



# KPT SceneBuilder Tutorial

Welcome to the KPT® SceneBuilder tutorial. This tutorial introduces you to all the major features and functions in KPT SceneBuilder—teaching you the techniques you need to know to create 3D illustrations.

Each section is self-contained so that you can start the tutorial at any point. If you're a beginner, we recommend that you begin with Lesson 1.

The tutorial uses various files which you can find on your KPT 6 CD-ROM in the **Tutorials:**  
**KPT SceneBuilder** folder.

# Lesson 1: Getting Started

In this lesson, you'll launch KPT SceneBuilder, load a simple object, and learn how to manipulate it in KPT SceneBuilder's workspace.

## Loading an Object

You'll use a small 300 by 300 pixel document as the base image for launching KPT SceneBuilder. You'll then load an existing object and view it in different preview modes.

To load an object:

- 1 Launch the host application—either Adobe® Photoshop® or a Photoshop-compliant host, such as MetaCreations™ Painter™.
- 2 Create a new 300 by 300 pixel RGB document with a white background.
- 3 Choose **Filter menu > KPT6 > KPT SceneBuilder**.
- 4 Click and hold on the File button—choose Open from the menu.



The Open dialog appears.

- 5 Use the dialog controls to select Torus.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.

A blue torus appears in the middle of the KPT SceneBuilder workspace. It is displayed using the default Preview mode—Wireframe. Throughout this tutorial, you'll work in Gouraud shaded mode.

To change the Preview mode:

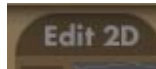
- Click the Gouraud shaded icon on the left side of the Scene window.



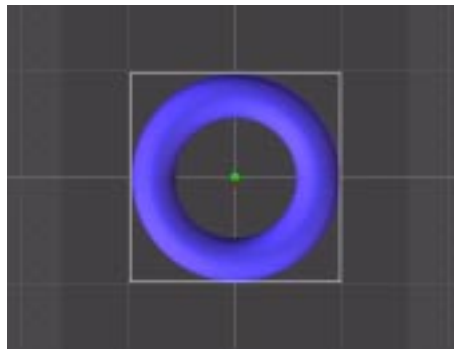
If this is your first time using KPT SceneBuilder, the default mode is Edit 2D. If you've already worked with KPT SceneBuilder, make sure that Edit 2D mode is still active.

To select Edit 2D mode:

- Click the Edit 2D tab at the top of the workspace.



The KPT SceneBuilder workspace should appear as follows.



## Using the Ghost Menu

You can access many of the commands you'll use in the following sections through the Ghost menu.



The Ghost menu.

The key benefits of using the Ghost menu are:

- You don't have to move the mouse to the toolbar—the menu pops up under your mouse.
- You don't have to remember keyboard commands.
- The Ghost menu recalls your last action. The next time you activate it, the command you used last time is directly under your cursor. To activate the same command again, just release the mouse button.

To access the Ghost menu:

- Windows: Right click in the Scene window.
- Macintosh: Control+Click in the Scene window.

## Manipulating the Object

Now that you've loaded the object, you can move, rotate, and resize it in the workspace.

To move the object:

- 1 Click on the torus to select it.
- 2 Drag it to a desired location.

To rotate the object:

- 1 Click on the torus to select it.
- 2 Do one of the following:
  - Choose Rotate from the Ghost Menu.
  - Click the Rotate Objects tool in the Object panel.



- 3 Drag in the Scene window to rotate the object to a new orientation.

To rotate the object around one axis:

- 1 Make sure the object is selected.
- 2 Choose Rotate X, Y, or Z from the Ghost menu.
- 3 Drag the mouse horizontally.

To scale the object:

- 1 Make sure the object is selected.
- 2 Do one of the following:
  - Choose Scale from the Ghost menu.



- Click the Scale tool in the Object panel.

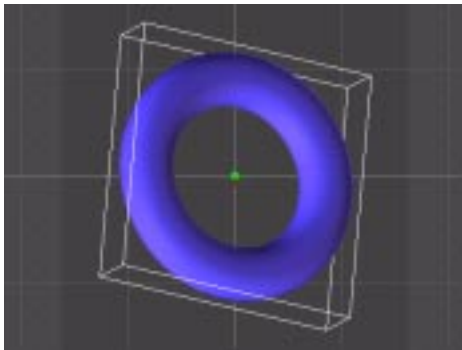


- 3 Drag the mouse horizontally to change the object's size.

To scale the object along one axis:

- 1 Make sure the object is selected.
- 2 Choose Scale X,Y, or Z from the Ghost Menu.

Move, scale, and rotate the torus several times to get used to using the commands and tools.



The rotated and scaled torus.

If the torus gets too distorted, go back to its previous state using the Undo and Redo commands.

To undo the last object manipulation:

- Click on the Edit button and choose Undo, or
- Press Command/Ctrl+Z.

To redo the last undone object manipulation:

- Click on the Edit button and choose Redo, or
- Press Command/Ctrl+Y.

## Shading the Object

A *shader* is the mechanism that allows you to apply surface properties to an object. An object's shader determines whether it is shiny or dull, rough or smooth, transparent or opaque.

Each shader has multiple *channels*—each controls a specific property of the object's surface. By adjusting the various channels, you can completely change how an object looks.

Let's start by changing the color of the torus to purple.

### To change the object's color:

- 1 Click on the Color tab in the Shader panel.



The color channel options appear in the right side of the Shader panel.

- 2 Click the Use color option.
- 3 Click on the color swatch.  
A color window appears, containing a color spectrum.
- 4 Release the mouse button when the mouse is over the purple area of the color spectrum.

The torus is now purple, but lacks a shiny and realistic surface. In the real world, objects show highlights when they are illuminated. These bright spots are reflections of light sources onto the material.

The material of an object determines the quality of its highlights. For example, plastic surfaces have large, dimmed highlights, while metallic objects have small, bright highlights. Other materials—like stone and concrete—do not produce highlights.

### To change the object's highlights:

- 1 Click on the Highlight tab in the Shader panel.

The highlight channel options appear in the right side of the Shader panel.

- 2 Click on the color swatch.  
A color window appears, containing a color spectrum.
- 3 Release the mouse button when the mouse is over the white area of the color spectrum.
- 4 Set the Shininess slider to 5.

The object now has highlights.



The purple torus with highlights.

Rotate the torus to see how the highlights interact with the scene lighting. Refer to “Manipulating the Object” on page 3 for more information about rotating objects.

## Rendering the Object

You are now ready to render the object and return to the host application.

To render the object:

- Click the OK button.

In a few seconds, the purple torus appears in the host application document. Zoom into the image to see the subtle light interactions and high quality antialiasing at the edges of the torus.



The rendered image.

## Lesson 2: Working with Cameras and Texture

To start this lesson:

- 1 Create a new 400 by 300 pixel RGB document in the host application.
- 2 Launch KPT SceneBuilder.
- 3 Open Cube.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.

## Using Edit 3D Mode

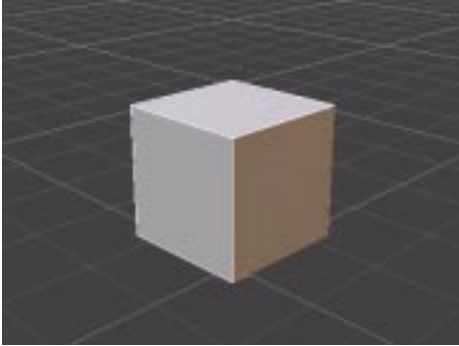
In the previous lesson, you learned how to manipulate the object in a 2D workspace. Now, you'll learn about working in KPT SceneBuilder's 3D workspace.

To edit in 3D:

- Click the Edit 3D tab at the top of the workspace.



In Edit 3D mode, the object appears in three-dimensional space—as if you're looking at it through the viewfinder of a real camera.



An object in the three-dimensional workspace.

When you work in Edit 3D mode, you can change your view of the object in three-dimensional space by repositioning the scene's camera. The Camera panel contains four tools for adjusting the camera position:

- Zoom
- Pan
- Dolly
- Set camera Focal



The Camera tools.

Let's start by rotating the camera around the object using the Dolly tool.

To use the Dolly tool:

**1** Do one of the following:

- Click the Dolly tool in the Camera panel.



- Choose Dolly from the Ghost Menu.



**2** Drag in the Scene window to rotate the view.

Notice that the cursor reflects the active tool.

Now try changing your view of the object using the other camera tools.

You can also access preset camera positions from the alternate Ghost menu.



The alternate Ghost menu.

To access the alternate Ghost menu:

**1** Hold down the Option/Alt key.

**2** Do one of the following:

- Windows: Right click in the Scene window.
- Macintosh: Ctrl+Click in the Scene window.

# Adding a Texture Map

KPT SceneBuilder allows you to wrap a 2D image around the surface of an object. This image is called a *texture map*.

Used effectively, a texture map can lend unparalleled realism to an object. In fact, complex objects are nearly impossible to simulate through other means.

To add a texture map to the object:

- 1 Click on the Color tab in the Shader panel.



The color channel options appear in the right side of the Shader panel.

- 2 Click the Use texture option.  
The file selector dialog appears.
- 3 Use the dialog controls to select DieMap.jpg, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.
- 4 Click the Textured icon on the left side of the Scene window to view the texture.



The textured cube.

Textured mode just shows you a preview of the textured object. You do not have to exit KPT SceneBuilder to view the final-quality image—you can render the object directly in the Scene window.

To view the final-quality texture:

- 1 Click the Render Image icon.



While the image is rendering, you can abort the operation by pressing the Esc key or Command+(.).



The rendered cube.



## Adding a Bump Map

Rough surfaces are extremely difficult to model. For example, imagine the irregularities of an orange skin—it is impossible to model each irregularity by hand.

KPT SceneBuilder simulates the variations on the surface of an object using the bump channel.



The bump channel.

By loading an image into the bump channel, you can add irregularities to a smooth surface. To simulate bumps, the bump channel changes the variation in intensity between adjacent pixels. Only the relative change between adjacent pixels is important—the color information in the loaded image (called a *bump map*) does not affect the bump quality.

To add a bump map to the object:

- 1 Click on the Bump tab in the Shader panel.  
The bump channel options appear in the right side of the Shader panel.
- 2 Click the disk icon on the left side of the bump map swatch.



The file selector dialog appears.

- 3 Use the dialog controls to select **DieBumpMap.jpg**, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.
- 4 Set the Bump Intensity slider to  $-1.3$ .  
This creates the appearance of little holes around the black dots on the dice
- 5 Click the Render Image icon to see the final-quality result.



## Saving Your Work

To save the scene to a new file:

- 1 Use the camera tools to achieve the desired view of the object.
- 2 Choose **File menu > Save As**.
- 3 Use the dialog controls to enter a new file name and location.

# Rendering in Photoshop

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**Note** The following information is specific to Adobe Photoshop.

When you click OK to render the object, you exit KPT SceneBuilder and return to Photoshop. By using a simple keyboard command, you can re-render the object in the Photoshop document without launching KPT SceneBuilder.

To render the object in Photoshop:

- 1 Create a selection in the Photoshop document using the Rectangular Marquee Tool.
- 2 Press Command/Ctrl+F to re-render the object.



Cubes rendered in Photoshop.

## Lesson 3: Working with Lights, Reflections, and Transparency

To start this lesson:

- 1 Create a new 400 by 300 pixel RGB document in the host application.
- 2 Fill the background with a neutral dark gray.
- 3 Launch KPT SceneBuilder.
- 4 Open Dollar.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.

### Lighting the Scene

The appearance of objects in KPT SceneBuilder is determined by the scene's light sources. A good lighting scheme dramatically increases the readability and the atmosphere of a rendered scene.

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**Note** Lighting effects are only visible when using Flat shaded, Gouraud shaded, or Textured Preview mode. In this lesson, use the Gouraud shaded mode.

The same scene rendered with two different lighting schemes will produce completely different results. For example, a lighting scheme with dark lights produces a dark image. A lighting scheme with bright lights washes out subtle effects.

The Light Sources panel lets you adjust up to six directional light sources and one ambient light source.



Light Sources panel.

**To set up the scene's light source:**

- 1 In the Light Sources panel, click the leftmost light bulb icon.  
The icon changes to a switched off light bulb.
- 2 Click the light bulb icon again. The icon changes to a switched on light bulb, indicating that the light source is on.
- 3 Click the color swatch below the light bulb icon you just turned on.



- A color window appears, containing a color spectrum. Release the mouse button when the mouse is over the white area of the color spectrum.
- 4 Select the second light source from the left by clicking on the button beneath the light's color swatch.

- 5 Drag the highlight on the surface of the light sphere to the center.



- 6 Continue working with the first four light sources to achieve the following settings:

	Color	Highlight
Light 1	white	
Light 2	peach	
Light 3	gray	
Light 4	light blue	

- 7 Click the Render Image icon to see the lighting result.  
The surface of the object should look like dull metal. Next, you'll add some reflections.

# Adding Reflections and Transparency

One of KPT SceneBuilder's key features is the Interactive Texture Renderer—which renders the current scene with final-quality reflections and transparency in real-time.

To use the Interactive Texture Renderer:

- 1 Click Interactive Texture tab at the top of the workspace.
- 2 Click the black image in the center of window.  
A preview of the rendered scene appears.
- 3 Click dollar object to select it.

Now, you'll add reflections and transparency to the dollar to create a realistic, mirror-like surface.

To add reflections and transparency:

- 1 Click on the Color tab in the Shader panel and set the color to black.
- 2 Click the Reflection tab and set the color to gold.
- 3 In the Environment panel—which is located below the Light Sources panel—click the disk icon.



- 4 Select Environm.jpg, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.

The object should look like this:



The environment map you just set up simulates a 3D environment surrounding the object. When you render the scene, light reflects off this environment onto the surface of the object, creating realistic reflections.

- 5 Click the Transparency tab in the Shader panel. Set the color to gray and the Index of refraction slider to 1.
- 6 Click OK to render the object.

## Lesson 4: Building a Scene

In this lesson, you'll insert an object into a scene and duplicate it to create a button for use on a Web page.

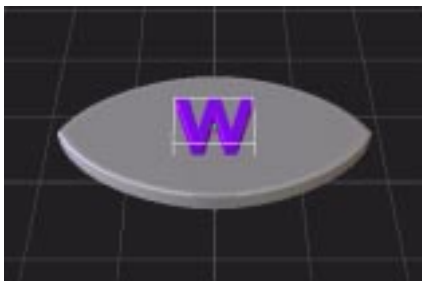
To start this lesson:

- 1 Create a new 400 by 300 pixel RGB document in the host application.
- 2 Fill the background with a neutral dark gray.
- 3 Launch KPT SceneBuilder.
- 4 Open Button.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.
- 5 Select Gouraud shaded preview mode.

To insert and duplicate objects:

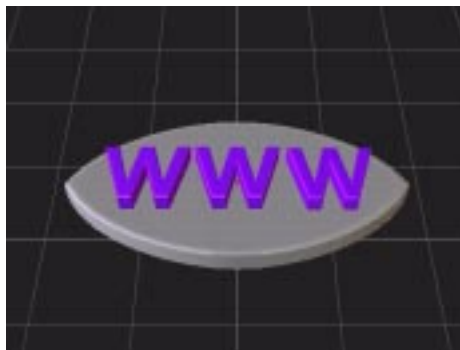
- 1 Choose **File menu> Insert**.
- 2 Use the dialog control to select w.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.
- 3 Click Open.

The scene should look like this:



- 4 Select the "w".
- 5 Choose **Edit menu> Duplicate**, or press Command/Ctrl+D, to duplicate the object.  
You won't see two "w"s because the duplicate sits directly on top of the original.
- 6 Repeat the previous step to duplicate the "w" again.
- 7 Select the top "w" and drag it to the right.
- 8 Select the middle "w" and drag it to the left.

The scene should look like this:



The scene after duplicating the "w".

When you have multiple objects in a scene, it is often easier to manipulate them as a group. A grouped object has a blue bounding box when you select it, as opposed to stand-alone objects, whose bounding boxes are white.

To group and scale the “w”s:

- 1 Select all three “w”s.
- 2 Choose **Edit Menu > Group**, or press Command/Ctrl+G.
- 3 Scale the grouped object to reduce its size.  
Refer to “Manipulating the Object” on page 3 for more information about scaling objects.
- 4 Position the grouped “w”s so that they are centered on the button.
- 5 Press the OK button to render the scene.

## Lesson 5: Working with Layers

### Note

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In this lesson, we use Photoshop 5 as a host application. However, you can create similar effects in another host—such as MetaCreations Painter.

KPT SceneBuilder objects are anti-aliased using the alpha channel, so you can freely move the objects around, rearrange layers, and add shadows or glows with Photoshop layer effects.

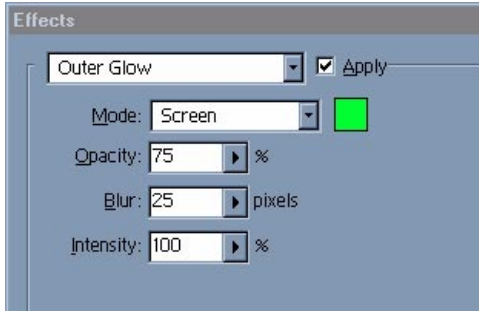
To start this lesson:

- 1 In Photoshop, open Background.jpg, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.
- 2 Create a new layer and select it.
- 3 Launch KPT SceneBuilder.
- 4 Open Mars.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.  
A flying source appears in the KPT SceneBuilder workspace.
- 5 Click the OK button to render flying saucer.

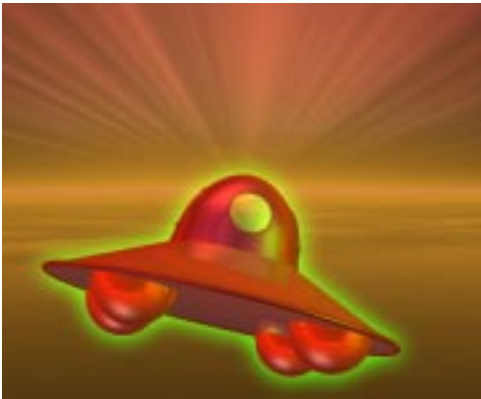
KPT SceneBuilder renders the flying saucer in the transparent layer. The object’s borders blend perfectly with the background, due to the anti-aliasing transparency.

To add special effects to the image:

- 1 In Photoshop, select **Layer menu > Effects > Outer Glow** and enter the following settings:



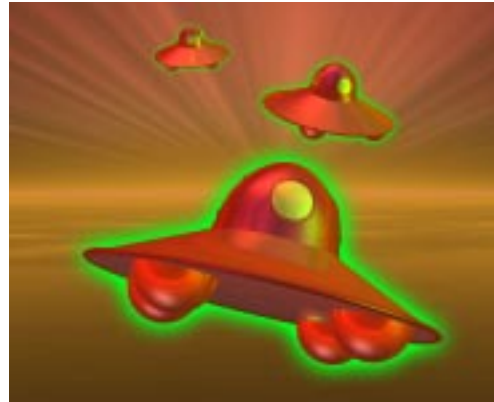
The image should look like this:



- 2 Create a new layer and launch KPT SceneBuilder.
- 3 Select the flying saucer, reduce its size, rotate it, and move it up and to the right.
- 4 Click OK to render the object.
- 5 Repeat Step 1 to add a green glow to the new flying saucer.

- 6 Repeat Steps 2 through 5 to create a third flying saucer in a new layer. This time, position the flying saucer at the top of the scene.

Your image should look like this:



The layered image.

As you can see, KPT SceneBuilder lets you create 3D illustrations with unparalleled simplicity and speed. No other 3D application lets you change the background and position of objects, add or remove glows and shadows, etc., without re-rendering the entire scene.

This is especially true when working with high resolution images. Sometime, rendering an image in a 3D application can take hours. With KPT SceneBuilder, you can re-render a single object in a layer in a matter of seconds.

## Tip

When working with a large scene, consider working with a multiple layer document. This speeds up rendering time and gives you more freedom to express your ideas.

# Lesson 6: Creating a Cartoon

## Note

In this lesson, we use Photoshop 5 as a host application. However, you can create similar effects in another host—such as MetaCreations Painter.

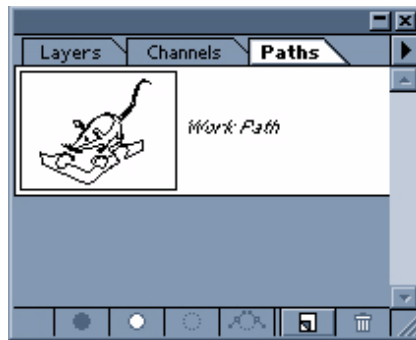
### To start this lesson:

- 1 Create a new 800 by 600 pixels RGB document in Photoshop. The background must be a pure white.
- 2 Launch KPT SceneBuilder.
- 3 Open Mouse.ptc, located in the **Tutorials: KPT SceneBuilder** folder on your KPT 6 CD-ROM.
- 4 Select the cheese.
- 5 Adjust the shader settings as follows:
  - Color: black
  - Highlight: white
  - Shininess: 0
- 6 Drag and drop the shader onto the other objects in the scene—the mouse and the eyes of the mouse.
- 7 Click OK to render the scene.  
The image should look like this:



To create the cartoon in Photoshop:

- 1 Choose **Image menu > Adjust > Threshold**.
- 2 Set Threshold Level to 230
- 3 Click OK.  
The image is now black and white.
- 4 With the Magic Wand, select a black part of the image.
- 5 Choose **Select menu > Similar**.  
The black areas of the image are now selected.
- 6 Choose Make Work Path in the Paths palette.
- 7 Set Tolerance to 1.0 pixels and click OK.
- 8 Deselect the Work Path in the Paths palette.



- 9 Clear the document by choosing **Select > All** and pressing the Delete key. The document must be completely white.
- 10 Select the Work Path in the Paths palette.
- 11 Click on the “Loads Path As Selection” button in the Paths palette.
- 12 Deselect the path.



- 13** Fill the selection with black using the Fill command in the Edit menu.

Your cartoon is complete.



The final image.