



KPT SceneBuilder

KPT SceneBuilder provides the tools and effects needed to create amazing 3D scenes inside Photoshop or a Photoshop-compliant host—including transparency, reflection, refraction, bump mapping, multiple light sources, and much more.

This chapter provides specific information about working with KPT SceneBuilder, including:

- [KPT SceneBuilder Basics](#)
- [Loading and Saving Objects](#)
- [Working in the Scene Window](#)
- [Selecting Objects](#)
- [Arranging Objects](#)
- [Manipulating Objects](#)
- [Shading Objects](#)
- [Lighting the Scene](#)
- [Setting Up the Environment Map](#)
- [Using the Interactive Texture Renderer](#)
- [Rendering a Scene](#)
- [Using the Object Library](#)

See your KPT 6 CD-ROM for the KPT SceneBuilder Tutorial.

To launch KPT SceneBuilder:

- 1 Open the image you want to modify in the host application.

If the image includes multiple layers, select the layer on which you want to render the scene.

If you want to apply the effect to a selected area, make that selection now. Otherwise, make sure that no selections are active in the host application.

- 2 Select **Filter menu> KPT6> KPT SceneBuilder**.

The KPT SceneBuilder window appears.

KPT SceneBuilder Basics

The KPT SceneBuilder window is subdivided into functional areas, including the:

- File and Edit menus
- Scene window and modes
- Shader panel
- Light Sources panel
- Environment panel
- Rendering options

To apply KPT SceneBuilder effects:

- Click OK to render the current scene.



To cancel KPT SceneBuilder effects:

- Click Cancel to discard the current scene.

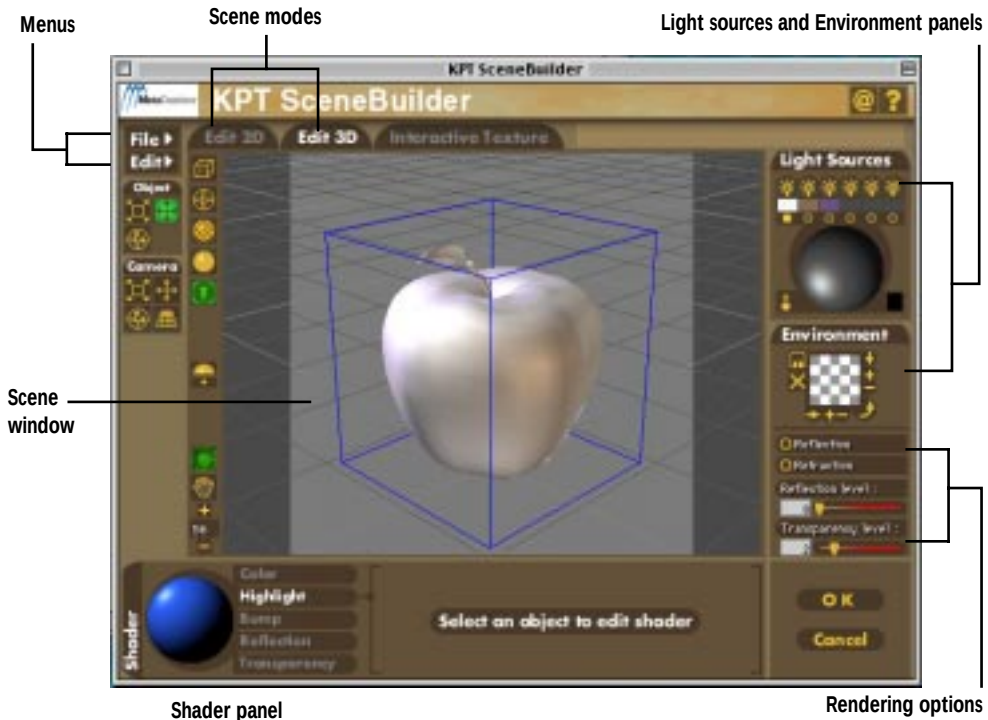
To activate help:

- Click the Help icon located in the upper right corner of the KPT SceneBuilder window



- Click the Web icon to direct your browser to the MetaCreations Web site.

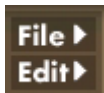




File and Edit Menus

The File menu provides commands for managing your 3D scene—such as loading a new scene or saving the current one.

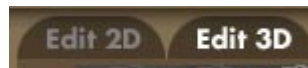
The Edit menu provides commands for interacting with the objects in your scene.



File and Edit menus.

Scene Window and Modes

The Scene window lets you arrange and manipulate the objects in your scene. You can view objects in the Scene window in one of two modes: 2D or 3D.



Edit 2D and Edit 3D modes.

Shader Panel

The Shader panel lets you add materials to your objects. It contains a preview and different channels.



The Shader panel

Light Sources Panel

The Light Sources panel contains controls for setting the light sources in a scene.



The Light Sources panel

Environment Panel

The Environment panel contains controls for setting un an environment map for your scene.



The Environment panel and rendering options

Rendering Options

Below the Environment panel are the rendering options. Rendering is performed when you click the OK button.

When you render a scene, it is stored—ready to be reopened when you render it again (with Ctrl/Command+F in Photoshop). The next time you launch KPT SceneBuilder, it loads the previous scene.

Loading and Saving Objects

The typical workflow in KPT SceneBuilder begins by adding several objects to a scene.

To create a new scene:

- Choose **File menu> Reset**.
The current scene is cleared and a new one is created.

To add objects to a newly created scene:

- 1 Choose **File menu> Open**.



- 2 Select the file format you want to open.
You can open two different 3D formats in KPT SceneBuilder:
 - PTC files—the native KPT SceneBuilder format.
 - 3DS files—3D Studio™ files.
- 3 Browse your hard disk and select a file.
Refer to [“Using the Object Library”](#) for more information about using objects from the Objects Library.
- 4 Click Open.

The scene is displayed in the Scene window.

Note

When you use the Open command, the previous scene is lost.

To insert objects into a scene:

- 1 Choose **File menu> Insert**.
- 2 Select the file format you want to open.
- 3 Browse your hard disk and select a file.
Refer to [“Using the Object Library”](#) for more information about using objects from the Objects Library.
- 4 Click Open.
The new object is added to the existing scene.

To save a scene:

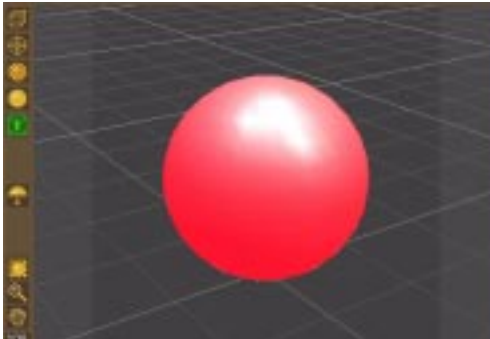
- Choose **File menu> Save**.

To save a scene in a new file:

- 1 Choose **File menu> Save As**.
- 2 Enter a new file name in the dialog.
- 3 Click Save.

Working in the Scene Window

KPT SceneBuilder's Scene window is a 3D workspace. This workspace is where you arrange and manipulate the objects in the scene.



The Scene window.

By default, KPT SceneBuilder opens new scenes with only a grid plane, called the Working Plane. The Working Plane is a visual reference for the 3D workspace and a tool to help you manipulate objects.

The icons on the left side of the Scene window let you manipulate the scene.

Choosing a Preview Mode

You can view a scene in one of several Preview modes.

To choose a Preview mode:

- Click a Preview mode icon on the left side of the Scene window.



Bounding Box mode displays objects as boxes.



Wireframe mode displays only the edges of the objects.



Flat shaded mode displays each face on the an object's surface as a flat value, with highlights.



Gouraud shaded mode displays an object's surface as a smooth gradation, with highlights.



Textured mode displays transparency and textures on the objects.

Tip

Textured mode and Gouraud shaded mode show details of the shape and color of an object, but take longer to calculate and draw. To increase KPT SceneBuilder efficiency, consider working in Wireframe at the outset of a project, then switch to Textured mode when specific details (like texture) become important.

Working with a Background Image

KPT SceneBuilder allows you to work inside a Photoshop layer. In order to place your objects relative to a background image, KPT SceneBuilder can display the current layer as a background.

To see a background image in the Scene window:

- Click the Display Background Image icon.



The background image is visible, but dimmed, to improve the readability of the scene.

If the background image is a light checkerboard, you are working on a transparent layer.

To zoom the background image in:

- Click the Zoom In Picture icon.



A new magnification factor is displayed.

To zoom the background image out:

- Click the Zoom Out Picture icon.

A new magnification factor is displayed.



To scroll the view of the background picture:

- Select the Scroll Picture tool.



- Drag in the Scene window.

The background image is scrolled accordingly.

Previewing the Rendered Scene

While creating a scene, it is best to render images over and over, to fine-tune the objects' positions and textures. In KPT SceneBuilder, you can render a scene without exiting the plug-in. This preview of the rendered scene displays in the Scene window.

To preview the rendered image:

- Click the Render Image icon.



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

Using the Ghost Menu

The Ghost menu provides an alternate method of accessing commands—directly from the Scene window.



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 action you used last time is directly under your cursor. To activate the same command again, just release the mouse button.

To use the Ghost menu:

- 1 Do one of the following:
 - Windows: Right click in the Scene window.
 - Macintosh: Ctrl+click in the Scene window.
- 2 Position the pointer over the desired command and release the mouse button. The Ghost menu is organized as follows:
 - Object manipulation commands are on the left.
 - Camera commands are on the right.
 - The icon color indicates the family of the command.

Selecting Objects

Before you can arrange or manipulate the objects in a scene, you must select them.

When you select an object, KPT SceneBuilder displays a bounding box around it. The color of the bounding box lets you know if the object is a standalone (single) object or a group of objects:

- Standalone objects have white bounding boxes.
- Groups have blue bounding boxes.

To select an object:

- 1 Do one of the following:
 - Choose the Selection/Move tool in the Object panel.



- Choose the Move command from the Ghost menu.



- 2 Click an object in the Scene window.

To select multiple objects:

- Hold down the Shift key and click to add additional objects to the selection.

To remove an object from a selection:

- Hold down the Shift key and click a previously selected object to remove it from the selection.

When working with complex scenes, you may need to select an object that is behind another, larger object. KPT SceneBuilder provides a feature called *selection cycling* for this purpose.

To use selection cycling:

- 1 Click and hold down the mouse button on the object closest to the hidden object you want to select.
- 2 Wait a fraction of a second and the object behind the top object is selected.

If you hold the mouse button down for longer, the next object behind the currently selected one is selected.

- 3 Move the mouse, or release the mouse button, when the desired object is selected.

If all objects have been selected in turn, the first object is selected again, then the second, and so on.

Arranging Objects

In a 3D scene, the arrangement of objects is called a *hierarchy*. This hierarchy contains either objects or groups of objects. You can, at any time, group objects and ungroup previously grouped objects.

The Edit menu provides commands for arranging the objects in a scene.



The Edit menu.

Undoing and Redoing Operations

The Undo and Redo commands let you undo and redo operations—such as translation, rotation, and object resizing. You can undo up to 32 operations.

To undo the last operation:

- Select **Edit menu> Undo** or press Ctrl/Command+Z.

To redo the last undone operation:

- Select **Edit menu> Redo** or press Ctrl/Command+Y.

Cutting, Copying, and Pasting Objects

KPT SceneBuilder provides a clipboard for cutting, copying, and pasting objects.

To cut an object or objects:

- 1 Select an object or objects in the Scene window.
- 2 Choose **Edit menu> Cut** or press Ctrl/Command+X.

A copy of the selection is placed onto the clipboard and the original is deleted from the scene.

To copy an object or objects:

- 1 Select an object or objects in the Scene window.
- 2 Choose **Edit menu> Copy** or press Ctrl/Command+C.
A copy of the selection is placed onto the clipboard.

To paste an object or objects:

- Choose **Edit menu> Paste** or press Ctrl/Command+V.
The selection appears in the Scene window.

Deleting Objects

To delete an object or objects:

- 1 Select an object or objects in the Scene window.
- 2 Press the Delete key or the Backspace key.

Duplicating Objects

To duplicate an object or objects:

- 1 Select an object or objects in the Scene window.
- 2 Choose **Edit menu> Duplicate** or press Ctrl/Command+D.
The selected objects are duplicated in the same location as the original selection.

Managing Selections

To select all objects in the scene:

- Choose **Edit menu> Select All** or press Ctrl/Command+A.

To invert a selection:

- Choose **Edit menu> Invert**.
The objects previously selected are deselected, the previously deselected objects are selected.

Grouping and Ungrouping Objects

Grouping objects lets you manipulate them as a unit. Grouped objects have blue bounding boxes when selected, while standalone objects have white bounding boxes.

To group objects:

- 1 Select two or more objects in the Scene window.
- 2 Choose **Edit Menu> Group** or press Ctrl/Command+G.
The objects in the selection are grouped together in a blue bounding box.

To ungroup a group:

- 1 Select a group in the Scene window.
- 2 Choose **Edit menu> Ungroup** or press Ctrl/Command+U.
The group is split into standalone objects with white bounding boxes.

Manipulating Objects

The object manipulation tools let you align, position, and orient objects by dragging in the Scene window. These tools are located in the Object panel.



The object manipulation tools.

Tip

While manipulating objects, you can always undo your actions. Refer to [“Undoing and Redoing Operations”](#) for more information.

Moving Objects

To move objects parallel to the working plane:

- 1 Do one of the following:
 - Click the Selection/Move tool in the Object panel.



- Choose Move from the Ghost menu.



- 2 Select the object or objects you want to move in the Scene window.
- 3 Drag the selected objects to the desired location.

To move objects perpendicular to the working plane:

- Press the Alt/Option key while dragging the selected objects to the desired location.

Rotating Objects

To rotate objects:

- 1 Select the object or objects you want to rotate.
- 2 Do one of the following:
 - Select the Rotate Objects tool in the Object panel.



- Choose Rotate from the Ghost menu.



- 3 Click and drag in the Scene window to rotate the selection to a new orientation

To rotate objects around one axis:

- 1 Select the object or objects you want to rotate.
- 2 Select Rotate X, Y, or Z from the Ghost menu.



- 3 Drag the mouse horizontally to rotate the objects around the selected axis.
Hold the Shift key to constrain rotation to a 45° increment.

Resizing Objects

To scale an object:

- 1 Select the object you want to scale.
- 2 Do one of the following:
 - Select the Scale tool in the Object panel.



- Choose Scale from the Ghost menu.



- 3 Drag the mouse horizontally in the Scene window.

To scale an object along one axis:

- 1 Select the object you want to scale.
- 2 Select the Scale X, Y, or Z from the Ghost menu.



- 3 Drag the mouse horizontally in the Scene window.

Using Scene Modes

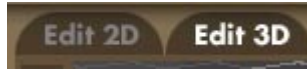
KPT SceneBuilder provides two modes of interaction for working with objects:

- **Edit 2D mode** displays all objects in the scene in two dimensions, from the top view. All operations are constrained to two dimensions—including Move, Rotate, and Resize.

- **Edit 3D mode** displays the scene through a conical camera. You can manipulate this camera and the objects in the scene in three dimensions.

To select a Scene mode:

- Click the Edit 2D or Edit 3D tab at the top of the Scene window.



Positioning the Camera

When in Edit 3D mode, the Scene window shows the 3D workspace through a conical camera.

The Camera panel—which is visible only when Edit 3D mode is active—contains four tools for positioning the camera:

- Dolly
- Zoom
- Pan
- Set Camera Focal



The Camera panel.

Note

When you select a camera tool, the cursor changes to reflect the active tool.

Rotating the Camera

The Dolly tool lets you rotate the camera around its current position—or viewpoint.

To rotate the camera around its viewpoint:

- 1 Do one of the following:
 - Select the Dolly tool from the Camera panel.



- Select Dolly from the Ghost menu.



- 2 Drag in the Scene window to rotate the camera.

Hold down the Alt/Option key to tilt the camera instead of rotating it.

The following keyboard commands also let you rotate the camera around its viewpoint.

What you press:	The results you get:
4 on the keypad	Rotate the camera to the left
6 on the keypad	Rotate the camera to the right
8 on the keypad	Rotate the camera up
2 on the keypad	Rotate the camera down

Adjusting the Camera's Roll

The Ghost menu contains an additional command for adjusting the camera's roll.

To adjust the camera's roll:

- 1 Select Roll from the Ghost menu.



- 2 Drag in the Scene window to roll the camera.

Panning the Camera

The Pan tool lets you move the camera in the 3D workspace.

To pan the camera:

- 1 Do one of the following:
 - Select the Pan tool in the Camera panel.



- Select Pan from the Ghost menu.



Note that the cursor changes to reflect the active tool.

- 2 Drag in the Scene window to pan the camera.

Hold the Alt/Option key to track the camera in and out.

Zooming the Camera

The Zoom tool lets you zoom the camera in or out.

To zoom the camera:

- 1 Do one of the following:
 - Select the Zoom tool in the Camera panel.



- Select Zoom from the Ghost menu.



- 2 Drag the mouse horizontally to zoom in or out.

Note

The zoom command located in the Camera panel does not act like the Magnify command of the Scene window. The zoom command actually changes the camera, therefore modifying only the view of the objects, unlike the Magnify command which modifies both the objects' view and the size of the background image.

Changing the Camera Perspective

The Set Focal tool lets you change the perspective used by the camera.

To change the camera's perspective:

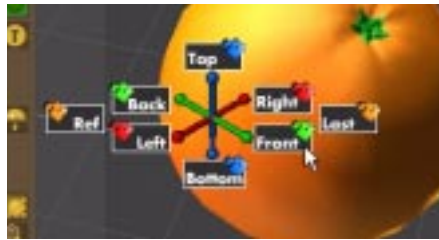
- 1 Select the Set Focal tool in the Camera panel.



- 2 Drag the mouse horizontally to change the focal perspective.

Using Camera Presets

The alternate Ghost menu provides commands for selecting preset camera positions.



The alternate Ghost menu.

- Ref: Reference camera (perspective view)
- Left/Right: Left and Right views
- Top/Bottom: Top and Bottom views
- Back/Front: Back and Front views
- Last: returns to the last perspective view

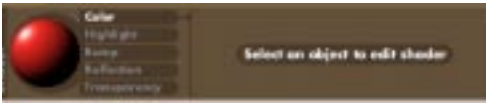
To use the alternate Ghost menu:

- 1 Hold down the Alt/Option key.
- 2 Do one of the following:
 - Windows: Right click in the Scene window.
 - Macintosh: Ctrl+click in the Scene window.

- 3 Position the pointer over the desired command and release the mouse button.

Shading Objects

Shading objects adds texture and colors to the scene by adding materials to the objects.



The Shader panel.

The Shader panel contains two sections:

- Shader preview
- Shader channels

Using the Shader Preview

This preview always shows the shader for the currently selected object.

The shader preview automatically refreshes when you modify any of the shader parameters.



The shader preview.

Assigning Shaders to Objects

You can assign shaders to an object using one of two methods:

- Drag and drop the shader to an object in the Scene window.
- Select an object and modify its shader channels.

To assign a shader by dragging and dropping:

- 1 Click the shader preview.
- 2 Hold the left mouse button down and drag the mouse to an object.
If the object is a standalone object, the mouse cursor is an arrow.
If the object is a group, the cursor is an interdiction sign.
- 3 Release the mouse button.
The object displays (and renders) with the newly created shader.

To modify the shader in the Shader panel:

- 1 Select a standalone object.
Make sure the selected object is not a group.
- 2 Click the channel name to display the channel panel.
- 3 Edit the channel settings.
Refer to the following section for detailed information about each channel panel.

Working with Channels

Each shader is made up of channels that define the properties of the object's material.



The shader channels.

Using the Color Channel

No shader channel has a more obvious effect on the appearance of an object than the color channel.

You can set the color channel to a color or an image—called a *texture map*—which is wrapped around the object:



The color channel.

You can load either a JPEG or a BMP file as a texture map.

To set a color in the color channel:

- 1 Select the Use color option.
- 2 Click the color swatch.
A color window appears, containing a color spectrum.

- 3 Release the mouse button when the mouse is on the color you want.
The color swatch displays the selected color.

To set a color numerically:

- 1 Select the Use color option.
- 2 Hold the Ctrl/Ctrl key and click the color swatch.
The standard color picker appears.
- 3 Enter the values for the color you want and click OK.

To load an image in the color channel:

- 1 Select the Use texture option.
- 2 If no texture was loaded, a standard file selector displays, letting you choose the image file you want.
The texture swatch displays the selected image.

To change the image in the color channel

- 1 Do one of the following:
 - Click the disk icon.

 - Activate the local menu (right click Windows; Command+click Macintosh) and choose Load.
- 2 A standard file selector appears, letting you choose the image file you want to load.

To clear the loaded image:

- Click the cross icon, or



- Activate the local menu (right click Windows; Command+click Macintosh) and choose Clear.

To rotate the image 90 degrees:

- Click the rotate icon in the bottom right corner of the texture swatch.



To flip the image horizontally:

- Click the down arrow icon in the upper right corner of the texture swatch.



To flip the image vertically:

- 1 Click the right arrow icon in the lower left corner of the texture swatch.



To increase the tiling of the image:

- Click the + icon at the right edge of the texture swatch to increase the vertical tiling.



- Click the + icon at the bottom edge of the texture swatch to increase the horizontal tiling.

To decrease the tiling of the image:

- Click the – icon at the right edge of the texture swatch to decrease the vertical tiling.



- Click the – icon at the bottom edge of the texture swatch to decrease the horizontal tiling.

Using the Highlight Channel

In the real world, objects show highlights when they are illuminated. These bright spots are reflections of light sources on 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.

With KPT SceneBuilder, you can simulate almost any highlight by setting the highlight color and the highlight shininess.

The Highlight Color option determines the brightness of the highlight. The Shininess slider controls the size of the highlight.



The highlight channel.

Real materials whose highlights are very bright have a high shininess value, where as materials with soft highlights have a low shininess value.

To set the highlight color:

- 1 Click the Highlight Color swatch.
A color window appears, containing a color spectrum.
- 2 Release the mouse button when the cursor is on the color you want.
The color swatch displays the selected color.

To set the color numerically:

- 1 Hold the Ctrl/Ctrl key and click the color swatch.
The standard color picker appears.
- 2 Enter the values for the color you want and click OK.

To adjust the highlight's shininess:

- Drag the shininess slider to the desired position.

Using the Bump Channel

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.

Note

The bump channel does not modify the surface of the geometric objects. Rather, it changes the angle of the light at specific points on the object's surface, creating a bumpy effect. The edges of the objects remain smooth.

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. Because of this, it is often better to load a grayscale image in the bump channel.

You can load either a JPEG or a BMP file as a bump map.

To load an image in the bump channel:

- 1 Do one of the following:
 - Click the disk icon.



- Activate the local menu (right click Windows; Command+click Macintosh) and choose Load.

2 A standard file selector appears, letting you choose the image file you want to load.

To clear the loaded image:

- Click the cross icon, or



- Activate the local menu (right click Windows; Command+click Macintosh) and choose Clear.

To rotate the image 90 degrees:

- Click the rotate icon in the bottom right corner of the bump swatch.



To flip the image horizontally:

- Click the down arrow icon in the upper right corner of the bump swatch.



To flip the image vertically:

- Click the right arrow icon in the lower left corner of the bump swatch.



To increase the tiling of the image:

- Click the + icon at the right edge of the bump swatch to increase the vertical tiling.



- Click the + icon at the bottom edge of the bump swatch to increase the horizontal tiling.

To decrease the tiling of the image:

- Click the – icon at the right edge of the bump swatch to decrease the vertical tiling.



- Click the – icon at the bottom edge of the bump swatch to decrease the horizontal tiling.

In order to achieve subtle effects when modifying a surface, KPT SceneBuilder provides you with a slider to change the intensity of the bump effect.

This slider, whose range is –3 to +3, lets you increase the bump effect (high values), soften the bump effect (low values), and even invert the bump effect (negative values).

To change the bump intensity:

- Drag the Bump intensity slider to the desired level.



Using the Reflection Channel

Many real materials—such as glass and metal—are reflective. The reflection channel lets you to set the color of the reflection, enabling you to create both subtle and fantastic effects.



The reflection channel.

Usually, a highly reflective object appears more vivid when its reflection color is a variation of the object's color. However, you can specify a completely different color in the reflection than in the color channel, leading to unusual effects.

Keep in mind that dark colors produce less reflection, while bright colors produce greater reflection. Setting the reflection color to black produces no reflection.

To set the reflection color:

- 1 Click the Reflection Color swatch.
A color window appears, containing a color spectrum.
- 2 Release the mouse button when the cursor is on the color you want.
The color swatch displays the selected color.

To set the color numerically:

- 1 Hold the Ctrl/Ctrl key and click the color swatch.
The standard color picker appears.
- 2 Enter the values for the color you want and click OK.

Using the Transparency Channel

The transparency channel controls the opacity of an object using a color.



The transparency channel.

The value of the color determines how opaque the object appears. Black is completely opaque; white is completely transparent. Any color in between sets a different transparency. The brighter the color, the more transparent the object.

Tip

To achieve realistic transparency, set similar colors in the color and transparency channels.

When light rays pass through a semi-transparent object, their trajectories are deflected. This behavior is called *refraction*. Glass, water, and other materials refract

light—leading to a distorted view of objects behind the refractive surface. The factor which controls the amount of distortion is known as the index of refraction.

The Indice of refraction slider lets you change the shader's index of refraction.

To set the transparency color:

- 1 Click the Transparency Color switch.
A color window appears, containing a color spectrum.
- 2 Release the mouse button when the cursor is on the color you want.
The color switch displays the selected color.

To set the color numerically:

- 1 Hold the Ctrl/Ctrl key and click the color switch.
The standard color picker appears.
- 2 Enter the values for the color you want and click OK.

To change the index of refraction:

- Drag the Indice of refraction slider to the desired level.

You can produce realistic results for common materials using the following refraction values:

Material	Refraction Value
Air	1.0
Water	1.3
Alcohol	1.36

Material	Refraction Value
Quartz	1.46
Glass	1.5
Diamonds	2.46

Lighting the Scene

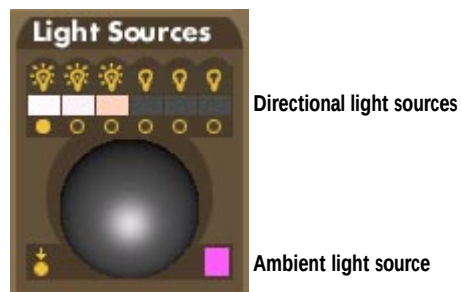
The appearance of objects in KPT SceneBuilder is determined by the scene's light sources. A good lighting scheme dramatically increases the readability and the atmosphere of a rendered scene.

Note

Lighting effects are only visible when using Flat shaded, Gouraud shaded, or Textured Preview 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.

Adjusting the Ambient Light Source

Ambient light provides uniform lighting in the 3D workspace. It has no origin and no predominant direction, because it radiates in every direction. It is the equivalent of daylight in the real world.

To set the color of the ambient light source:

- 1 Click the color swatch at the bottom right corner of the Light Sources panel.
A color window appears, containing a color spectrum.
- 2 Release the mouse button when the cursor is on the color you want.
The color swatch displays the selected color.

To set the color numerically:

- 1 Hold the Ctrl/Ctrl key and click the color swatch.
The standard color picker appears.
- 2 Enter the values for the color you want and click OK.

Adjusting the Directional Light Sources

Directional light sources are positioned outside the 3D workspace and cast light rays parallel to the workspace.

You can adjust the state, color, and position of each directional light source.

Turning Lights On and Off

A light source can be on or off—enabled or disabled. When a light source is off, it has no effect on the scene.

To turn a light source off:

- Click the light bulb icon for the light source you want to turn off.



The icon changes to a switched off light bulb.



To turn a light source on:

- Click the light bulb icon for the light source you want to turn on.
The icon changes to a switched on light bulb.

Setting Light Source Colors

Each directional light source has a color swatch for setting the color of the light.



Keep in mind that dark-colored light sources cast less light than brighter ones. If a light source is black, it does not contribute to the scene's lighting.

To set the color of a light source:

- 1 Click the light source's color swatch.
A color window appears, containing a color spectrum.
- 2 Release the mouse button when the cursor is on the color you want.
The color swatch displays the selected color.

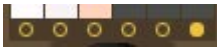
To set the color numerically:

- 1 Hold the Ctrl/Ctrl key and click the color swatch.
The standard color picker appears.
- 2 Enter the values for the color you want and click OK.

Positioning Light Sources

The virtual light sphere lets you reposition the light sources in a scene.

Because there are six light sources and only one virtual light sphere, each light has a selector dot. If the dot is under a light source is filled in (solid yellow), the light sphere shows the position of that light source.



The light source selectors.

When positioning a light, imagine the light sphere as a glass ball surrounding your scene. The highlight shows where the light shines through the glass, towards the center of your scene.

Because you can only see one hemisphere of the virtual light sphere at a time, the Light Sources panel contains an icon for inverting the light position.



The light inversion icon.

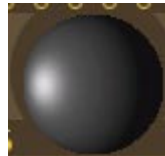
When the arrow points down, the light source is above the scene. When the arrow points up, the light source is under the scene.

To select a light source:

- Click the light source selector under the light source.

To reposition a light source:

- 1 Select the light source.
- 2 Drag the highlight on the surface of the light sphere to the desired position.



To invert the light position:

- Click the light inversion icon to the right of the light sphere.

Setting Up the Environment Map

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

Note

The effects of the environment map are only visible when the Interactive Texture Renderer is active, or in the final rendered image.

Imagine the environment map as an image projected on the inside of a big sphere surrounding your scene. Objects with reflective surfaces show this image. The environment map is especially important when your scene contains highly reflective objects—such as chrome or metal objects.

The Environment panel contains controls for selecting, rotating, flipping, and tiling the environment map. The environment map swatch in the middle of the panel displays the loaded texture, or a checkerboard if no image is loaded.



The Environment panel.

Note

If no Environment map is loaded, a default environment is used: it is a bi-gradient, simulating a sky and a ground plane.

You can load either a JPEG or a BMP file as a environment map.

To load an environment map:

1 Do one of the following:

- Click the disk icon.



- Activate the local menu (right click Windows; Command+click Macintosh) and choose Load.

2 A standard file selector appears, letting you choose the image file you want to load.

To clear the loaded texture:

- Click the cross icon, or



- Activate the local menu (right click Windows; Command+click Macintosh) and choose Clear.

To rotate the image 90 degrees:

- Click the rotate icon in the bottom right corner of the environment map swatch.



To flip the image horizontally:

- Click the down arrow icon in the top right corner of the environment map swatch.



To flip the image vertically:

- Click the right arrow icon in the bottom left corner of the environment map swatch.



To increase the tiling of the image:

- Click the + icon at the right edge of the environment map swatch to increase the vertical tiling.



- Click the + icon at the bottom edge of the environment map swatch to increase the horizontal tiling.

To decrease the tiling of the image:

- Click the – icon at the right edge of the environment map swatch to decrease the vertical tiling.



- Click the – icon at the bottom edge of the environment map swatch to decrease the horizontal tiling.

Using the Interactive Texture Renderer

The Interactive Texture renderer lets you make changes to a rendered image in real-time. This is very useful for setting up:

- Textures on objects
- Lighting schemes
- Environment maps

Note

The Interactive Texture renderer has high memory consumption. In addition, it uses fixed reflection and refraction settings to achieve real-time rendering.

To activate the Interactive Texture renderer:

- 1 Click the Interactive Texture tab.



- 2 Click the black image in the center of window.

A preview of the rendered scene appears.

To assign a texture an object in the Interactive Texture renderer:

- 1 Select the object you want to assign a texture to.

The Shader panel shows the shader associated with the selected object.

- 2 Adjust the shader channels as described in [“Shading Objects”](#).

To modify the lighting scheme in the Interactive Texture renderer:

- Adjust the light sources as described in [“Lighting the Scene”](#).

To modify the environment map in the Interactive Texture renderer:

- Adjust the environment map as described in [“Setting Up the Environment Map”](#).

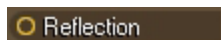
Rendering a Scene

Rendering is the process of capturing a view of your 3D scene and saving it as a 2D image. An image must be rendered before you can print it or view it in the host application.

The rendering process considers all the objects in a scene and calculates not just their forms, colors, and texture, but the interaction of lights and surfaces within the scene.

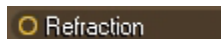
KPT SceneBuilder provide four rendering options to allow you to customize the rendering process.

- The Reflection option determines whether or not reflections are rendered.



Rendering a scene with reflections is slower than rendering without reflections—provided that there are reflective objects in the scene.

- The Refraction option determines whether or not refractions are rendered.



Rendering a scene with refraction is slower than rendering without refractions—provided that there are transparent objects in the scene.

- The Reflection level and Transparency level sliders determine the quality of the rendered image.



The Reflection level slider sets the sharpness of the reflections; the Transparency level slider sets the amount of transparency. Setting a high value produces a higher-quality image by takes more time and computer memory.

Note

If you use the Interactive Texture Renderer, the Reflection and Transparency levels are fixed—at 1 and 4, respectively.

To enable or disable rendering of reflections:

- Click the Reflection option.
The option is enabled with the button is solid yellow.

To enable or disable rendering of refractions:

- Click the Refraction option.
The option is enabled with the button is solid yellow.

To adjust the reflection quality:

- Drag the Reflection level slider to the desired amount.

To adjust the transparency quality:

- Drag the Transparency level slider to the desired amount.

To render the final image:

- Click the OK button.



The rendering time depends on the complexity of your scene, the number of reflective and transparent objects, and the size of the image.

KPT SceneBuilder renders the final image in the Adobe Photoshop document, so the final image size and resolution is fixed by the size and resolution of the Photoshop document or selection.

Note

KPT SceneBuilder can only render to true RGB documents. If you need another kind of document, render to a RGB document and use Photoshop to convert the image to another color model.

Using the Object Library

The KPT 6 CD-ROM includes a library of objects for use in KPT SceneBuilder. These objects were created by professional 3D modelers and are fully editable.

The object files—located in the Objects folder on your KPT 6 CD-ROM—are organized into the following categories:

- Fruits
- Fun
- Miscellaneous
- Packaging
- Primitives
- Web

Objects: Fruits



apple.ptc



banana.ptc



orange.ptc



pear.ptc



pepper.ptc



walnut.ptc

Objects: Fun



flying saucer.ptc



heart.ptc



helix.ptc



mouse.ptc



node.ptc



strange.ptc



sun.ptc



teapot.ptc



stars.ptc

Objects: Miscellaneous



armchair.ptc



book.ptc



bowling pin.ptc



carafe.ptc



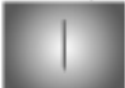
coffee.ptc



cornucopia.ptc



cornucopia2.ptc



crayon.ptc



cushion.ptc



eye.ptc



glass.ptc



jug.ptc



on-off.ptc



pen.ptc



pin.ptc



ring.ptc

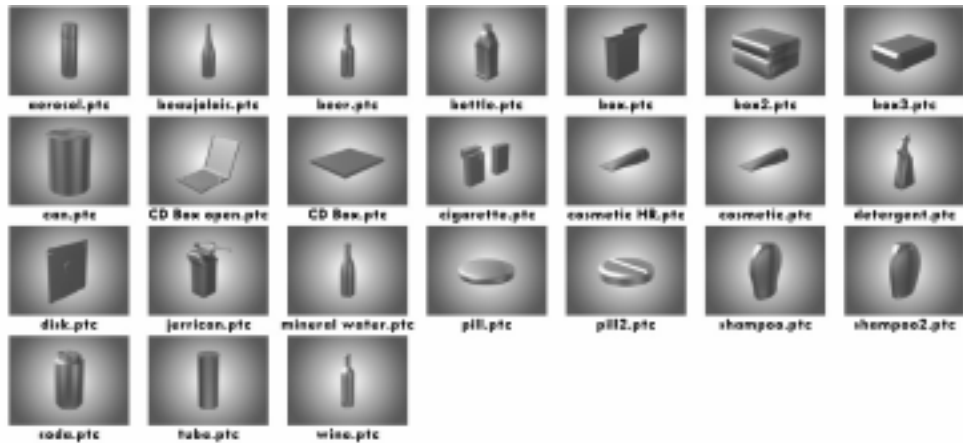


teapot2.ptc

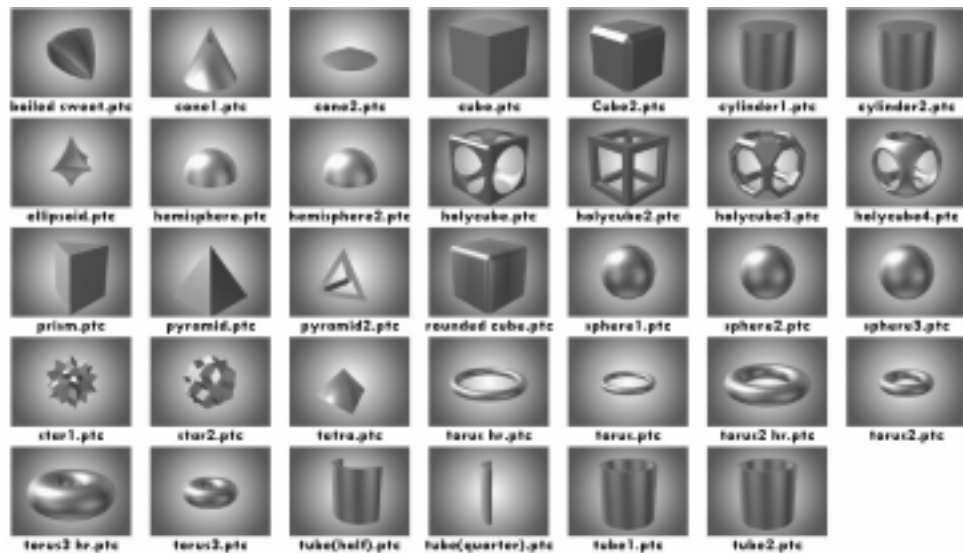


trombone.ptc

Objects: Packaging



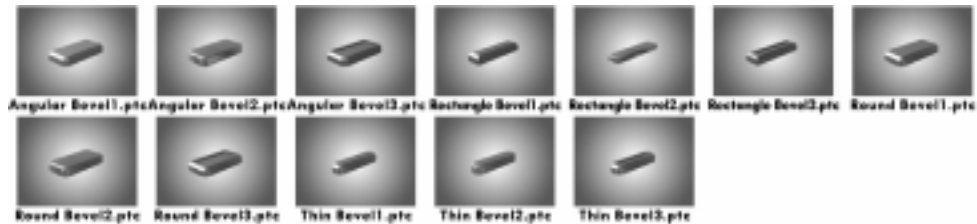
Objects: Primitives



Objects: Web



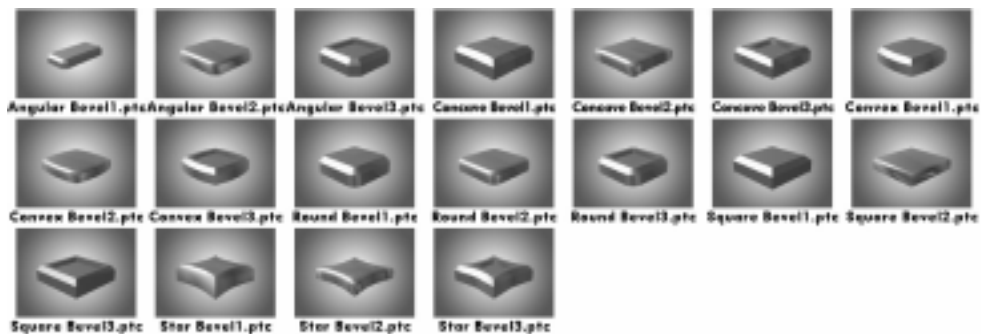
Objects: Web: Rectangle Buttons



Objects: Web: Round Buttons



Objects: Web: Square Buttons



Objects: Web: Torus Buttons

