itDD

_Introduction to Techniques in Digital Design

Laura Fehlberg, Instructor
Mark Daniel Nagis, Instructor

web@verillium.net

Blend Shape

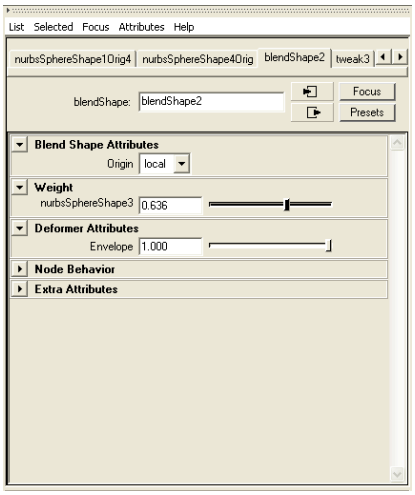
Blend Shape deformers let you change the shape of one object into the shapes of other objects. It is specifically designed to perform morphing tasks, and it has a separate slider editor. One can access blend shape sliders in the **Attribute Editor** or through the channels in the **Channel Box**.

Blending works best when the **Target Object** and the **Base Object** have the same **Topology**, meaning they have the same number of CVs in the same order. Although Maya will blend objects with different Topologies, the user may not always get the desired result.

Creating a Blend Shape Deformation:

1. In **Object Mode**, select one or more deformable objects for **Target Object** shape(s), and then select one deformable object as the **Base Object** shape. Make sure that these elements have the same **Topologies**, meaning they have the same number of CVs in the same order. The user can also **Blend Shape** points. Select X amount of point on the Target Object, and then select X amount of points on the Base Object.
2. With the **Animation** Pull Down Menu selected in the **Status Line**, click *Deform* > Create Blend Shape (Options Dialog Box) in the **Main Menu**
3. Click the **Basic** and **Advanced** tabs and set the creation options. The Envelope variable specifies the deformation scale factor. Use the slider to specify values from 0.0000 to 1.0000. The **Origin** determines whether the blend shape will be relative to the base object shape's position, rotation, and scale. **Local** will blend the base object shape to the target object shape(s) while ignoring differences in position, rotation, and scale between the base object and the target object(s). In general, Local is useful when you want to have your target object(s) in various separate positions for easy viewing but don't want their positions to affect the deformation. **World** will blend the base object shape to the target object shape(s), taking into account any differences in position, rotation, and scale between the target object shape(s).
4. Click Create to Complete

You can also edit the **Target** values in the **Attribute Editor**, where the targets appear as sliders under the **Weight** section of the **blendShape Tab**. Once you are satisfied with the **blendShape Targets**, you can delete the **Target Objects** to lighten the scene. This prevents you from further editing the **Target Shapes**, but the blending information remains with the base object, so you can always recreate a **Target** geometry by copying it from the **Base Object (A)**.



(A)

Motion Paths

Attach to Motion Path:

1. Create a curve to serve as your motion path.
2. Select the object you wish to animate; shift-select the path curve.
3. With the *Animation* Pull-Down Menu selected in the *Status Line,* select *Animate>Motion Paths>Attach to Motion Path.*
4. Select the appropriate settings in the *Options Dialog Box.* See below for an explanation of the settings options:
   Start Time Specifies the start time of the motion path animation.
   End Time Specifies the end time of the motion path animation.

   Parametric Length Specifies the method Maya uses to position an object as it moves along a curve. There are two methods: the parametric space method and the parametric length method. Turning off Parametric Length selects the parametric space method. Turning on Parametric Length selects the parametric length method.

   Parametric Space Method will cause your object to move at a constant rate along the length of the curve. The advantage of using the parametric space method is that if you have spent time adjusting the timing of the object's movement along the curve, CVs can be added to the beginning or end of the curve without affecting the timing of the motion on the existing part of the curve.

   Parametric Length Method divides the total amount of time for the animation by the spans of the path curve, each weighted according to span length. The rate of speed of your object as it moves along the path will vary. The object will move swiftly along long spans with few CVs and more slowly with negotiating shorter spans with more CVs. The advantage of using the parametric length method is that it is easy to obtain smooth timing of the object's motion without having to insert timing markers to refine the timing of the object along the path curve.

Follow If on, Maya computes the object's orientation as it moves along the curve. It is on by default.
Note: When attaching an aimed camera to a curve as a motion path, turn off the Follow option.

Front Axis Specifies which of the object's local axes aligns with the front vector. This specifies the frontwards orientation of the object as it travels along the curve.

Up Axis Specifies which of the object's local axes aligns with the up vector. This specifies the upwards orientation of the object as it travels along the curve. The up vector aligns with the world up vector specified by the World Up Type.

World Up Type Specifies the type of world up vector that the up vector aligns with. Selections include Scene Up, Object Up, Object Rotation Up, Vector, and Normal. You will find the most useful options to be the following:

Scene Up specifies that the up vector try to align with the scene's up axis instead of the world up vector. The world up vector is ignored. You can specify the scene's up axis in the Preferences window. The default scene up axis is the world space positive Y-axis.

Vector specifies that the up vector tries to align with world up vector as closely as possible. The world up vector is defined relative to the scene's world space. (This is the default.) Use World Up Vector to specify the direction of the world up vector relative to the scene's world space.

Normal specifies that the axis specified by Up Axis will try to match the normal to the path curve. The interpretation of the curve normal is different depending on whether the path curve is a curve in world space, or a curve on surface curve. It is best to avoid using the Normal option for the Up Directions with world-space curves because the normal to a curve will flip 180 degrees when the curve changes from a convex to concave (or vice versa) shape. If the path curve is a curve-on-surface, then the normal to the curve is the normal to the surface at that point on the curve. The Normal option will give the most intuitive results when the path curve is a curve-on-surface.

Inverse Up If this option is on, Up Axis tries to align itself with the inverse of up vector.

Inverse Front Reverses the frontwards direction an object is pointing along the curve.

Bank Banking means the object will lean in towards the center of the curvature of the curve that it travels along (like a motorcycle going around a corner). The bank option is only available if the Follow option is on, as banking also affects the rotations of the object.

The path animation automatically computes how much banking should occur depending on how curved the path curve is. You can adjust the banking using Bank Scale and Bank Limit. If you increase the Bank Scale, then the banking effects will be more pronounced. For example, if the Bank Scale is set to 2, then the object will bank twice as much as the default that is computed.

The Bank Limit lets you restrict the amount of leaning. For example, the Bank Scale may be increased to obtain pronounced effects, but then this may cause the object to lean too much where the curve is very curved. This option will limit the leaning to the given amount.

Create Tube

Animate an Extrusion:

1. Create a surface extrusion. Be sure that in the *Extrude* options dialog box you select "**Curve Range>Partial**".
2. In the *Channel Box Editor*, under the *Inputs* node, determine which subCurve is the direction in which you would like to animate the extrusion.
3. Set Max Value of that subCurve to