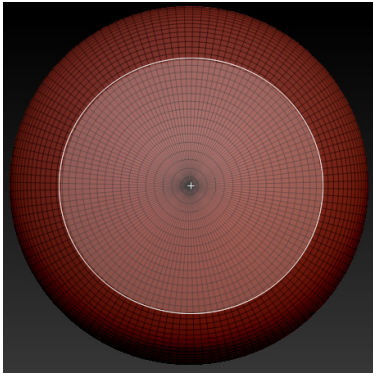


Figure 2-117 A circular selection mask displayed on the sphere

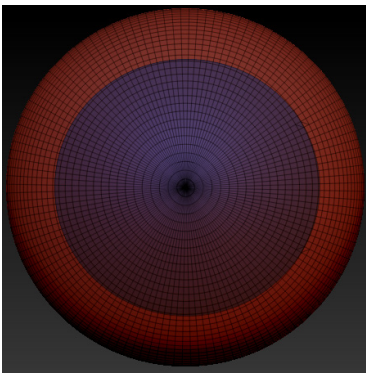


Figure 2-118 The selected area of the mask separated from the sphere

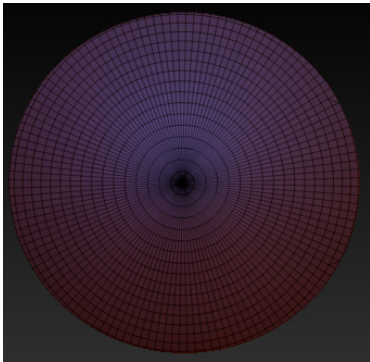


Figure 2-119 The selected area displayed in the canvas

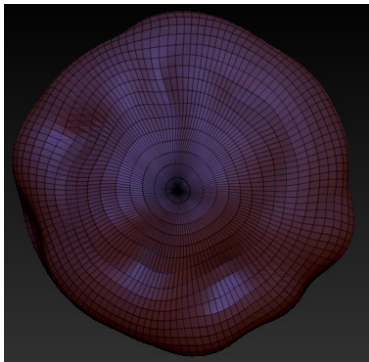


Figure 2-120 The selected area sculpted using the **Standard** brush

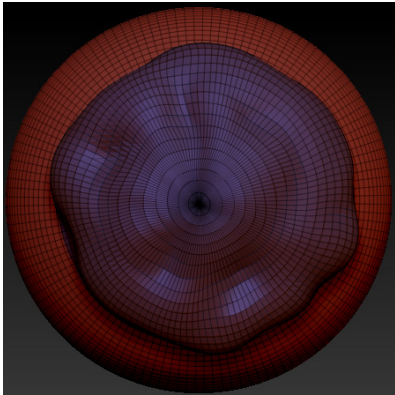


Figure 2-121 The complete sphere displayed in the canvas

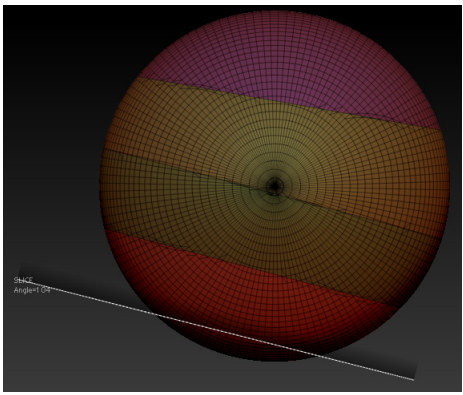


Figure 2-122 The sphere divided into different parts using the **SliceCurve** brush

Slide Brush



The **Slide** brush is used to slide out the polygons of an object in the outward direction, refer to Figure 2-124.

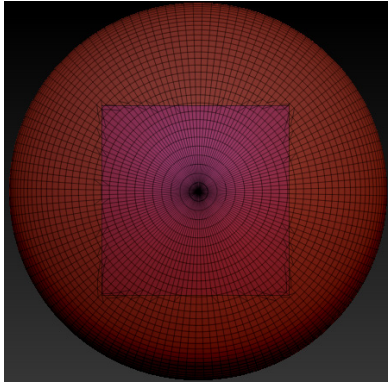


Figure 2-123 A rectangular selection area created on the surface of sphere

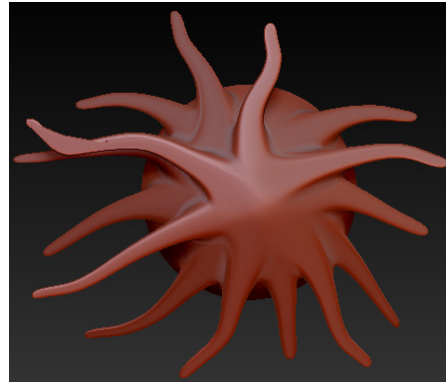


Figure 2-124 The polygons slide outward using the **Slide** brush

Smooth Brush

There are three types of Smooth brushes, namely **Smooth**, **SmoothPeaks**, and **SmoothValleys**, as shown in Figure 2-125. The **Smooth** brush is used to even out the displaced surface in order to create a smoother appearance. To invoke this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **Standard** brush from this flyout. Next, choose the Current Alpha button from the left shelf; a flyout containing different alpha images will be displayed. Choose the **Alpha 05** alpha image from this flyout. Next, press and hold the left mouse button and drag the cursor on the surface of the sphere to create the pattern, as shown in Figure 2-126.

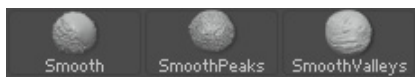


Figure 2-125 The Smooth brushes

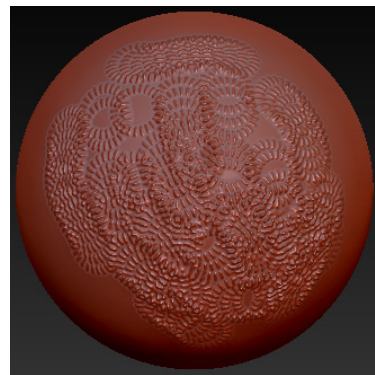
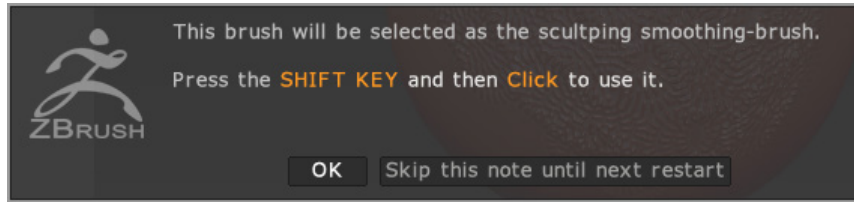
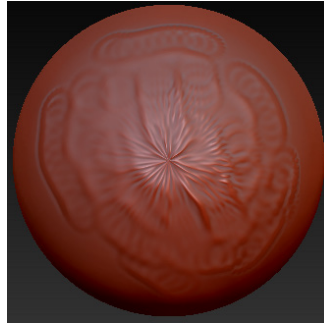


Figure 2-126 Pattern created using the **Standard** brush

Next, choose the **Smooth** brush; a message box prompting to press SHIFT to activate this brush will be displayed, refer to Figure 2-127. Choose the **OK** button from this message box. Press SHIFT and then press and hold the left mouse button. Next, drag the cursor on the surface of the sphere; the sculpted area of the sphere will become smoother, refer to Figure 2-128.

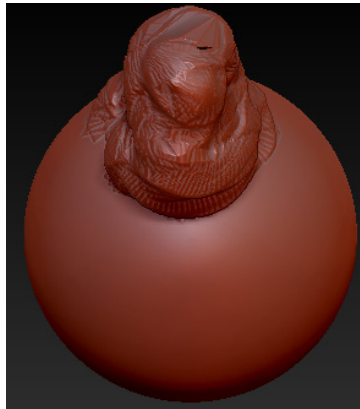


*Figure 2-127 The message box displayed on choosing the **Smooth** brush*

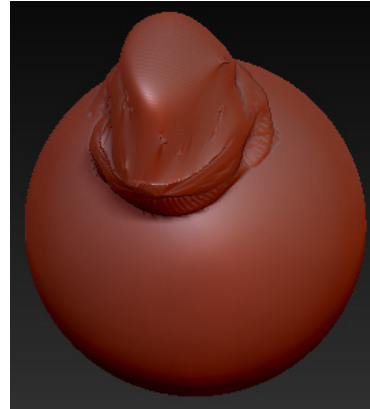


*Figure 2-128 The surface smoothened using the **Smooth** brush*

The **SmoothPeaks** brush is used to smoothen the surface of the peaks created on an object, refer to Figures 2-129 and 2-130. In Figure 2-130, the peak has been created using the **ClayBuildup** brush. The **SmoothValleys** brush is used to smoothen the surface of the cavities created on an object, refer to Figures 2-131 and 2-132. In Figure 2-132 the cavity has been created using the **ClayBuildup** brush and by choosing the **Zsub** button from the top shelf.



*Figure 2-129 Peak created using the **ClayBuildup** brush*



*Figure 2-130 Peak smoothened using the **SmoothPeaks** brush*

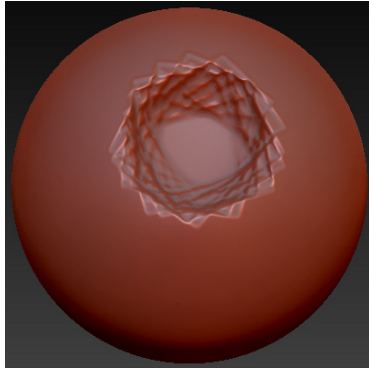


Figure 2-131 Cavity created using the *ClayBuildup* brush

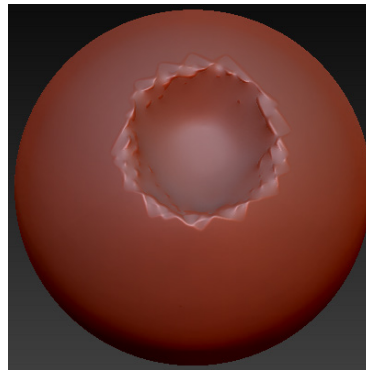


Figure 2-132 Cavity smoothed using the *SmoothValleys* brush

SnakeHook Brush



The **SnakeHook** brush is used to pull out strands from a surface, as shown in Figure 2-133. These strands have narrow ends. This brush is ideal for making barks, horns, and so on.

Soft Brushes

There are two types of Soft brushes, namely the **SoftClay** and **SoftConcrete**, as shown in Figure 2-134. These brushes use alpha images to add detail to an object quickly. By default, the **SoftClay** brush uses a rectangular alpha to add depth and the **SoftConcrete** brush uses a stone like alpha to add depth to an object, refer to Figures 2-135 and 2-136. In the **SoftClay** brush, the edges of the alpha image are smooth. However, in the **SoftConcrete** brush, the edges of the alpha image are hard.

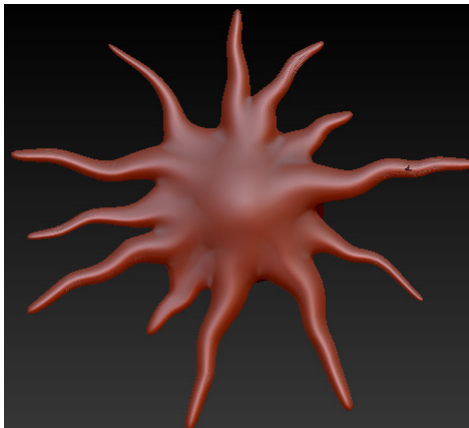


Figure 2-133 Strands pulled out using the *SnakeHook* brush

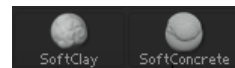
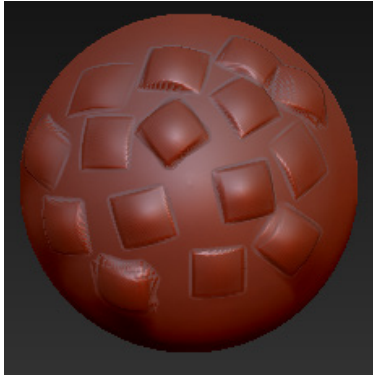
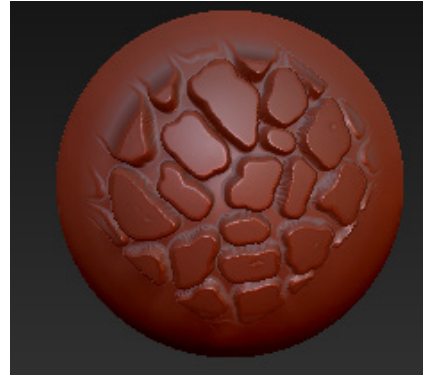


Figure 2-134 The soft brushes



*Figure 2-135 Rectangular alpha added using the **SoftClay** brush*



*Figure 2-136 A stone like alpha added using the **SoftConcrete** brush*

Spiral Brush



The **Spiral** brush is used to create twisted displacement in the surface of an object, refer to Figure 2-137.

sPolish Brush



The **sPolish** brush stands for the soft polish brush. This brush is used to smoothen or polish the extruded surface of an object.

Standard Brush



The **Standard** brush is the default brush in ZBrush. It raises the surface of a mesh or pushes it inward, depending on the settings made. If you choose the **Z Add** button, the surface of the mesh will be raised. In organic modeling, the **Standard** brush can be used to sculpt a nose on the face of a character. Similarly, if you choose the **Zsub** button, the surface of the mesh will be pushed inwards. While modeling human faces, it can be used to sculpt eye sockets on the face of a character.

The **Z Intensity** slider will determine the strength of the stroke. Higher the value of intensity, higher will be the degree of elevation. The **Draw Size** slider helps you in controlling the size of the brush and the **Focal Shift** slider controls the softness or fall off of the edge of the brush. If you sculpt with the **Zadd** button chosen, and holding the ALT key, the surface will be pushed inward instead of being raised. Similarly, holding the ALT key with the **Zsub** button chosen will raise the surface of an object. Figure 2-138 shows a sphere sculpted by using the **Zadd** and **Zsub** settings of the **Standard** brush.

StitchBasic Brush



The **StitchBasic** brush is used to create a pattern of stitches on the surface of an object. This brush is ideal for sculpting clothes and leather accessories.

Topology Brush



The **Topology** brush is used to create a new mesh on the already existing object. This brush is ideal for creating accessories on a human model. This brush can be used if the geometry has not been subdivided. This brush will be discussed in detail in later chapters.



Figure 2-137 Twisted displacement produced by using the **Spiral** brush



Figure 2-138 A sphere sculpted by the **Standard** brush

Transpose Brush



The **Transpose** brush is used to move, rotate, or scale an object. This brush can also be used to pose a character. To invoke this brush, choose the Current Brush button from the left shelf; a flyout containing different sculpting brushes will be displayed. Choose the **Transpose** brush from this flyout; an action line will be displayed on the surface of the spiral, refer to Figure 2-139.

Press and hold the left mouse button and drag the cursor on the surface of the spiral; the size of action line will be increased, refer to Figure 2-140.

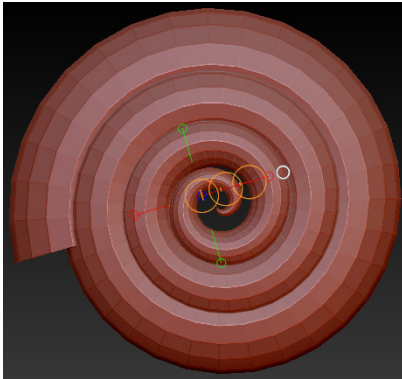


Figure 2-139 Action line displayed on the spiral

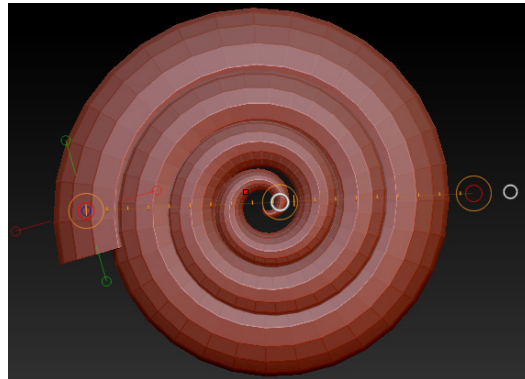


Figure 2-140 Size of the action line increased

On choosing the **Transform** brush, you will notice that the **Move** button in the top shelf gets automatically chosen. This button will enable you to move the spiral in the canvas. To move the spiral, hover the cursor at the centre of the middle most circle of the action line and then press and hold the left mouse button. Next, drag the cursor; the position of the spiral will change in the canvas accordingly.

To scale the spiral, choose the **Scale** button from the top shelf and hover the cursor at the centre of the middle most circle of the action line and then drag the cursor in the canvas; the spiral will be scaled, refer to Figures 2-141 and 2-142.

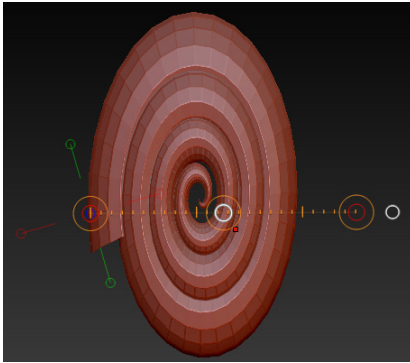


Figure 2-141 Spiral scaled up vertically

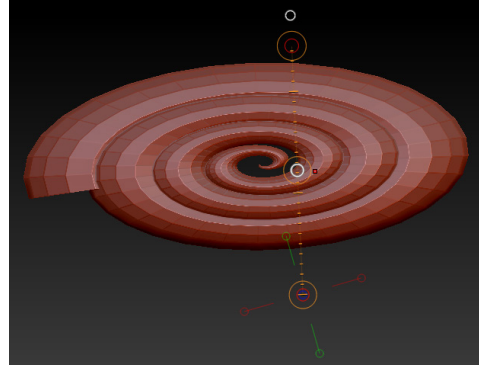


Figure 2-142 Spiral scaled up horizontally

To scale the spiral uniformly, hover the cursor at the centre of the end most circles of the action line and then press and hold the left mouse button. Next, drag the cursor in the canvas area; the spiral will be scaled uniformly. Similarly, you can rotate the spiral in the canvas by choosing the **Rotate** button from the top shelf.



Note

To change the position of the action line on the surface of an object, drag the cursor on the object at different positions; the action line will be displayed at those positions. To flip the direction of the action line, click on the green circle at the end of the action line.

You can also bend the surface of an object by using the **Transpose** brush. To do so, create an object in the canvas and convert it into polymesh. Next, choose the **Transpose** brush; a small action line will be created on the surface of the object. Press and hold the left mouse button and drag the cursor on the surface of the object; the size of the action line will be increased, refer to Figure 2-143. Hover the cursor at the centre of the middle most circle in the action line. Press and hold the ALT key and the left mouse button and drag the cursor downward; the surface of the object will be bent, refer to Figure 2-144.

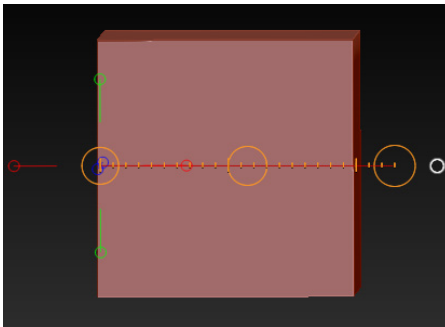


Figure 2-143 Action line displayed on the spiral

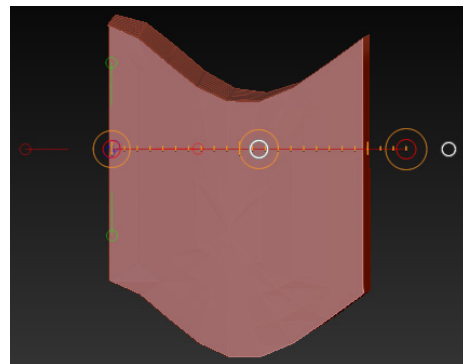


Figure 2-144 Surface of the cube bent using the **Transpose** brush

TransposeSmartMask Brush

The **TransposeSmartMask** brush is used to mask distinct areas of a surface. This brush detects the curved areas in the surface and creates a mask around them. To understand the working of this brush, choose the **LightBox** button from the top shelf; the LightBox browser will be displayed. In the **Tool** tab of this browser, double-click on the **Dog.ZTL** file. Press and hold the left mouse button and drag the cursor on the canvas; the model of the dog will be loaded in the canvas, refer to Figure 2-145.

After loading the model, choose the **Edit** button from the top shelf, and then choose the **TransposeSmartMask** brush. Press and hold the CTRL key and the left mouse button and drag the cursor on the surface of the model; the size of action line will increase and a mask will be created on the top area of the model, refer to Figure 2-146. To increase the area of the mask, drag the cursor on surface of the model such that its size is increased significantly, refer to Figure 2-147.



Figure 2-145 Model of the dog created in the canvas

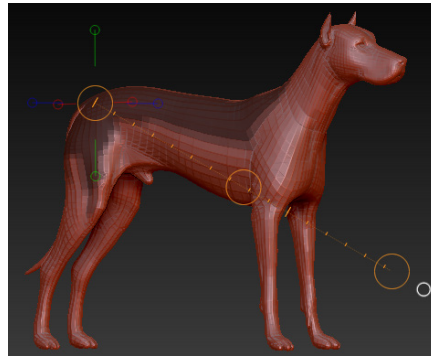


Figure 2-146 Mask created on the top area of the model

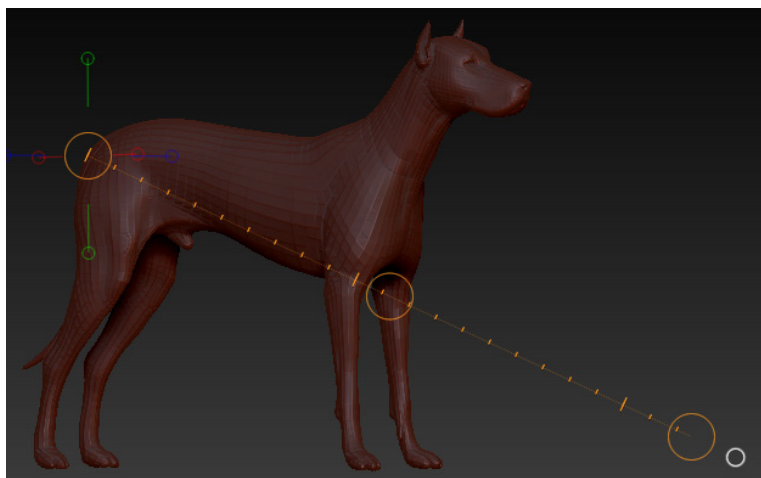


Figure 2-147 Mask created on the entire surface of the model

Trim Brushes

The Trim brushes are used to make the surface of an object flat. There are six types of Trim brushes namely: **TrimAdaptive**, **TrimCircle**, **TrimCurve**, **TrimDynamic**, **TrimLasso**, and **TrimRect**, refer to Figure 2-148. The **TrimAdaptive** brush is used to create planes on the curved surface by slicing the curve. The **TrimCircle** brush uses circular shape to slice the geometry and create new polygons. The **TrimCurve** brush uses curves or straight lines to slice the geometry and create new polygons. The **TrimDynamic** brush creates planes on the surface and maintains the curvature of the surface. The **TrimLasso** brush uses desired shape to slice the geometry and create new polygons. The **TrimRect** brush works similar to **TrimCircle** brush with the only difference that it uses a rectangular marquee selection to slice the geometry and create new polygons on the squeezed area.

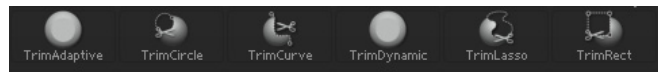


Figure 2-148 The Trim brushes

Weave1 Brush



The **Weave1** brush is used with different alphas to create different patterns on an object, refer to Figure 2-149.

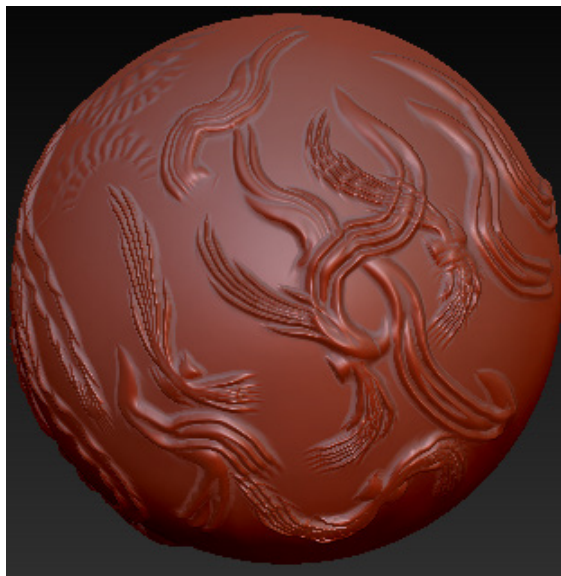


Figure 2-149 Different patterns created using the Weave brush

ZProject



The **ZProject** brush is used mainly in texturing. If you want to texture a human face, then you need to keep the reference image along with the 3D model in the canvas area.

By using the **ZProject** brush, you can transfer the texture from the reference image into your 3D model. The **ZProject** brush uses the Z axis of the canvas to transfer sculpting and texturing details either from the canvas or from other subtools. This brush will be discussed in detail in later chapters.

ZRemesherGuide Brush



The **ZRemesherGuide** brush is used to control the flow of edges in geometry. This brush is used in combination with the **ZRemesher** feature. The **ZRemesher** is used to edit the existing topology of an object. The **ZRemesherGuide** brush facilitates this by enabling you to draw curves on the surface of an object. These curves decide the edge loop flow in the geometry. The **ZRemesher** features and the **ZRemesherGuide** brushes will be discussed in detail in the later chapters.

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 hot keys is used to activate the Clip brushes?
 - (a) CTRL+ALT
 - (b) CTRL+SHIFT
 - (c) CTRL
 - (d) None of these
2. The _____ brush is used to add wrinkles to an object.
3. The _____ brushes are used in the **Quick Sketch** mode or painting on the polygons.
4. The _____ brush is used mainly in texturing.
5. The _____ brush is used to create a pattern of stitches on the surface of an object.
6. The _____ brush is used to control the flow of edges in the geometry.
7. The **Divide** button in the **Geometry** subpalette is used to decrease the number of polygons in a mesh. (T/F)
8. The **MatchMaker** brush is used to fit one mesh into the contours of another mesh. (T/F)
9. The **Smooth** brush is activated by pressing the ALT key. (T/F)
10. Each time you subdivide a model with subdivision history using the **Divide** button, the **SDiv** slider should be at its highest setting. (T/F)

Review Questions

Answer the following questions:

1. Which of the following keys activates the alternate mode for the **Z Add** button and the **Z Sub** button?
 - (a) ALT
 - (b) SHIFT
 - (c) CTRL
 - (d) SPACEBAR
2. The term IMM stands for _____ .
3. The _____ brush is used to add organic details to an object.
4. The _____ brush is used to create a new mesh on the surface of an object by drawing curves for the new mesh.
5. The _____ brush uses a circular stroke to create a mask on the surface of an object.
6. The **Inflat** brush is used to expand the surface of an object by a significant amount. (T/F)
7. The **Rake** brush is used to isolate a certain region of an object. (T/F)
8. The **Transpose** brush is activated when the brush is in the **Draw** mode. (T/F)
9. The **CurveBridge** brush is used to create a bridge geometry between two curves. (T/F)

Answers to Self-Evaluation Test

1. b, 2. Crumple, 3. Pen, 4. ZProject, 5. Eight, 6. QRemesherGuide, 7. F, 8. T, 9. F, 10. T