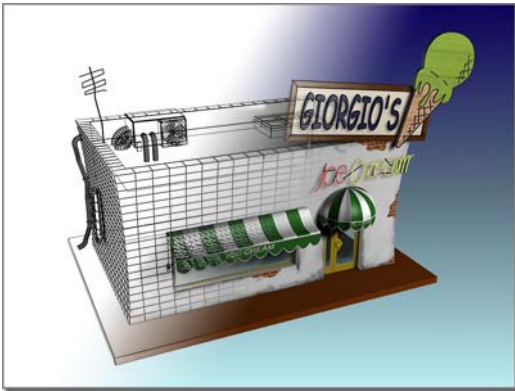# 17 Rendering

Rendering "fills in" geometry with color, shadow, lighting effects, and so on.

Rendering shades the scene's geometry using the lighting you've set up, the materials you've applied, and environment settings, such as background and atmosphere. You use the *Render Scene dialog (page 3–2)* to create renderings and save them to files. Renderings are also displayed on the screen, in a *rendered frame window (page 3–5)*.

Tip: When you render a very large image, you might get a message that says "Error Creating Bitmap," or that says you are out of RAM. If this happens, turn on the Bitmap Pager. You turn on the Bitmap Pager in *Rendering Preferences (page 3–863)*. The Bitmap Pager prevents a rendering from hanging because of overuse of memory. On the other hand, it slows down the rendering process.

Environments and Rendering Effects

A variety of special effects, such as film grain, depth of field, and lens simulations, are available as rendering effects. Another set of effects, such as fog, are provided as environment effects.

Environment settings (page 3–268) let you choose a background color or image, or choose an ambient color value for when you render without using radiosity. One category of environment settings is the *exposure controls (page 3–289)*, which adjust light levels for display on a monitor.

Rendering effects (page 3–214) provide a way for you to add blur or film grain to a rendering, or to adjust its color balance.

See also

Object-Level Rendering Controls

You can control rendering behavior at the object level. See *Object Properties (page 1–111)* and *Object Properties Dialog (page 1–111)*.

Render Scene Dialog

Rendering menu > Render
Main toolbar > Render Scene button

Rendering creates a 2D image or animation based on your 3D scene. It shades the scene's geometry using the lighting you've set up, the materials you've applied, and environment settings such as background and atmosphere.

The Render scene dialog has multiple panels. The number and name of the panels can change, depending on the active renderer. These panels are always present:

*   *Common panel (page 3–27)*

    Contains the main controls for any renderer, such as whether to render a still image or an animation, setting the resolution of rendered output, and so on.

*   *Renderer panel (page 3–35)*

    Contains the main controls for the current renderer.

*   *Render Elements panel (page 3–126)*

    Contains the controls for rendering various image information into individual image files. This can be useful when you work with compositing, image-processing, or special-effects software.

At the bottom of the Render Scene dialog are controls that, like those in the *Common Parameters rollout (page 3–27)*, apply to all renderers. These are described in this topic's "Interface" section, below.

Tip: When you render a very large image, you might get a message that says "Error Creating Bitmap," or that says you are out of RAM. If this happens, turn on the Bitmap Pager. You turn on the Bitmap Pager in *Rendering Preferences (page 3–863)*. The Bitmap Pager prevents a rendering from hanging because of overuse of memory. On the other hand, it slows down the rendering process.

Choice of a Renderer

Three renderers are provided with 3ds Max. Additional renderers might be available as third-party plug-in components. The renderers provided with 3ds Max are:

*   *Default scanline renderer (page 3–37)*

    The scanline renderer is active by default. It renders the scene in a series of horizontal lines.

    Global illumination options available for the scanline renderer include *light tracing (page 3–43)* and *radiosity (page 3–50)*.

    The scanline renderer can also *render to textures (page 3–139)* ("bake" textures), which is especially useful when preparing scenes for game engines.

*   *mental ray renderer (page 3–77)*

    The mental ray renderer created by mental images is also available. It renders the scene in a series of square "buckets."

    The mental ray renderer provides its own method of global illumination, and can also generate caustic lighting effects.

    In the Material Editor, a variety of *mental ray shaders (page 2–1520)* provide effects that only the mental ray renderer can display.

*   *VUE file renderer (page 3–126)*

    The VUE file renderer is a special-purpose renderer that generates an ASCII text description of the scene. A view file can include

multiple frames, and specify transforms, lighting, and changes of view.

Production and ActiveShade Renderers

In 3ds Max, there are two different types of renderings. One, called "Production" rendering, is active by default, and is typically the one you use for finished renderings. Production renderings can use any of the three aforementioned renderers. The second type of rendering is called *ActiveShade (page 3–17)*. An ActiveShade rendering uses the default scanline renderer to create a preview rendering that can help you see the effects of changing lighting or materials; the rendering interactively updates as you change your scene. ActiveShade renderings are, in general, less precise than production renderings.

Another advantage of production renderings is that you can use different renderers, such as the mental ray or VUE file renderer.

To choose between production or ActiveShade renderings, use the radio buttons described in the "Interface" section below. To change the renderer assigned to production rendering, use the *Assign Renderer rollout (page 3–34)*.

See also

Render Scene (page 3–11)

Procedures

To render a still image:

1. Activate the viewport to render.

2. Click Render Scene.

   The Render Scene dialog appears, with the Common panel active.

3. Make sure Single is turned on in the Time Output group of the Common Parameters rollout.

4. In the Output Size group, set other rendering parameters or use the defaults.

5. Click Render.

   By default, the rendering appears in a *rendered frame window (page 3–5)*.

   Tip: To render a view without using the dialog, click *Quick Render (page 3–16)*.

To render an animation:

1. Activate the viewport to render.

2. Click Render Scene.

   The Render Scene dialog appears, with the Common panel active.

3. Open the *Common Parameters rollout (page 3–27)*. In the Time Output group, choose a time range.

4. In the Output Size group, set other rendering parameters or use the defaults.

5. In the Render Output group, click Files.

6. On the *Render Output File dialog (page 3–8)*, specify a location, name, and a type for the animation file, and then click Save.

   Typically, a dialog appears that lets you configure options for the chosen file format. Change settings or accept the defaults, and then click OK to continue.

   The Save File check box turns on.

7. Click the Render button at the bottom of the dialog.

   Note: If you set a time range and do not specify a file to save to, the animation is rendered only to the window. This can be a time-consuming mistake, so an alert warns you about it.