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Deformers

Using Deformers

Deformers are a special set of tools that let you easily manipulate objects in ways that would normally require a large number of arranging and remodeling operations.

For example, using the Explode deformer, you can make an object appear to explode by setting only a few parameters. Without the Deformer, you would have to remodel the object several times to achieve the same effect.

Deformers can also be animated. So you can create complicated animation effects like morphing and dissolves by simply applying different Deformers to your objects.

Applying Deformers

You can access all the Deformer available in Ray Dream from the Deformers tab on the **Properties** palette. Each Deformer has its own settings but they're all applied in the same way.

To apply a Deformer:

1. Select the object or group you want to deform.
2. Open the **Properties** palette by choosing **Windows menu▸ Properties**.
3. Click the **Deformers** tab. If the tab is not visible, use the scroll buttons at the top of the palette.
4. Select the Deformer you wish to apply from the pop-up.
5. Select the Deformer's properties parameters by adjusting the value of its sliders and enabling the relevant options.
6. Click **Apply**. The Deformer is applied to the object.

Only one Deformer can be selected at any given time, so if you want to combine the effects of multiple Deformers (a **Stretch** and a **Twist** for instance) to an object, you need to stack them up using artificial group hierarchies.

To apply multiple Deformers:

1. Apply the first Deformer.
2. Put the object in a group by itself using the **Group** button.

Use the Group button to group the selected object.

3. Apply the second Deformer to the new group.

Controlling a Deformer Directly

The **Direct Manipulation** controls let you adjust the Deformers attributes directly on the object. **Direct manipulation** controls appear as a set of wires with "handles" at certain points. The handles represent attributes you can change by dragging.

To display the Direct Manipulation controls on a Deformer:

1. Select an object.
2. Display the **Properties palette▸ Deformers tab** and apply a Deformer to the object.
3. Click **Auto**.
4. Click the **Direct Manipulation** button. The Deformers control handles appear in the **Perspective** window.

Note: Not all Deformers have **Direct Manipulation** controls.

Using the Atomize Deformer

The **Atomize** deformer replaces the surface of the selected object with small balls which are then slightly scrambled or wiggled.

When you apply the Atomize deformer to an object its surface is replaced with small balls.

To set Atomize deformer attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Completion of Wiggle Effect** slider.

   The **Completion of Wiggle Effect** slider controls the amount of movement the balls display as they move. When animating this Deformer, you would set the value of this slider to 0% at the first

frame and 100% at the final frame. A setting of 600% may result in the same position as a setting of 0%.

2. Adjust the value of the **Particle Density** slider.

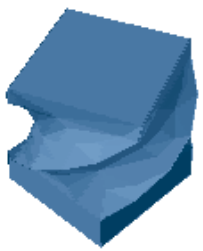
   This slider controls the number of balls created to cover the surface of the object.

3. Adjust the value of the **Particle Size** slider.

   This slider controls the size of the balls on the object's surface.

Using the Bend and Twist Deformer

The **Bend and Twist** deformer bends and/or twists the surface of an object. This Deformer is particularly useful for fine tuning complex models such as bent compound shapes that are otherwise tricky or impossible to achieve.

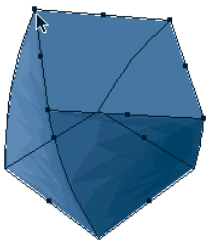


You can add bends and curves to an object by applying the Bend and Twist deformer.

The bend and bend axis respectively control the amount and direction of the bend, while the twist, twist start and twist size define the amount of twist and portion of the object on which the twist is applied.

To directly control the Bend and Twist deformer:

1. Click the **Direct Manipulation** button on the **Properties palette:Deformer tab**. A bounding box with twelve points appears around the object.



Use the Bend and Twist deformer' s direct manipulation controls to set the Deformer's attributes in the Perspective window.

2. Enable a **Twist axis** button. These buttons let you select the axis to which the twist will be applied.

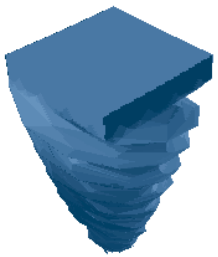
   When you select an axis the bend and twist controls on the object's bounding box move to the selected axis.

3. On the **Twist** axis, drag one of the corner points clockwise, or counter-clockwise to twist the object.

4. On the twist axis, drag one of the middle point up or down to bend the object.

Using the Black Hole Deformer

The **Black Hole** deformer creates a vortex effect, similar to the way water swirls as it is being sucked down a drain. In an animation the **Black Hole** deformer creates a whirling, circular motion that tends to form a cavity or vacuum at the center of its action.



The Black Hole deformer creates a vortex effect.

To set Black Hole attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Completion of Hole Entrance** slider.

The **Completion of Hole Entrance** slider controls the state of the vortex. Set this value to 0% at the beginning of an animation, and 100% at the end.

2. Adjust the value of the **Winding** slider.

   This slider controls the rotation as the Black Hole deforms. A negative setting creates a counterclockwise rotation.

3. Adjust the value of the **Spin Speed** slider.

   The **Spin Speed** slider controls how fast the object turns as it goes down the vortex

4. Adjust the value of the **Suck Down Point Below Object** slider.

   This slider controls how far below the object the center of gravity is placed. A low setting results in little gravity pull while a high setting results in a stronger pull.

Using the Dissolve Deformer

The **Dissolve** deformer reduces the object to triangles or polygons then diminishes the object so that it gradually fades away or disintegrates. You can use this Deformer to create interesting sci-fi effects such as a transporter or a mummy dissolving before your face in a horror movie.

Use the Dissolve deformer to convert an object's surface to triangles and polygons that fade.

To set Dissolve attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Completion** slider.

   This slider controls how much the object has dissolved. In an animation, set this value to 0% in the first frame and 100% in the last.

2. Adjust the value of the **Size of Pieces** slider.

   This slider controls the size of the piece the object dissolves into.

Using the Explode Deformer

The **Explode** deformer causes the object to burst apart.

Use the Explode deformer to break an object apart.

To set Explode attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Completion of Explosion** slider.

   This slider controls how much the object has exploded. In an animation, set this value to 0% in the first frame and 100% in the last. If you apply gravity, the pieces gradually fall to the ground as the explosion progresses.

2. Adjust the positions of the controls in the **Size of Pieces** slider.

   This slider controls the range of sizes for the pieces created by the explosion. The slider contains two controls. The right

control sets the size of the largest pieces while the left control sets the size of the smallest pieces.

Use the Size of Pieces slider to set the size of the exploded pieces.

With the left control set to the far left (0%) and the right control set to the far right (100%) you will have the greatest variety of sizes for the pieces. With the two controls set close together the difference between the largest and smallest pieces will be less dramatic.

3. Adjust the positions of the controls in the **Speed** slider.

   The **Speed** slider controls the speed of the pieces as they move away from the original position of the object. The slider contains two controls. The left control sets the speed for the slowest moving particles while the right control sets the speed for the fastest moving particles

   With the left control set to the far left (0%) and the right control set to the far right (100%) you will have the greatest variety of speed.

4. Adjust the value of the **Gravity** slider.

   The **Gravity** slider controls how much gravity is applied to the pieces. The higher the setting, the faster the pieces fall downward.

5. Adjust the value of the **Slow Down at End** slider.

   This slider controls the rate at which the pieces slow down as they get farther from the center of explosion.

6. Adjust the positions of the controls in the **Rotational Speed** slider.

   The **Rotational Speed** controls the speed at which the pieces rotate as they move away from the original position of the object. The slider contains two controls. The left control sets the speed for the slowest moving pieces while the right control sets the speed for the fastest moving pieces

7. Enable the **Large Pieces Move Slower** checkbox if you want larger pieces move more slowly during the explosion.

8. Enable the **Pieces Stop At Bottom** checkbox if you want all the pieces stop falling when they reach the bottom of the original object's bounding box.

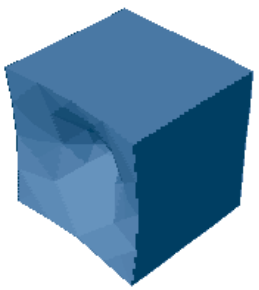
9. Enable the **Explode from Top Down** checkbox if you want the object to explode starting from the top then working down to the bottom.

Using Formula Deformers

The **Formula** deformers uses mathematical equations to deform the selected object. You can use the **Formula Editor** to input variables, operators and parameters. Formula deforming is a very technical process, for more information on using formulas refer to the "Using Formulas in Ray Dream Studio 5" PDF on the Ray Dream Studio 5 CD.

Using the Punch Deformer

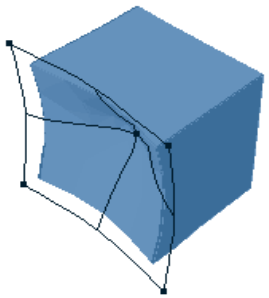
The **Punch** deformer punches a dent into an object or bulge it outward.



Use the Punch deformer to dent or bulge an object.

To directly control the Punch deformer:

1. Click the **Direct Manipulation** button. A square with five points appears in front of the object.



Use the Punch deformer's direct manipulation controls to set its attributes in the Perspective window.

2. If necessary, click the **Orientation** menu and choose an axis.

   The punch controls move to the selected axis.

3. If necessary, enable the **Punch Other Side** checkbox to place the dent on the other side of the object.

4. Drag the center point on the square towards the object to increase the strength of the Punch, or away from it to decrease the strength. Dragging away from the object creates a bulge instead of a dent.

5. Drag one of the corner handles away from the center of the square to increase the **Punch Radius**, or towards the center to decrease the radius.

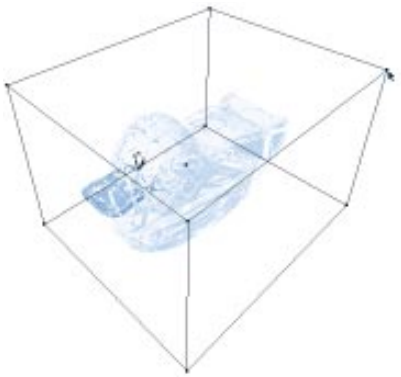
Using the Shatter Deformer

Shatter is a very simple, facet based Deformer you can use to simulate object explosions. Since the Deformer only works at the facet/patch level, it will work best on non patch based objects (for example, imported objects or objects created in the **Mesh Form** modeler). When applied to objects made with Ray Dreams's **Free Form** modeler, the shatter will only separate the patches that make up the surface of the object from each other. This results in a coarse grained shatter effect.

The Shattered deformer separates the patches that make up an object's surface.

To directly control the Shatter deformer:

1. Click the **Direct Manipulation** button. A bounding box with eight points appears around the object.

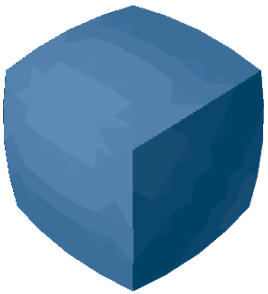


Use the Shatter deformer's direct manipulation controls to set the Deformer's attributes in the Perspective window.

2. Drag a point on the box away from the object to increase the scale of the shatter, or drag towards the object to decrease the shatter scale.

Using the Spherical Morph Deformer

The **Spherical Morph** deformer turns the selected object into a sphere.



The Spherical Morph turns any selected object into a sphere.

To set Spherical Morph attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Completion** slider.

   This slider controls the morphing of the object into a sphere. In an animation, set this value to 0% in the first frame and 100% in the last frame.

Using the Spike Deformer

The **Spike** deformer adds needle-like pointed spikes to the selected object. Use the **Spike** deformer to add stubble to a character's chin or create a field of grass, blowing in the wind.

The Spikes deformer creates needle point shapes over the surface of an object.

To set Spike attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Spike Density** slider.

   This slider sets the number of spikes applied to an object.

2. Adjust the value of the **Length** slider.

   The **Length** slider controls the length of the spikes.

3. Adjust the value of the **Radius** slider.

   This slider lets you set the radius of the spikes.

4. Adjust the value of the **Messiness** slider.

   The **Messiness** slider controls how wavy the spikes appear. A low setting results in fairly straight spikes while a high setting results in very wavy spikes.

5. Adjust the value of the **Flow** slider.

   The **Flow** slider works with **Messiness** and controls the wiggles of the spikes during animations. The higher the value, the more the spikes will appear to move.

6. Adjust the value of the **Gravity** slider.

   The **Gravity** slider controls the strength of gravity on the spikes.The higher the value, the more the spike will bend downward.

7. Enable the **Keep Original Object** checkbox if you want to keep the original object while adding the spikes around it. Disable it to replace the object with spikes.

Using the Stretch Deformer

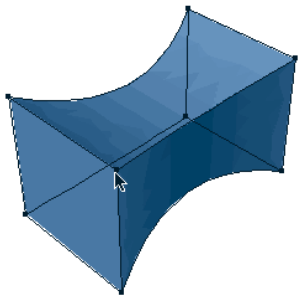
The **Stretch** deformer is particularly suitable for simulating the exaggerated, cartoon-style effects of squash and stretch motions. A squashed object will seem to bulge; a stretched one will elongate itself while thinning in its middle, almost like chewing-gum!

Use the Stretched deformer to elongate an object.

The stretch axis indicates the axis along which the stretch/squash will occur. Any percentage value lower than 100% will cause the object to be compressed and bulge; any value greater than 100% will elongate and thin the object or group selected.

To directly control the Stretch deformer:

1. Click the **Direct Manipulation** button. A bounding box with eight points appears around the object.



Use the Stretch deformer's direct manipulation controls to set the Deformer's attributes in the Perspective window.

2. Select an axis to stretch along.

3. Drag a point on the box away from the object to stretch it, or drag towards the object to squash it.

Using the Warp Deformer

The **Warp** deformer takes the object's surface points that are farthest from the center of the object and moves them out farther. At the same time, surface points that are nearest the center of the object move in closer to the center.

Note: The **Warp** deformer has no effect on spheres because all the surface points are the same distance from the center.

When you apply the Warped deformer the object is distorted by reversing its surface points.

To set Warp attributes:

1. On the **Properties Palette:Deformers tab**, adjust the value of the **Warp Strength** slider.

   The **Warp Strength** slider controls the amount of distortion. A negative setting moves surface points near the center away from the center and surface points far from the center in toward the center. A positive setting moves surface points far from the center farther away from the center and points near the center closer to the center.

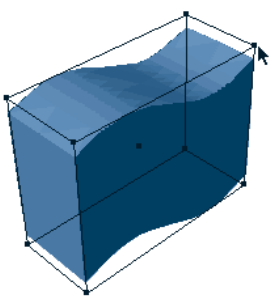
Using the Wave Deformer

The **Wave** deformer distorts the object by pulling it along an imaginary wavy sweep path. Use this Deformer to simulate air or water currents.

Apply the Waves deformer to distort an object along a wavy sweep path.

To directly control the Wave deformer:

1. Click the **Direct Manipulation** button. A bounding box with a number of control handles appears around the object.



Use the Wave deformer' s direct manipulation controls to set the Deformer's properties in the Perspective window.

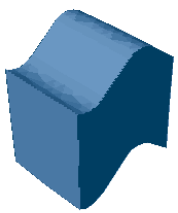
2. Click the **Properties palette▸ Deformer tab▸ Orientation menu** and choose an axis.

   The height and phase controls move to the selected axis.

3. Adjust the value of the **Number of Wave Cycles** slider to set the number of waves applied to the object.

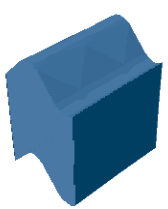
4. Click the **Properties palette▸ Deformer tab▸ Shape menu** and choose a shape for your wave.

   Planar A: Wave moves along the plane A.



An object deformed using Planar A wave.

Planar B: Wave moves along the plane B.

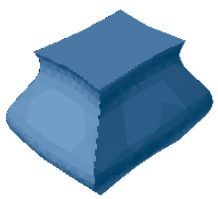


An object deformed using a Planar B wave.

Radial: Wave moves from center point outward.

An object deformed using a Radial wave.

Cylindrical: Wave moves around the outside of the object as if it were in a cylinder.



An object deformed using Cylindrical waves.

The direction in which the wave is applied depends on the setting in the Orientation box.

5. Drag one of the corner handles to adjust the height of the wave. Dragging away from the object increases the wave's height.

6. Depending on the type wave you selected you can adjust the **Phase** of the waves in a number of ways:

For Planar A and B waves move the center handles left or right to adjust the phase.

For **Radial** waves you can move the handles towards or away from the objects center. As you move towards the middle of the object, its center appears to sink, as you move away, its center bulges up.

For **Conical** waves you can move the center handles up or down to adjust the phase.