

The 3ds Max Interface

This chapter explains the 3ds Max interface and its basic operation. You can use this chapter as a reference as you work through the rest of this book, although the following chapters and their exercises will orient you to the 3ds Max user interface (UI) quickly. It's important to be in front of your computer when you read this chapter, so you can try out techniques as we discuss them in the book.


Topics in this chapter include the following:

- ▶ **The workspace**
- ▶ **Transforming objects using gizmos**
- ▶ **Graphite Modeling Tools ribbon**
- ▶ **Command panel**
- ▶ **Time slider and track bar**
- ▶ **File management**

The Workspace

This section presents a brief rundown of what you need to know about the UI and how to navigate in 3ds Max's 3D workspace.

User Interface Elements

Figure 1.1 shows the 3ds Max UI. At the very top left of the application window is a large button () called Application; clicking it opens the Application menu, which provides access to many file operations. Also running along the top is the Quick Access toolbar, which provides access to common commands, and the InfoCenter, which offers support for various Autodesk applications.

Some of the most important commands in the Quick Access toolbar are file management commands such as Save File and Open File. If you do something and then wish you hadn't, you can click the Undo Scene Operation icon (↶) or press Ctrl+Z. To redo a command or action that you just undid, click the Redo Scene Operation button (↷) or press Ctrl+Y.

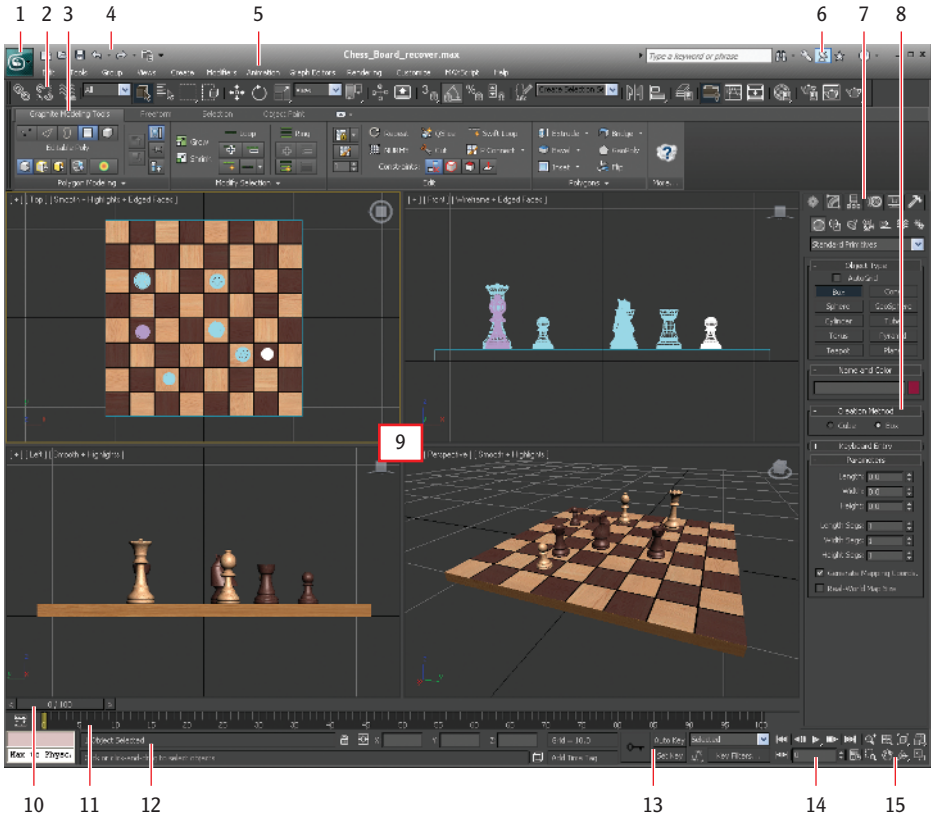



FIGURE 1.1 3DS Max interface elements

- | | | |
|---|--------------------------------|--|
| 1 | Application button | Opens Application menu that provides file management commands. |
| 2 | Main toolbar | Provides quick access to tools and dialog boxes for many of the most common tasks. |
| 3 | Graphite Modeling Tools ribbon | Provides access to a wide range of tools to make building and editing models in 3ds Max fast and easy. |

4	Quick Access toolbar	Provides some of the most commonly used file management commands, as well as Undo and Redo.
5	Menu bar	Provides access to commands grouped by category.
6	InfoCenter	Provides access to information about 3ds Max and other Autodesk products.
7	Command panel tabs	Where all the editing of parameters occurs; provides access to many functions and creation options; divided into tabs that access different panels, such as Creation pane, Modify panel, etc.
8	Rollout	A section of the Command panel that can expand to show a listing of parameters or collapse to just its heading name.
9	Viewports	You can choose different views to display in these four viewports as well as different layouts from the viewport label menus.
10	Time slider	Shows the current frame and allows for changing the current frame by moving (or scrubbing) the time bar.
11	Track bar	Provides a timeline showing the frame numbers; select an object to view its animation keys on the track bar.
12	Prompt line and status bar controls	Prompt and status information about your scene and the active command.
13	Coordinate display area	Allows you to enter transformation values.
14	Animation keying controls	Animation playback controls.
15	Viewport navigation controls	Icons that control the display and navigation of the viewports; icons may change depending on the active viewport.

Just below the Quick Access toolbar is the menu bar, which runs across the top of the UI. The menus give you access to a ton of commands—from basic scene operations, such as Undo under the Edit menu, to advanced tools such as those found under the Modifiers menu. Immediately below the menu bar is the Main toolbar. It contains several icons for functions such as the three Transform tools: Move, Rotate, and Scale (.

When you first open 3ds Max, the workspace has many UI elements. Each is designed to help you work with your models, access tools, and edit object parameters.

Viewports

You'll be doing most of your work in the viewports. These windows represent 3D space using a system based on Cartesian coordinates. That is a fancy way of saying “space on *X*, *Y*, and *Z* axes.”

You can visualize *X* as left–right, *Y* as up–down, and *Z* as in–out (into and out of the screen from the Top viewport). The coordinates are expressed as a set of three numbers such as (0, 3, –7). These coordinates represent a point that is at 0 on the *X* axis, 3 units up on the *Y* axis, and 7 units back on the *Z* axis.

Four-Viewport Layout

3ds Max's viewports are the windows into your scene. By default, there are four main views: front, top, left, and perspective. The first three—front, top, and left—are called orthographic (2D) views. They are also referred to as modeling windows. These windows are good for expressing exact dimensions and size relationships, so they are good tools for sizing up your scene objects and fine-tuning their layout. The General viewport label menu (**[+]**) in the upper-left corner of each viewport provides options for overall viewport display or activation as shown in Figure 1.2. It also gives you access to the Viewport Configuration dialog box.

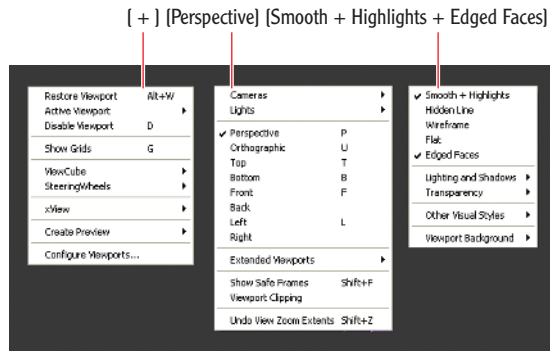


FIGURE 1.2 Viewport label menu

The perspective viewport displays objects in 3D space using perspective. Notice in Figure 1.1 how the distant objects seem to get smaller in the perspective

viewport. In actuality, they are the same size, as you can see in the orthographic viewports. The perspective viewport gives you the best representation of what your output will be.

To select a viewport, click in a blank part of the viewport (not on an object). If you do have something selected, it will be deselected when you click in the blank space. You can also right-click anywhere in an inactive viewport to activate it without selecting or deselecting anything. When active, the view will have a mustard yellow highlight around it. If you right-click in an already active viewport, you will get a pop-up context menu called the *quad menu*. You can use the quad menu to access some basic commands for a faster workflow. We will cover this topic in the section “Quad Menus” later in this chapter.

ViewCube

The ViewCube navigation control, shown in Figure 1.3, provides visual feedback of the current orientation of a viewport, lets you adjust the view orientation, and allows you to switch between standard and isometric views.

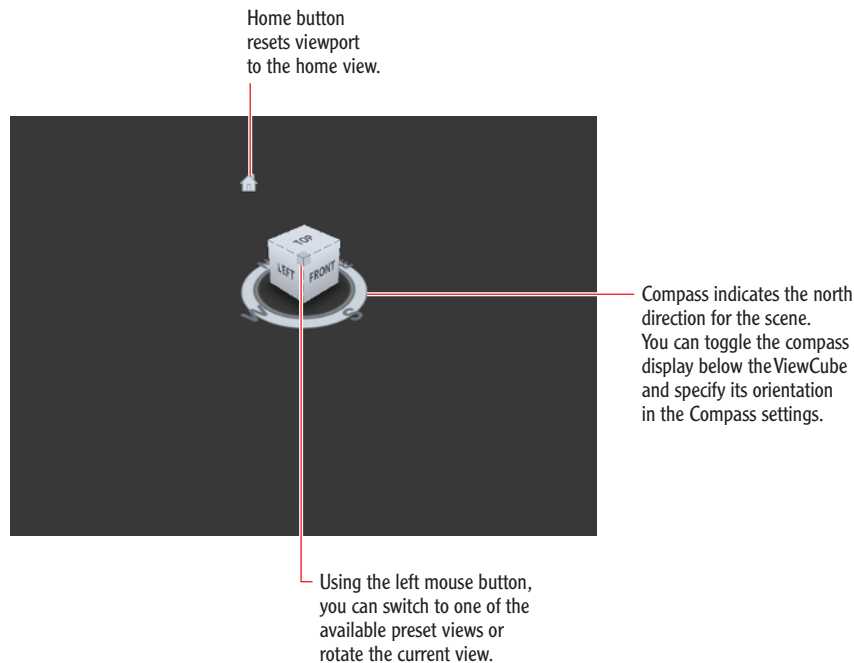


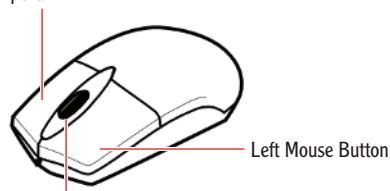
FIGURE 1.3 ViewCube navigation tool

The ViewCube is displayed by default in the upper-right corner of the active viewport, superimposed over the scene in an inactive state to show the orientation of the scene. It does not appear in camera or light views. When you position your cursor over the ViewCube, it becomes active. Using the left mouse button, you can switch to one of the available preset views, rotate the current view, or change to the home view of the model. Right-clicking opens a context menu with additional options.

Mouse Buttons

Each of the three buttons on your mouse plays a slightly different role when manipulating viewports in the workspace. When used with modifiers such as the Alt key, they are used to navigate your scene, as shown in Figure 1.4.

Right mouse button opens the quad menu. Specialized quad menus become available when you press any combination of Shift, Ctrl, and Alt while right-clicking in any standard viewport.



Mouse wheel and middle mouse button (MMB). Use wheel for zooming. Use MMB to pan, Alt+MMB for arc rotate, Ctrl+Alt+MMB for slow zoom.

FIGURE 1.4 Breakdown of the three computer mouse buttons

Quad Menus

When you click the right mouse button anywhere in an active viewport, except on the viewport label, a quad menu is displayed at the location of the mouse cursor (see Figure 1.5). The quad menu can display up to four quadrant areas with various commands without your having to travel back and forth between

the viewport and rollouts on the Command panel (the area of the UI to the right—more on this later in the section “Command Panel”).

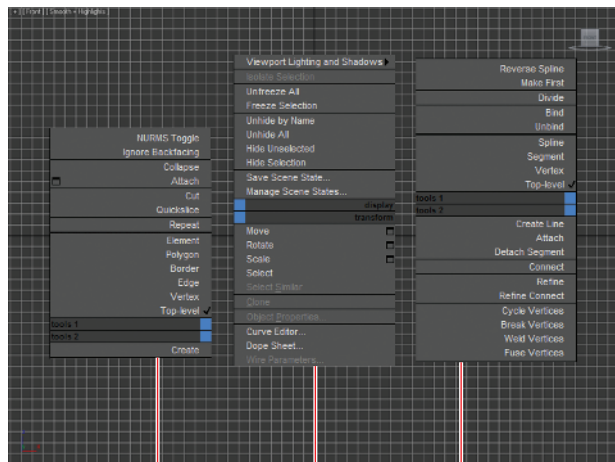
The two right quadrants of the default quad menu display generic commands, which are shared between all objects. The two left quadrants contain context-specific commands, such as mesh tools and light commands. You can also repeat your last quad menu command by clicking the title of the quadrant.

The quad menu contents depend on what is selected. The menus are set up to display only the commands that are available for the current selection; therefore, selecting different types of objects displays different commands in the quadrants. Consequently, if no object is selected, all of the object-specific commands will be hidden. If all of the commands for one quadrant are hidden, the quadrant will not be displayed.

Cascading menus display submenus in the same manner as a right-click menu. The menu item that contains submenus is highlighted when expanded. The submenus are highlighted when you move the mouse cursor over them.

Some of the selections in the quad menu have a small icon next to them. Clicking this icon opens a dialog box where you can set parameters for the command.

To close the menu, right-click anywhere on the screen or move the mouse cursor away from the menu and click the left mouse button. To reselect the last selected command, click in the title of the quadrant of the last menu item. The last menu item selected is highlighted when the quadrant is displayed.



Polygon quad menu Display/Transform quad menu Shapes quad menu

FIGURE 1.5 Quad menus

The Caddy Interface

Like the quad menu, the new caddy interface is designed to keep your eyes in the viewports while providing context-sensitive tools. The caddies replace the Settings dialog boxes available in previous versions of 3ds Max. Depending on the tool, clicking the Settings button (identified as a small arrow below the name of the tool) displays the tool-specific caddy directly over the selected objects or subobjects. Figure 1.6 shows the Extrude Polygons caddy. Each tool's caddy is slightly different and may include more than one parameter.

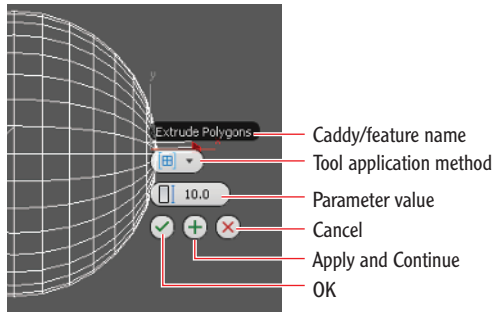


FIGURE 1.6 The Extrude Polygons caddy

Pausing your cursor over any of the highlighted features changes the caddy title to reflect the name of that feature. Clicking a feature with a down arrow opens a drop-down menu where you can choose an option. There are three methods for executing the changes in a caddy: OK, Apply And Continue, and Cancel. Clicking OK applies the parameter values set and then closes the caddy. Clicking Apply And Continue applies the parameter values but keeps the caddy open. Clicking Cancel terminates the command.

Display of Objects in a Viewport

Viewports can display your scene objects in a few ways. If you click the viewport's name, you can switch that panel to any other viewport angle or point of view. If you click the viewport display mode, a menu appears to allow you to change the display mode. The display mode names differ depending on the graphics driver mode you selected when starting 3ds Max. This book uses the display modes with Direct3D driver mode selected. If you use the recommended graphics driver mode Nitrous, you will find slightly different names for the viewport display modes.

The most common view modes are Wireframe mode and Smooth + Highlights mode (called Realistic in Nitrous driver mode). Wireframe mode displays the edges of the object. It is the fastest to use because it requires less computation on your video card. The Smooth + Highlights mode is a shaded view where the objects in the scene appear solid (see Figure 1.7).

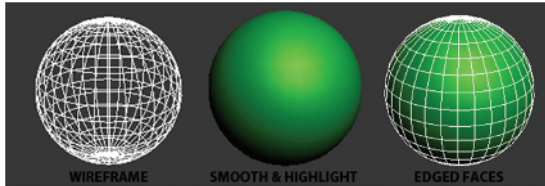


FIGURE 1.7 Viewport rendering options with DirectX3D or OpenGL driver modes

Each viewport displays a ground plane grid (as shown in the perspective viewport), called the *Home Grid*. This is the basic 3D-space reference system where the *X* axis is red, the *Y* axis is green, and the *Z* axis is blue. It's defined by three fixed planes on the coordinate axes (*X*, *Y*, *Z*). The center of all three axes is called the origin, where the coordinates are (0, 0, 0). The Home Grid is visible in 3ds Max's default settings when you start the software, but it can be turned off in the right-click viewport menu or by pressing the G key.

Selecting Objects in a Viewport

Click an object to select it in a viewport. If the object is displayed in Wireframe mode, its wireframe turns white while it is selected. If the object is displayed in a Shaded mode, a white bracket appears around the object.


To select multiple objects, hold down the Ctrl key as you click additional objects to add to your selection. If you Alt+click an active object, you will deselect it. You can clear all your active selections by clicking in an empty area of the viewport.

Changing/Maximizing the Viewports

To change the view in any given viewport—for example, to go from a perspective view to a front view—click the current viewport's name. From the menu, select the view you want to have in the selected viewport. You can also use keyboard shortcuts. To switch from one view to another, press the appropriate key on the keyboard, as shown in Table 1.1.

TABLE 1.1 Viewport shortcuts

Viewport	Keyboard shortcut
Top view	T
Bottom view	B
Front view	F
Left view	L
Camera view	C
Orthographic	U
Perspective view	P

If you want to have a larger view of the active viewport than is provided by the default four-viewport layout, click the Maximize Viewport Toggle icon () in the lower-right corner of the 3ds Max window. You can also use the Alt+W keyboard shortcut to toggle between the maximized and four-viewport views.

Viewport Navigation

3ds Max allows you to move around its viewports either by using key/mouse combinations, which are highly preferable, or by using the viewport controls found in the lower-right corner of the 3ds Max UI. An example of navigation icons is shown for the Top viewport in Figure 1.8, though it's best to become familiar with the key/mouse combinations.



FIGURE 1.8 Viewport navigation controls are handy, but the mouse keyboard combinations are much faster to use for navigation in viewports.

Open a new, empty scene in 3ds Max. Experiment with the following controls to get a feel for moving around in 3D space. If you are new to 3D, using these

controls may seem odd at first, but it will become easier as you gain experience and should become second nature in no time.


Pan Panning a viewport slides the view around the screen. Using the middle mouse button (MMB), click in the viewport and drag the mouse pointer to pan the view.

Zoom Zooming moves your view closer to or farther away from your objects. To zoom, press Ctrl+Alt and MMB+click in your viewport, and then drag the mouse up or down to zoom in or out, respectively. You may also use the scroll wheel to zoom.

Orbit Orbit will rotate your view around your objects. To orbit, press Alt and MMB+click and drag in the viewport. By default, Max will rotate about the center of the viewport.

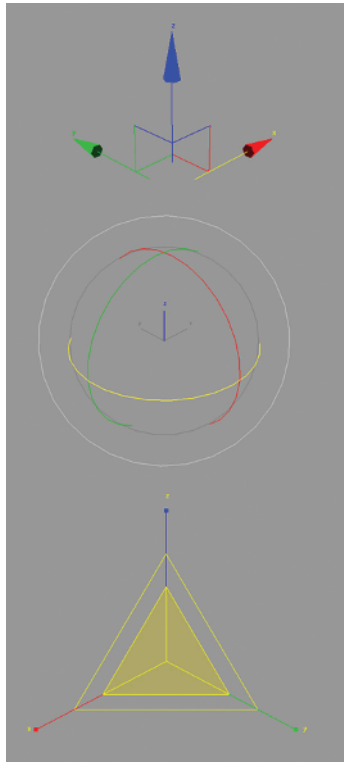
Transforming Objects Using Gizmos

Using gizmos is a fast and effective way to transform (move, rotate, and/or scale) your objects with interactive feedback. When you select a transform tool such as Move, a gizmo appears on the selected object. Gizmos let you manipulate objects in your viewports interactively to transform them. Coordinate display boxes at the bottom of the screen display coordinate or angular or percentage information on the position, rotation, and scale of your object as you transform it. The gizmos appear in the viewport on the selected object at their pivot point as soon as you invoke one of the transform tools, as shown in Figure 1.9.

You can select the transform tools by clicking the icons in the Main toolbar's Transform toolset () or by invoking shortcut keys: W for Move, E for Rotate, and R for Scale. In a new scene, create a sphere by choosing Create > Standard Primitives > Sphere. In a viewport, click and drag to create the sphere object. Follow along as we explain the transform tools next.

Move

Invoke the Move tool by pressing W (or accessing it through the Main toolbar), and your gizmo should look like the top image in Figure 1.9. Dragging the XYZ axis handles moves an object on that specific axis. You can also click on the plane handle, the box between two axes, to move the object in that two-axis plane.

**Move Gizmo**

Use a colored handle to move in just that axis.

Rotate Gizmo

Use the colored rings to rotate about a single axis. Use the center to rotate freely.

Scale Gizmo

Drag in the center of the gizmo to scale uniformly. To perform non-uniform scaling, drag on a colored handle.

FIGURE 1.9 Gizmos for the transform tools

Rotate

Invoke the Rotate tool by pressing E, and your gizmo will turn into three circles, as shown in the middle image in Figure 1.9. You can click on one of the colored circles to rotate the object on the axis only, or you can click anywhere between the circles to freely rotate the selected object in all three axes.

Scale

Invoke the Scale tool by pressing the R key, and your gizmo will turn into a triangle, as shown in the bottom of Figure 1.9. Clicking and dragging anywhere inside the yellow triangle will scale the object uniformly on all three axes. By selecting the red, green, or blue handles for the appropriate axis, you can scale along one axis only. You can also scale an object on a plane between two axes by selecting the side of the yellow triangle between two axes.

Graphite Modeling Tools Ribbon

The Graphite Modeling Tools (also called the Graphite Modeling Tools ribbon) is a section of the UI directly under the main toolbar (as you saw earlier in Figure 1.1). The Graphite Modeling Tools ribbon provides you with a wide range of tools to make building and editing models in 3ds Max fast and easy. All the available tools are divided into tabs that are organized by function, and then further divided into panels. For example, the Graphite Modeling Tools tab contains the tools you use most often for polygon modeling and editing, organized into separate panels for easy, convenient access. In the following chapters, you will make copious use of the Graphite Modeling Tools (see Figure 1.10).

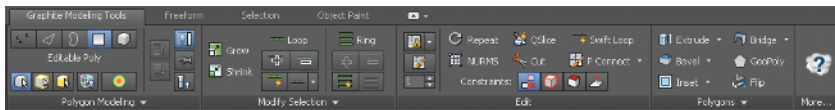


FIGURE 1.10 The Graphite Modeling Tools ribbon

The panels found in the Polygon Modeling tab are:







- ▶ Polygon Modeling panel
- ▶ Modify Selection panel
- ▶ Edit panel
- ▶ Geometry (All) panel
- ▶ [Subobject] panel
- ▶ Loops panel
- ▶ Additional panels

Command Panel

Everything you need to create, manipulate, and animate objects can be found in the Command panel running vertically on the right side of the UI (Figure 1.1). The Command panel is divided into tabs according to function. The function or toolset you need to access will determine which tab you need to click. When you encounter a panel that is longer than your screen, 3ds Max displays a thin vertical scroll bar on the right side. Your cursor also turns into a hand that lets you click and drag the panel up and down.

You will be exposed to more panels as you progress through this book. Table 1.2 is a rundown of the Command panel functions and what they do.

TABLE 1.2 Command panel functions

Icon	Name	Function
	Create panel	Lets you create objects, lights, cameras, etc.
	Modify panel	Lets you apply and edit modifiers to objects
	Hierarchy panel	Lets you adjust the hierarchy for objects and adjust their pivot points
	Motion panel	Lets you access animation tools and functions
	Display panel	Lets you access display options for scene objects
	Utilities panel	Lets you access several functions of 3ds Max, such as motion capture utilities and the Asset Browser

Object Parameters and Values

The Command panel and all its tabs give you access to an object’s parameters. Parameters are the values that define a specific attribute of or for that object. For example, when an object is selected in a viewport, its parameters are shown in the Modify panel, where you can adjust them. When you create an object, that object’s creation parameters are shown (and editable) in the Create panel.

Modifier Stack

In the Modify panel you’ll find the modifier stack (Figure 1.11). This UI element lists all the modifiers that are active on any selected object. Modifiers are actions applied to an object that change it somehow, such as bending or warping. You can stack modifiers on top of each other when creating an object and then go back and edit any of the modifiers in the stack (for the most part) to adjust the object at any point in its creation. You will see this in practice in the following chapters.

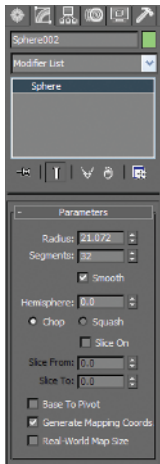


FIGURE 1.11
The modifier stack in
the Modify panel

Objects and Subobjects

An object or mesh in 3ds Max is composed of polygons that define the surface. For example, the facets or small rectangles on a sphere are *polygons*, all connected at common edges at the correct angles and in the proper arrangement to make a sphere. The points that generate a polygon are called *vertices*. The lines that connect the points are called *edges*. Polygons, vertices, and edges are examples of subobjects and are all editable so that you can fashion any sort of surface or mesh shape you wish.


To edit these subobjects, you have to convert the object to an editable polygon, which you will learn how to do in the following chapters.

Time Slider and Track Bar

Running across the bottom of the 3ds Max UI are the time slider and the track bar, as shown earlier in Figure 1.1. The time slider allows you to move through any frame in your scene by scrubbing (moving the slider back and forth). You can move through your animation one frame at a time by clicking on the arrows on either side of the time slider or by pressing the < and > keys.

You can also use the time slider to animate objects by setting keyframes. With an object selected, right-click on the time slider to open the Create Key dialog box, which allows you to create transform keyframes for the selected object.

The track bar is directly below the time slider. The track bar is the timeline that displays the timeline format for your scene. More often than not, the track bar is displayed in frames, with the gap between each tick mark representing frames. On the track bar, you can move and edit your animation properties for the selected object. When a keyframe is present, right-click it to open a context menu where you can delete keyframes, edit individual transform values, and filter the track bar display.

The Animation Playback controls in the lower right of the 3ds Max UI () are similar to the ones you would find on a VCR (how old are you?) or DVD player.

File Management

3ds Max provides several subfolders automatically grouped into projects for you. Different kinds of files are saved in categorized folders under the project folder. For example, scene files are saved in a Scenes folder and rendered images are saved in a Render Output folder within the project folder. The projects are set up according to what types of files you are working on, so everything is neat and organized from the get-go. 3ds Max automatically creates this folder structure for you once you create a new project, and its default settings keep the files organized in that manner.

The conventions followed in this book and on the accompanying web page (www.sybex.com/go/3dsmax2012essentials) follow this project-based system so that you can grow accustomed to it and make it a part of your own workflow. It pays to stay organized.

Setting a Project

The exercises in this book are organized into specific projects such as Dresser, the one you will tackle in the next chapter. The Dresser project will be on your hard drive, and the folders for your scene files and rendered images will be in that project layout. Once you copy the appropriate projects to your hard drive, you can tell 3ds Max which project to work on by choosing Application > Manage > Set Project Folder. Doing so will send the current project to that project folder. For example, when you save your scene, 3ds Max will automatically take you to the Scenes folder of the current project.

Designating a specific place on your PC or server for all your project files is important, as is having an established naming convention for its files and folder.

For example, if you are working on a project about a castle, begin by setting a new project called Castle. Choose Application > Manage > Set Project Folder, as shown in Figure 1.12. In the dialog box, click Make New Folder to create a folder named **Castle** on your hard drive. 3ds Max will automatically create the project and its folders.

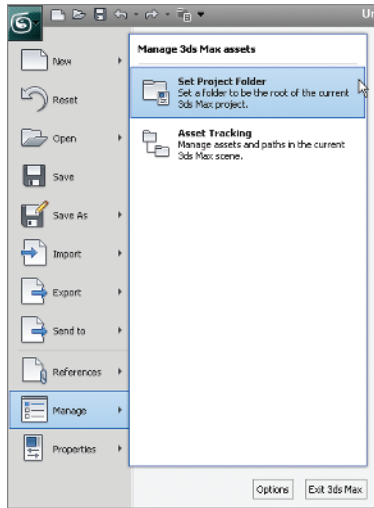


FIGURE 1.12 Choosing Set Project Folder

Once you save a scene, one of your scene filenames should look like this: `Castle_GateModel_v05.max`. This tells you right away it's a scene from your Castle project and that it is a model of the gate. The version number tells you that it's the fifth iteration of the model and possibly the most recent version. Following a naming convention will save you oodles of time and aggravation.

Version Up!

After you've spent a significant amount of time working on your scene, you will want to *version up*. This means you save your file using the same name, but you increase the version number by 1. Saving often and using version numbers are useful for keeping track of your progress and protecting yourself from mistakes and from losing your work.

To version up, you can save by selecting Application > Save As and manually changing the version number appended to the end of the filename. 3ds Max also

lets you do this automatically by using an increment feature in the Save As dialog box. Name your scene file and click the Increment button (the + icon) to the right of the filename text. Clicking the Increment button appends the filename with 01, then 02, then 03, and so on as you keep saving your work using Save As and the Increment button.

THE ESSENTIALS AND BEYOND

In this chapter you learned about the interface and how to navigate 3d space in 3ds Max. As you continue with the following chapters, you will gain experience and confidence with the UI, and many of the features that seem daunting to you now will become second nature.

ADDITIONAL EXERCISES

- ▶ From the Create panel, choose Standard Primitives and create each one of the primitives. Pay attention to each object's parameters to get familiar with what each object is capable of.
- ▶ Explore the viewport labels for rendering types and changing viewports.
- ▶ Convert each primitive to an editable polygon and, using the selection tools, practice selecting and deselecting vertices, edges, and polygons.