Chapter 1

Getting to Know VIZ

Welcome to *Mastering Autodesk VIZ 2008*. Once again, Autodesk VIZ 2008 benefits from the development of its sister product, 3ds Max, to give architects and other design professionals an indispensable design tool. VIZ 2008 gives designers cutting-edge rendering technology, easier-to-use architectural materials, improved communication with other software, enhancements to modeling and animation tools, and better viewport interactivity than ever before.

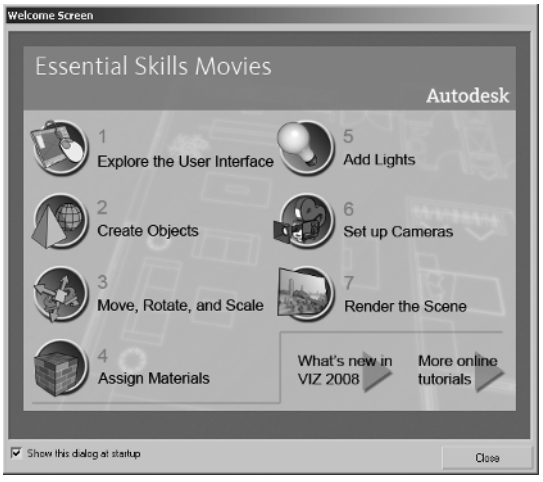
This chapter introduces some of VIZ 2008's special features and then gets you started working with the VIZ 2008 interface. In this chapter, you will learn to:

- Dock and float toolbars
- Copy objects and use the transform tools
- Create a named selection set

Introducing the New VIZ 2008 Features

Each new version of Autodesk VIZ incorporates new and exciting tools to enhance your capabilities and workflow and increase the performance of the program on your computer system. Utilizing these new features is key to improving your skills and decreasing the time it takes to complete your projects. The VIZ 2008 Welcome Screen dialog box (see Figure 1.1) now includes links to essential skills movies, which teach many of the basic skills for using VIZ, as well as links to movies that explain the new features and additional VIZ related tutorials.

FIGURE 1.1
The new Welcome Screen dialog box



The new features and additional skills movies are located on the Autodesk website and an active Internet connection is required to view them. When you no longer want the dialog box to appear as VIZ opens, simply uncheck the Show This Dialog at Startup option in the lower-left corner. The dialog box can then be opened by choosing Help ➢ Welcome Screen from the menu bar.

Throughout this book, you will change the viewport rendering mode: the way that VIZ interactively displays the scene. New to VIZ 2008 is the Hidden Line rendering mode, which displays the scene objects in wireframe but does not display an object's edges for faces that are oriented away from a camera or the viewport. The Hidden Line rendering mode displays the scene objects quickly while maintaining an uncluttered picture of the scene.

When VIZ utilizes image maps during the rendering process, the files are not actually included in the VIZ file but pointed to at rendering time. The filename and location must be consistent for each occurrence of the rendering for the rendering to be completed. In VIZ 2008 the file paths can be absolute, pointing to a specific location, or relative, pointing to a file path relative to the current file location. The relative path option can make it easier to relocate the file to another computer or for staff in different locations to render the same file.

The DWG import and export functionality and the DWG File Linking have been updated to coincide with the 2008 family of Autodesk products. Support for the latest versions of Revit is also included.

The mental ray renderer that now ships with VIZ 2008 has been upgraded to version 3.5 of the high-level, production-quality rendering system. This version includes final gather presets and easier-to-use controls, and the new Arch & Design and Car Paint materials for architectural and vehicular projects. You can also render larger images in separate portions using the split and stitch options.

All aspects of a VIZ scene can now be externally referenced (XRef'd), including both scene objects and materials. Controllers, the features that determine how animated objects are managed, can now maintain dependencies between XRef'd objects.

All items using the same style, in an imported or linked AutoCAD Architecture (formerly Architectural Desktop) file, can be quickly selected using the new Select Similar command.

Getting Started

Although many of VIZ's components are typical for a Windows program, quite a few are unique. To begin exploring the VIZ 2008 interface, start the program by doing one of the following:

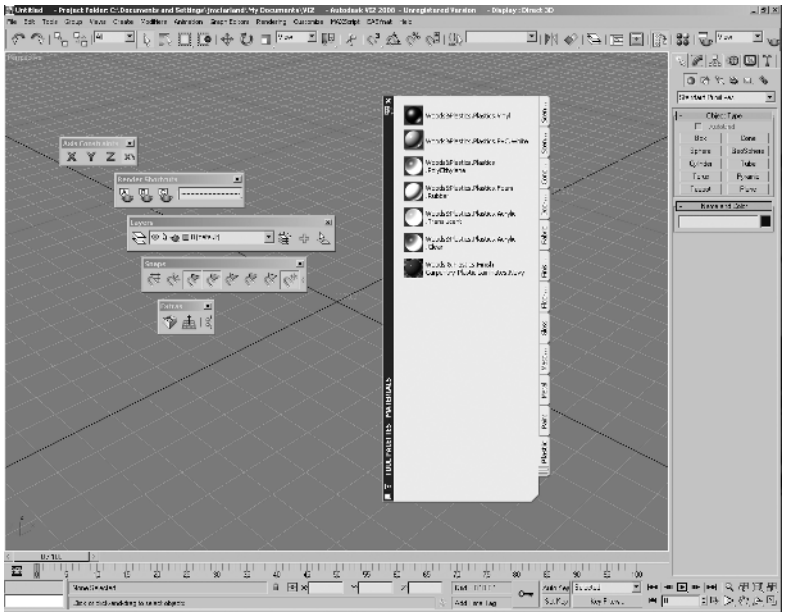
- Double-click the Autodesk VIZ 2008 icon on the Desktop.
- Choose Start ➢ Programs ➢ Autodesk ➢ Autodesk VIZ 2008 ➢ Autodesk VIZ 2008.

You'll see a variety of components in the VIZ window (see Figure 1.2)—some that are familiar and others that are not.

The Large Icons Option

The images in this book use the Large Icons option to better display the toolbar buttons. To activate this option, choose Customize ➢ Preferences to open the Preference Settings dialog box. In the UI Display section of the General tab, check the Use Large Toolbar Buttons option, and then shut down and reopen VIZ for the option to take effect.

FIGURE 1.2
The standard Autodesk VIZ 2008 window



At the top, you see a typical Windows menu bar and the VIZ Main toolbar. You may also see up to five floating toolbars containing additional VIZ tools and the tool palettes that hold materials, lights, and cameras for use in scenes. In the center, you see the viewport area, which currently shows a Perspective viewport. At the lower-right corner of the screen, you see the viewport navigation tools for adjusting your views in the current viewport. You also see the time controls for creating and playing animations, the prompt line and status bar, and the MAXScript Mini-Listener (for creating macros). On the right side of the user interface, you see the command panels, which contain nearly all the tools you'll use to create and edit objects in VIZ. Let's take a closer look at each of these components. VIZ often offers several methods, including toolbars, command panels, menus, and shortcuts, for accomplishing many tasks.

Touring the Interface

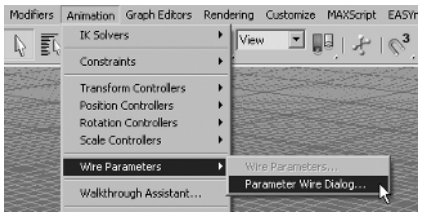
VIZ offers a wealth of tools, and their sheer number can be overwhelming. To get a basic understanding of the VIZ window, let's look at each of the window components individually, starting with the menu bar.

The Main Menu Bar

At the top of the screen is the menu bar. Here, you find the typical Windows commands for file maintenance, as well as commands specifically for Autodesk VIZ 2008.

The options in the menu bar are organized in the same way as they are in most other Windows applications. Clicking an option issues a command, and you're expected to take some action. An option that's followed by three periods, called an ellipsis, opens a dialog box, usually to allow you

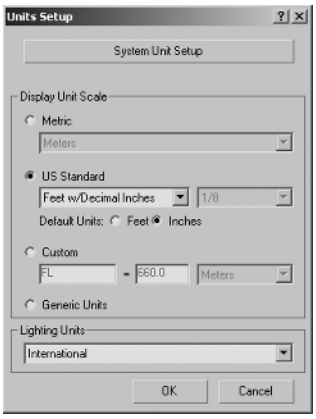
to make changes to settings related to the option. An option with a right-pointing arrow displays more options in what is called a *cascading menu*.



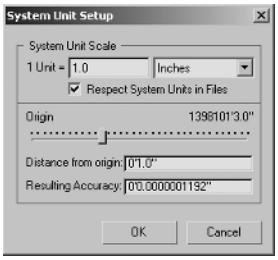
Try out the menu bar by taking a look at the Units Setup dialog box.

1. Choose Customize ➢ Units Setup. The Units Setup dialog box displays.
2. Select the US Standard radio button, and make sure that Feet w/Decimal Inches is selected below it, and that the Inches radio button is selected for Default Units, as shown in Figure 1.3.

FIGURE 1.3
Defining the units in the Units Setup dialog box



3. Click the System Unit Setup button and you will see another small dialog box. Make sure 1 Unit is set equal to 1 inch. Do not change anything else in the System Unit Setup dialog box and click OK twice to close both dialog boxes.



By setting the Units Setup dialog box, you ensure that in future exercises, you'll be working with the same units that are discussed in this book.

REVERTING TO THE STARTUP LAYOUT

Autodesk VIZ 2008 is something of a chameleon. It can change its appearance, depending on the focus of your modeling needs. If your VIZ 2008 window doesn't look the way it does in the figures in this book, choose Customize ➢ Revert to Startup Layout. You'll see a warning message telling you that any user interface (UI) changes you have made will be lost. Click Yes to set up your VIZ windows to match the interface you see in this book.

The Main Toolbar

Just below the menu bar is the Main toolbar. The tools on this toolbar offer tooltips to help you remember their purpose.

To the far left of the toolbar are the Undo and Redo options. Click these buttons to undo your last actions, up to 25 by default, or redo any undone actions. Right-clicking either button brings up a list of actions that you can select from.

Next is a set of tools for linking and selecting objects. The two linking tools, one for linking and the other for unlinking, cause one object to move, rotate, or scale based on commands applied to another object. The selection tools let you select objects by clicking them or by selecting them by name. You can also set the method for selecting objects by using a selection window, which provides a way of indicating a selection by placing a rectangle, circle, or other border around the objects.

To the right of the selection tools are the transform tools. This set of tools lets you move, rotate, and scale objects. You can also choose the reference coordinate system, set the center of the transform using the pivot options, use different snap options, work with named selection sets, and use tools to mirror and align objects.

The next group of tools to the right includes access to the Layer Manager and graph editor tools and the materials and rendering tools. The graph editor tools display your scene information as graphs or wiring diagrams to indicate the functionality or relationships of scene objects. The materials tools give you control over the appearance of objects by defining and applying their surface appearance. With these tools, you can create color, texture, opacity, and other material characteristics, and then apply these characteristics to objects in your model. You can also open the Render Scene dialog box, select the render type, and perform a quick render with the buttons on the far right.

The rendering tools give you control over the output of your Autodesk VIZ 2008 scene. Unlike output from most applications, output from VIZ 2008 is most likely to be image or animation files. The rendering tools let you set the type and size of output, from single, large-format stills to video-ready animations.

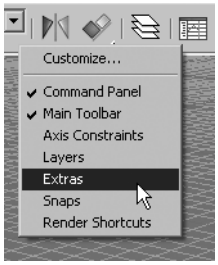
WORKING ON A LOWER-RESOLUTION SYSTEM

If you're working with a screen resolution less than 1280×1024, you won't see all the tools on the Main toolbar. Some of the tools are off the screen to the far right. To access these tools, place the cursor on the toolbar so that a hand icon appears, and then click and drag the toolbar to the left. The hidden tools will emerge. You can also click the Rendering menu item to access all the rendering tools. The smallest supported resolution in VIZ 2008 is 1024×768, but the recommended resolution is 1280×1024 or higher.

Docked and Floating Toolbars

In addition to the Main toolbar, you see several "floating" toolbars that may be sitting on top of the viewport (see Figure 1.2) or hidden. You can open hidden toolbars by right-clicking on a blank part of any toolbar. A context menu will appear listing the available toolbars. Let's take a quick look at the floating toolbars.

1. Right-click on a blank area of the Main toolbar and click on any of the toolbar items that do not have a checkmark next to them.



2. Repeat the process until all five floating toolbars are exposed.

All five toolbars float over the Perspective viewport: the Layers, Render Shortcuts, Snaps, Axis Constraints, and Extras toolbars. As with most toolbars, you can move these floating toolbars to the side or hide them altogether to gain better access to objects in the Main viewport. The toolbars can be resized by clicking on and dragging their left edges.

CONSIDER A DUAL-SCREEN SYSTEM

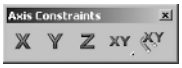
In VIZ and many other graphics programs, screen space is always at a premium. Using a two-monitor system allows for a lessening of screen clutter by moving items such as floating toolbars, the Material Editor, graph editors, tool palettes, and so forth to the second monitor, freeing up as much screen real estate as possible.

Layers are like overlays that help you organize the objects in your model. If you are an AutoCAD or Photoshop user, you should have an idea of how layers work. You'll learn more about layers in Chapter 6.

Render shortcuts contain predefined render settings, such as resolution and output file type, used to create content from your VIZ scenes. The Render Shortcuts toolbar is where you will find the tools for saving and storing your preset values. You'll learn about rendering in Chapters 10 and 11.

Snaps are features that control where the cursor jumps to, adding a degree of precision to your scene, when the cursor is near a characteristic in the scene. Using snaps, you can easily move the corner of one object to the midpoint of another or nearly any other characteristic combination.

Transforming objects (moving, rotating, or scaling) is often done along a particular axis, or direction, relative to the object or the scene. This functionality is usually utilized through the Transform gizmo, an onscreen tool to facilitate the transforms. The Axis Constraints toolbar also contains these tools.

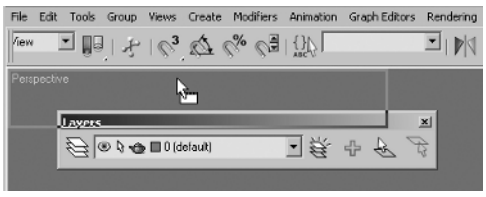


The Extras toolbar contains tools that don't fit cleanly into other categories. You can override existing shortcuts and turn on a creation grid relative to the surface of any scene object with the tools on this toolbar. You can also create numerous, precise clones of objects in matrices, along a path or at equal intervals.

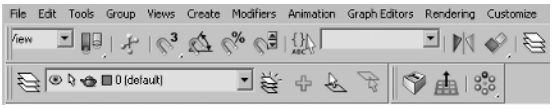
You can dock the floating toolbars or float the docked toolbars. Try the following exercise to see how to change the location of toolbars:

1. Click and drag the title bar of the Layers toolbar so that the toolbar is below the Main toolbar (see Figure 1.4). The Layers toolbar appears ghosted as a horizontal outline just before you release the mouse button.
2. When the outline is in the position shown in Figure 1.4, release the mouse button. The Layers toolbar is now in a docked position.

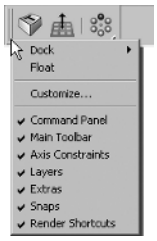
FIGURE 1.4
Docking the Layers toolbar under the Main toolbar



3. Dock the Extras toolbar just to the right of the Layers toolbar (also just under the Main toolbar).



4. Right-click the two vertical lines (called the toolbar handle) on the left side of the Extras toolbar to open the shortcut menu.



5. Select Float from the shortcut menu. The Extras toolbar returns to its floating position. Another way to do this is to drag the toolbar by its handle down into the viewport.

6. Toolbars can be docked on any side of the viewports. However, you should avoid docking toolbars to the left and right sides of the interface if the toolbars have drop-down lists; otherwise, the lists will not appear. Select the Snaps toolbar and dock it to the left side of the user interface.

7. Select the remaining floating toolbars and dock them on the top or left edge of the viewport. Your screen should look similar to the VIZ window shown in Figure 1.5.

In this brief exercise, you learned how to dock and float toolbars, and how to access the shortcut menu where you can toggle the toolbars on and off. Hide or float the toolbars however you wish.

Toolbar Flyouts

You may have noticed that some of the tools in the Main toolbar show a small arrow in the lower-right corner of the tool icon.

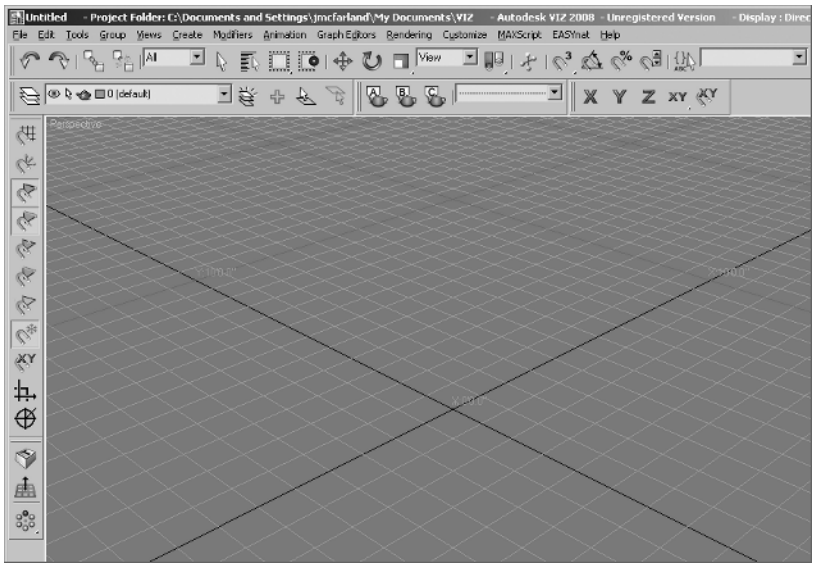
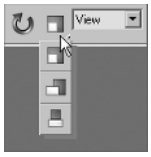


FIGURE 1.5
All toolbars docked at the top or left side of the viewport

That arrow indicates that the tool is one of several offered in a *flyout*. A flyout is like a graphical version of options in a menu bar. If you click and hold a tool that's part of a flyout, you see a set of other tools appear. For example, if you click and hold the Select and Uniform Scale tool, two additional tools appear.

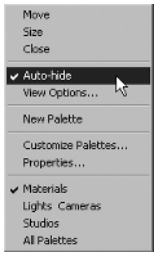


Once you select an option from a flyout, it becomes the default button that you see in the toolbar.

Tool Palettes

Tool palettes (see Figure 1.6) are collapsible boxes containing materials and tools for quick onscreen access. The palettes are collapsed by default, taking up a minimum of screen space, but expand whenever the cursor rolls over them. Clicking on any of the named tabs switches the visible category of tools or materials.

To constantly view the tools, right-click on the palette's title bar and uncheck the Auto-hide option in the context menu that appears.



You can change the visible palette by right-clicking on the title bar and choosing the palette that you want from the bottom of the context menu. The All Palettes option displays a single palette with all categories available. To access the contents of a specific palette, right-click below the last visible tab and choose the palette from the menu that appears (see Figure 1.7).

FIGURE 1.6
A typical tool palette

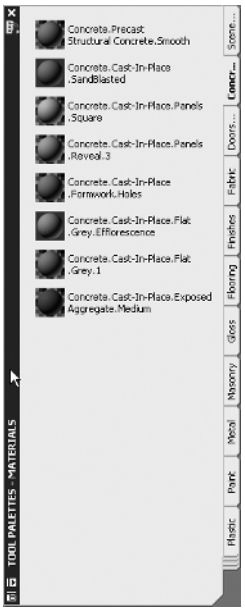
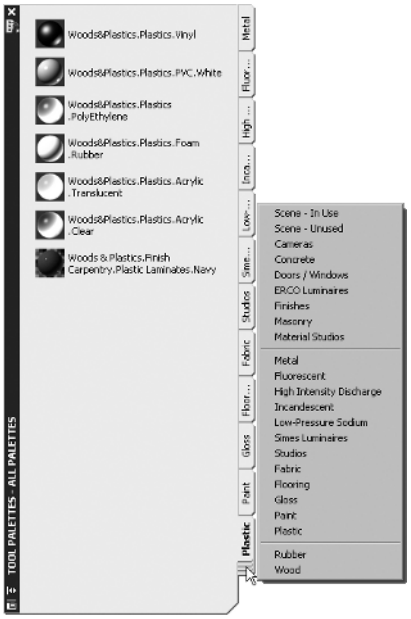


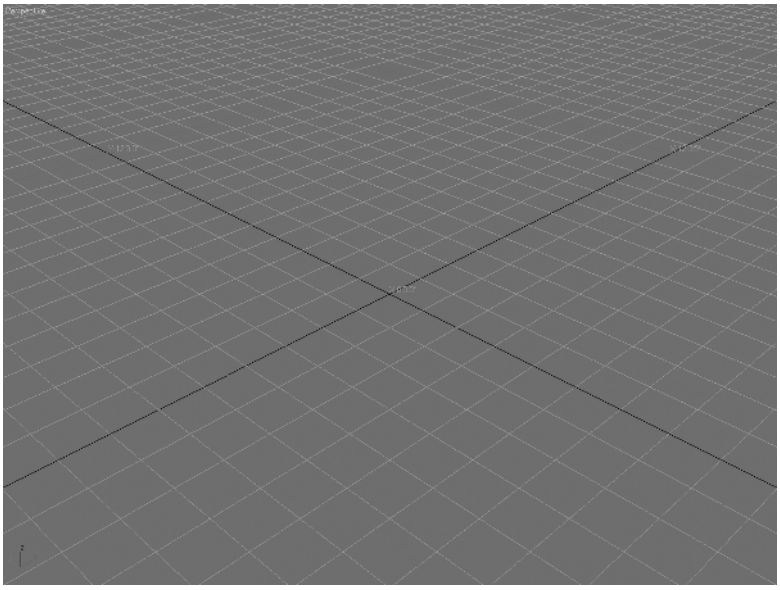
FIGURE 1.7
Right-click below the last visible palette to display the context menu.



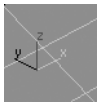
The Viewport

At the center of the window is the *viewport* (see Figure 1.8). This is where you'll be doing most of your modeling work. In a blank file, the viewport shows a grid that you can use as a reference for orientation and size. The grid is labeled with distances in the current, default unit setting. The labels also indicate the X and Y axes.

FIGURE 1.8
A typical Perspective viewport in the opening screen



If you look in the lower-left corner of the viewport, you see the world axis tripod that indicates the orientation of the X, Y, and Z axes. The world axis tripod helps you get your bearings when looking at other types of views.



Currently, the viewport shows the perspective view, as indicated by the label in the upper-left corner. You can also tell that it's a Perspective viewport by the way the grid squares get smaller and converge in the distance. As you'll see toward the end of this chapter, you can configure and view your model in a variety of ways, depending on your needs.

Tools for Working with the Viewport

At the bottom of the window are several other options that are grouped into four sections: the status bar, the prompt line, the time controls, and the viewport navigation tools (see Figure 1.9). Most of these tools affect the viewport, either by modifying the display of the viewport directly or by affecting the way you interact with objects within the viewport.

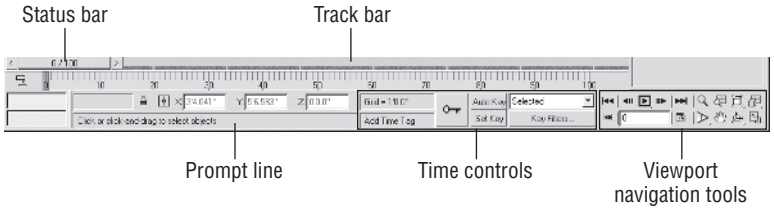
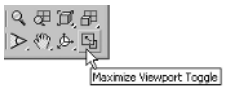


FIGURE 1.9
The bottom sections of the Autodesk VIZ 2008 window

The viewport navigation tools give you control over the main graphic display in the center of the window. With these tools, you can zoom and pan over the display as well as alter the viewpoint of your model. You can also switch between multiple views and a single view. Try the following:

1. Click the Maximize Viewport Toggle button in the far lower-right corner of the window. This is a tool you'll be using often. You can also press Alt+W on the keyboard.



   The graphic display changes to display four separate viewports. Each viewport shows a different type of view, as shown in Figure 1.10. Notice that the viewports are labeled in their upper-left corners.

2. Right-click the upper-left viewport, labeled Top. Notice that the border of the Top viewport becomes highlighted in yellow.

3. Click the Maximize Viewport Toggle again. Now the Top viewport fills the graphic area. Notice how you can quickly expand the view of a viewport to see more detail.

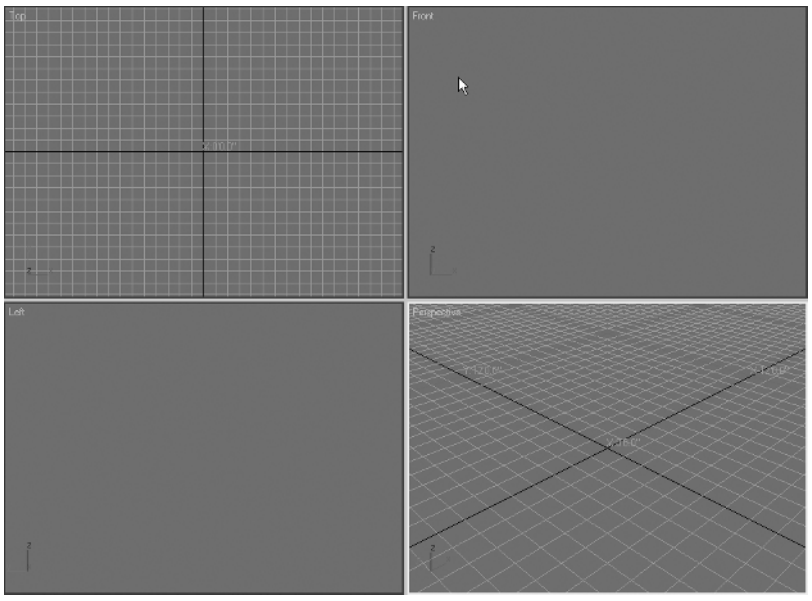
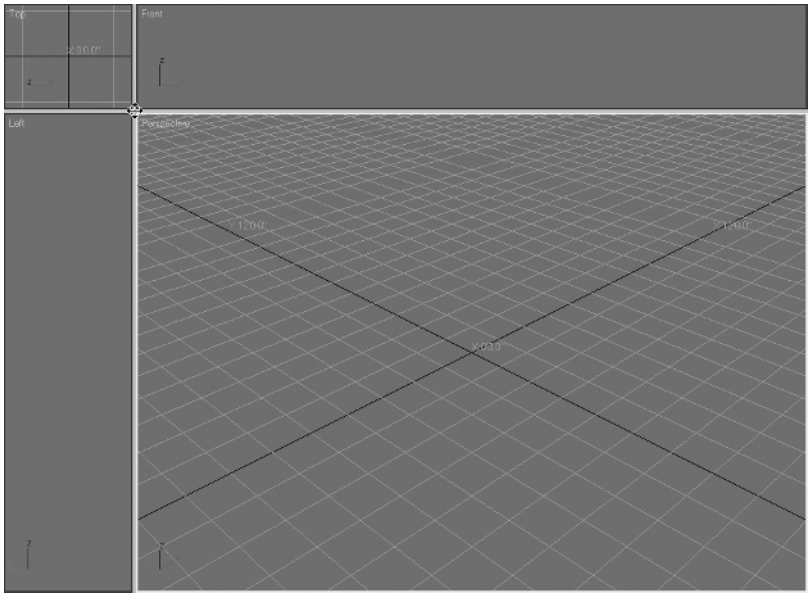


FIGURE 1.10
Four viewports, showing the Top, Left, Front, and Perspective viewports

4. Click the Maximize Viewport Toggle again to return to a four-viewport layout.
5. Place your cursor at the intersection of the four viewports until it changes to a crossing arrow cursor. Click and drag to resize all viewports simultaneously, as shown in Figure 1.11. You can also place the cursor between just two viewports to resize the viewports in only one direction.

FIGURE 1.11
Resize the viewports by dragging their intersection.



6. Right-click on the border between two viewports and choose Reset Layout from the menu that appears to return to the default layout.

7. Click anywhere within the Perspective viewport.
8. Click the Maximize Viewport Toggle to restore your original window setup.

You've just seen how you can expand the graphic area into multiple viewports showing the Top, Front, Left, and Perspective viewports. Several other views and viewport arrangements are available, as you'll see later in this chapter.

To the left of the viewport navigation tools are time control tools. These tools give you control over the animation functions of VIZ. Here, you can set your creations in motion by selecting the length of time for your animation as well as setting the precise location of objects within that time frame.

Near the bottom center of the interface is a large button with the symbol of a key on it and two smaller buttons to the right that are used to create animation keyframes, called *keys*.

Using Shortcut Keys to Switch Viewports

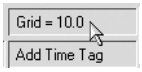
You can set the current, active viewport to display a top, front, or left side view by pressing the T, F, or L key. You can also press B for the bottom view. Pressing P will display the perspective view, and pressing U will display an isometric user-defined view. If you have added a camera, you can press C to select from a list of camera views. The hotkeys of R for right view and K for back have been removed from the defaults in VIZ. You can easily assign your own hotkeys to commands; this procedure is covered later in the chapter.

The long horizontal elements across the bottom of the viewport are the time slider and track bar, used for animation. You can hide the track bar to save space on the screen. Choose Customize ➢ Show UI ➢ Show Track Bar to toggle this part of the interface off until you're ready for making animations.

Just to the left of the animation controls are the transform type-ins. This area displays the location of your cursor in X, Y, and Z coordinates. It also displays other types of data, depending on your current activity. For example, if you're rotating an object, the coordinate readout displays the rotation angle of the object being rotated. If you're scaling the data, these text boxes will show percentages.

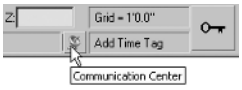
In addition to the transform type-ins, there is a Grid panel, which may lie hidden to the right if your display is set to low resolution. To find it, place the cursor on the vertical bar just to the left of the prompt line until you see a double-pointed arrow.

When you see the arrow, click and drag to the left. The Grid panel will be revealed to the right of the transform type-ins.

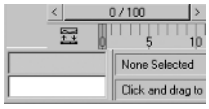


You can display a grid in the current, active viewport by clicking this panel or by clicking the **G** shortcut key. Right-click the panel to open a dialog box that lets you set the grid spacing and other grid parameters.

Below and to the left of the Grid panel is the Communication Center icon. Click this icon to establish the settings that determine when VIZ checks for official updates, patches, and news from Autodesk. Once this is set up, an information bubble will appear whenever information from Autodesk is available from the provided Internet link.



Finally, to the far left at the bottom of the VIZ window is the MAXScript Mini-Listener. MAXScript is a programming language that allows you to create custom applications or *macros* in Autodesk VIZ 2008. A macro is like a prerecorded series of instructions. The MAXScript Mini-Listener serves two functions: The pink area displays your activity when the MAXScript MacroRecord function is turned on, and the white area provides a space where you can enter commands through the keyboard.



Getting to Know the Command Panel

You'll be using the command panel for most of your work in VIZ. If you're an experienced AutoCAD user, you might think of the command panel as the equivalent of the AutoCAD command line; it's a single entry point for nearly all of the program's functions. The command panel offers nearly all the tools for creating and editing in VIZ.

Across the top of the command panel, you see a set of six tabs, each displaying an icon.

From left to right, the tabs are Create, Modify, Hierarchy, Motion, Display, and Utilities. If you place the cursor on a tab, you'll see a tooltip displaying the name of the tab. When you click a tab, the functions relating to the tab appear in the rest of the command panel. Here's a brief rundown of what each tab offers:

Create Allows you to create two- and three-dimensional objects. You can also create light sources, cameras, and helper objects that are used to determine distance and relationships between objects. Light sources, cameras, and helpers are objects that don't appear when your view is rendered.

Modify Gives you control over the dimension, shape, and parameters of your objects. You find tools to extrude, twist, and bend your objects. You can also control methods for applying material definitions to objects (called *mapping coordinates*) in this tab.

Hierarchy Offers a set of tools aimed primarily at animation. The options on this tab let you build relationships between objects to simulate joint movement or to constrain motion of one object in relation to another. It also offers a way to control the location of an object's pivot point.

Motion Another tab that gives you control over animation. Here, you can control the actual motion or parameter change of objects over time and view the objects' trajectories.

Display Lets you turn the visibility of objects on or off in your model. There may be times when you don't want a particular object visible while you render your model or while you're editing a complex model full of objects. Display lets you temporarily hide objects from view or lock them out from being selected. Objects can be hidden individually or by category.

Utilities A kind of catchall tab that provides access to special features and plug-ins. This is where you find the Camera Match utility that lets you match your model view to a photograph. You can also get access to the MAXScript customization features in this tab.

Floating and Hiding the Command Panel

You can move the command panel just like any toolbar or close the panel entirely by clicking the Close button (the one with the X, in the upper-right corner of the window) when the panel is floating. To bring the command panel back, right-click on the blank area of any toolbar and then select Command Panel from the shortcut menu. You can also right-click the command panel's title bar to dock the panel on the left or right side of the screen.

Understanding VIZ's Tools

There are a few ways of working in VIZ that are a bit unusual for a Windows program. In this section, you'll explore the Create tab of the command panel as a way to understand some of VIZ's quirks. There aren't many, but understanding them now will make it easier for you to learn how to use the program.

GETTING TO KNOW SCROLLING PANELS AND ROLLOUTS

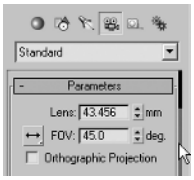
Autodesk VIZ 2008 has a rich set of creation and editing tools—so many, in fact, that VIZ's programmers had to come up with a way to get to them easily without making the program too arcane. Two of these tools help you navigate its interface: the *scrolling panel* and the *rollout*. A scrolling panel is an area that can be scrolled up or down using a hand cursor. A rollout is a set of tools that can be opened or closed, much like a drawer in a dresser. Let's start by looking at how a scrolling panel works:

1. Click the Create tab of the command panel. Notice the row of icons just below the title of the tab. These icons are buttons, or tools, that offer different categories of objects.

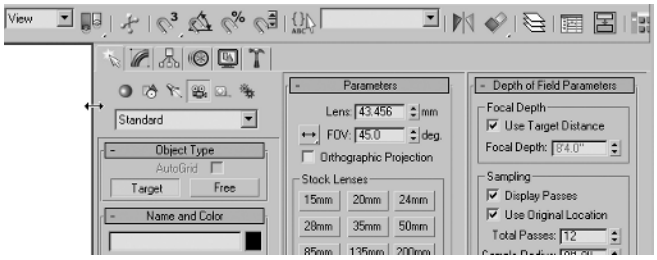
2. Place the cursor over the tool that looks like a movie camera. Notice that a tooltip displays, offering the name of the tool.
3. Click the Camera tool. You see the options change below the tools.

4. Click the Target button. A set of additional options appears. Although it may not be obvious, these options extend beyond the bottom of the command panel.

5. Move your cursor down to a blank spot in the command panel. The cursor changes to a hand.
6. Click and drag up with your mouse. Notice that the options in the command panel scroll up, following the motion of your mouse. This is an example of a scrolling panel. This scrolling action exposes the rest of the options in the lower portion of the command panel. Release the mouse button at any time once you've seen how this scrolling action works.
7. Place the cursor on a blank area again so that the hand cursor displays. Then click and drag down to view the Target and Free buttons under the Object Type bar.
8. You can also scroll the command panel by rolling the wheel on your mouse or by dragging the dark gray slender vertical scroll bar on the right side of the command panel. Try both of these methods.



9. Another way to see more of the command panel is to increase its width by dragging the vertical border between the command panel and the viewport. Position your mouse along this edge and drag to the left and expand the command panel to two and then three columns.



10. The advantage to having a three-column command panel is obvious—you can see all the controls within the command panel at once. The disadvantage is equally apparent—the viewport area becomes much smaller. Drag the command panel back to one vertical column to give yourself the maximum amount of screen space. In a one-monitor system, it's better to learn how to scroll within the command panel than to sacrifice valuable viewport space.

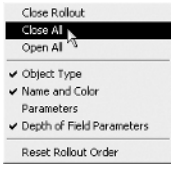
In this exercise, you see that the entire set of options can be changed by clicking a single tool. You can also see that the set of tools can extend beyond the bottom of the command panel. You can scroll the options up or down within the panel in several ways. This allows VIZ to offer a wide variety of options within the limited space of your display.

The Main toolbar also acts like a scrolling panel whenever a portion of the toolbar extends beyond the screen area. For example, if your screen resolution is 1024×768, a portion of the Rendering toolbar isn't visible to the right of the screen. If you place the cursor on a blank area of the Main toolbar, it turns into a hand cursor. You can then click and drag to the left to display the additional tools.

When you clicked the Target button in step 4 of the preceding exercise, a set of options appeared under a bar labeled Parameters. There are three other bars, labeled Depth of Field Parameters, Object Type, and Name and Color. Notice the minus (–) sign to the far left of these bars. These are called *rollouts*. They let you open and close a set of options to get them out of the way, or to roll them out for use. Try the following:

1. Click the rollout labeled Parameters. The options below the Parameters rollout disappear. Also notice that the minus (–) sign to the left of the rollout changes to a plus (+) sign. This indicates that the rollout is in its closed state. The plus tells you that there is more information inside, waiting to be rolled out.

2. Click the rollout labeled Name and Color. It also closes and displays a plus (+) sign to the left. Click the rollout to open it again. Right-click on a blank part of the interface within any one of the rollouts and you'll see a context menu. Select Close All.



3. Notice that the Parameters and Depth of Field Parameters rollouts closed but Object Type and Name and Color remained open. This is because all objects on the Create Panel have Object Type and Name and Color rollouts, and these always remain open by default. Any additional rollouts belong to the object you have chosen to create and can be controlled with this context menu. Try dragging the Depth of Field Parameters rollout above the Parameters rollout.

4. You will see a horizontal blue bar appear with an image of the rollout you are dragging ghosted. When you release the mouse, the rollout you are dragging gets docked where the blue bar was. Now the Depth of Field Parameters rollout should appear above the Parameters rollout.

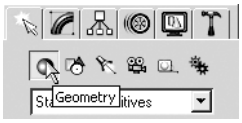
5. Click the Parameters and Depth of Field Parameters rollouts again to display the options.

Now you can see how easy it is to control and customize the command panel interface. In this and later chapters, you'll explore the rollouts that appear in the panel and throughout the program.

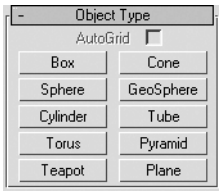
Creating Objects and Setting Their Parameters

By now, you've seen most of VIZ's interface and how it functions. However, you will want to know about a few more tools and methods before you delve into using VIZ. In the following exercises, you'll get a chance to create a simple object, and in the process, you'll be introduced to a few new tools.

1. In the Create tab of the command panel, click the Geometry tool at the top of the panel.

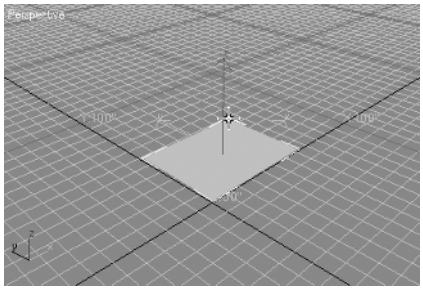


You see the Object Type rollout with a set of object types.



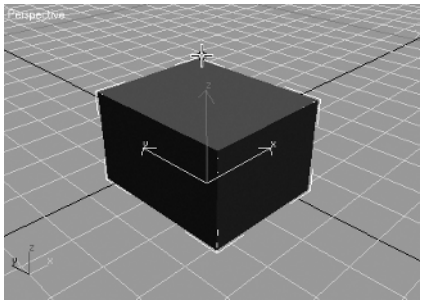
2. Click the Box button. Additional rollouts appear in the command panel. These include Creation Method, Keyboard Entry, and Parameters. Notice that a message displays in the prompt line at the bottom of the screen that says, "Click and drag to begin creation process." Also, the cursor in the graphic area displays as a cross, telling you that you're in object creation mode.
3. Place the cursor at the center of the graphic area at coordinates 0,0, where the two darker grid lines intersect, and click and drag diagonally to the upper-right corner of the screen—don't release the mouse button just yet. As you move the mouse, a rectangle follows your cursor. Notice that the values in the Length and Width input boxes in the Parameters rollout change as you move the mouse.
4. Place the cursor so that the rectangle looks similar to the one shown in Figure 1.12, and then release the mouse button. (You don't need to match the rectangle in the figure exactly.) Now, as you move the cursor, the rectangle changes in height. Notice that the Height value in the Parameters rollout also follows the change in height.

FIGURE 1.12
The rectangle so far



5. Adjust the height so that the Height parameter shows about 2´0˝ and click your mouse. The box is now fixed at the height you selected. It should look similar to Figure 1.13.

FIGURE 1.13
The finished box

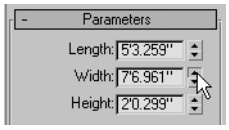


CREATE A NEW BOX IF NECESSARY

The following steps only work as directed if you have not deselected the box. If you have, create a new box and then proceed with the following steps.

You've just created your first object in VIZ, and in the process, you've seen how the dimensions of an object are reflected in the Parameters rollout. Once you've created an object, you can continue to modify its parameters, as the following exercise demonstrates.

1. In the Parameters rollout, locate the Width input box and click the up arrow to the right of the box several times. Arrows like this one are called *spinners,* and they allow you to graphically adjust the value of the input box they are associated with. Notice that the box in the Perspective viewport begins to widen as the value in the Width input box increases.



2. Click and hold down the left mouse button while pointing to the up arrow of the Width spinner. Notice that the box continues to grow in width as you hold down the mouse button. When you hold the mouse button down and move the mouse forward or backward, the rate of change on the values is accelerated.
3. Right-click the spinner arrow. The box shrinks in width to 0. Right-clicking any spinner changes the spinner value to its lowest possible non-negative value, which is 0 in this case.
4. Click and drag the mouse up from the Width spinner. The box grows in width. Click and drag down, and the width shrinks back down.
5. Click and drag the Width spinner up until the cursor reaches the top of the screen. Then continue moving the mouse up. Notice that the cursor reappears at the bottom of the screen. This *circular* action of the spinner lets you scroll continuously without being limited by the screen area.

UNDOING SPINNER CHANGES

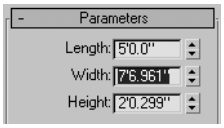
While adjusting a spinner, you can immediately undo any changes you make by right-clicking the mouse while still holding the left mouse button. This allows you to quickly experiment with spinner settings while you work.

You've just seen how you can change the parameters of an object by using the spinner. Now let's take a look at the absolute way of entering values into input boxes.

1. Double-click the Length input box in the Parameters rollout and type **60**↵. Notice how the box's length changes and the Length value changes to 5′0.0″, the feet and inches equivalent of 60″.

   Notice that it's not necessary to enter the inch (″) symbol to indicate a measurement in inches. You are, however, required to enter the foot (′) symbol when entering a measurement in feet. This is due to your selecting the Inches option as the default units in the Units Setup dialog box earlier in the chapter.

2. Press the Tab key. Notice that the Width value is now highlighted.



3. Type **60**↵ for the width and press Tab again. The Height value is highlighted.
4. Enter **5´**↵ again. The box is now a cube 60˝ square.

USING THE CUBE CREATION METHOD

You can also create a cube directly by selecting the Cube radio button in the Creation Method rollout.

If there is a series of related input boxes—such as the Length, Width, and Height boxes in the previous exercise—the Tab key lets you advance from one value to the next. You'll find that numeric input boxes and spinners are quite common throughout Autodesk VIZ 2008.

SETTING THE SPINNER RATE OF CHANGE

If you hold down the Ctrl key while you move a spinner, the rate of change in the spinner value increases. The Alt key has the opposite effect, decreasing the rate of change. The higher the numeric value in the spinner, the faster the rate of change, and vice versa.

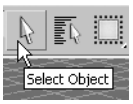
Working with Objects

Now that you've seen the main elements of the VIZ interface, let's take a look at how you interact with objects in the viewport. You'll start by looking at a way to move the box you've just created. Then you'll learn how you can view your box from different angles.

Selecting and Moving Objects

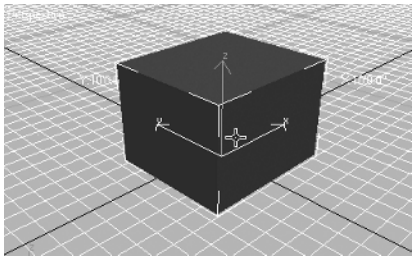
VIZ's basic editing tools are simple and straightforward, although it may take a little explaining for you to grasp the finer points. As with most graphics programs, you use a selection tool to select objects. This tool is typically shown on the toolbar as an up arrow that looks like the standard Windows cursor.

1. Click the Select Object tool in the Main toolbar.



2. Click on a blank area of the viewport. This clears any selections that may currently be active.
3. Move the cursor over the box. Notice that the cursor turns into a plus (+) sign. This tells you that the cursor has found a selectable object.

4. Click the box. A graphic displays, showing the X, Y, and Z orientation of the box in relation to the viewport. Also notice that marks like 3D *corner marks* appear at the corners of the box. These are called *selection brackets*, and they indicate graphically the objects that are selected.



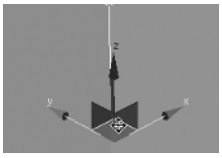
With the box selected, you can go to the Modify tab of the command panel and edit its properties, or you can use any number of other editing tools to affect the box.

Let's continue by looking at one of the more basic editing tools you'll use—the Select and Move tool.

1. Click the Select and Move tool in the Main toolbar. Notice that the graphics indicating the box selection change and new ones appear.

2. Place the cursor on the box. It changes into the Select and Move icon.
3. Click the box if it isn't still selected. A graphic known as the Move Transform gizmo appears, showing the X, Y, and Z orientation of the box in relation to the viewport. Selection brackets also appear at the corners of the box.
4. Place the cursor on the blue Z axis handle of the Move Transform gizmo; the blue arrow represents the Z axis. Notice that the Z axis label highlights in yellow and the X axis label turns back to red. When you move the cursor away from the Z axis, the X axis is highlighted again and the Z axis returns to blue.

   The yellow highlighting shows you which axis is currently active. The Y axis is the default constraint direction. If the Constraints toolbar is still open, you'll see that the Y axis button is selected. As you've seen in this step, you can select an axis to constrain just by placing your cursor on the axis coordinate arrow.
5. Place the cursor on the XY plane handle, the square that joins the X and Y handles of the Move gizmo. Notice that the XY plane handle highlights in yellow. Click and drag the box on the grid. The box now moves in the XY plane. When you click and drag the X arrow, movement is constrained along the X axis only.



6. Click and drag the blue Z coordinate arrow up. Now, movement is constrained in the Z axis, away from and toward the grid. As you may guess, clicking and dragging the green Y coordinate arrow constrains movement in the Y axis.

The Last Axis Transformed Is Highlighted in Yellow

The axis that is highlighted in yellow is the last axis constraint that was used. For example, if you transform an object in the Y direction, the next time you start to transform an object, the Y axis will be highlighted.

If you click an object in a location other than the coordinate arrows, but still on the object, you can freely move the object in the current axis or plane restriction. Notice that the coordinate location of the object is displayed in the status line just below the drafting tools.

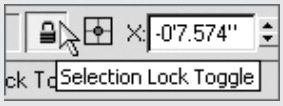
Constraining Motion

The tools in the Axis Constraints toolbar constrain the motion of an object in the X, Y, or Z axis. For example, to constrain motion in the X axis, click the Select and Move tool, and then click the X tool in the Constraints toolbar. The selected object's motion is constrained to the X axis. In early versions of VIZ, this was the only method available to constrain motion.

Another important function that the Axis Constraints toolbar offers is the selection of the default *free motion* plane. In step 5 of the preceding exercise, you were able to move the box freely in the XY plane, but you were constrained to that plane. The Constraints toolbar lets you select the default plane to which you are constrained. The Restrict to XY Plane tool is a flyout offering three options: XY, YZ, and ZX. You can select the plane in which you want to constrain motion by selecting one of these three options. The XY option is fine for nearly all of your work; every now and then, though, you'll want to use one of the other options, so it's good to be aware of this tool. You can also access these constraint planes simply by dragging the appropriate parts of the Transform gizmo—it's very intuitive.

If you prefer to use shortcut keys instead of a toolbar, the F5, F6, and F7 keys toggle the X, Y, and Z axis constraints, respectively. Pressing the F8 key repeatedly cycles through the XY, YZ, and XZ plane constraints.

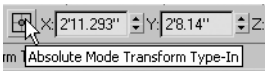
Finally, a tool that is related to the transform tools is the Selection Lock Toggle tool.



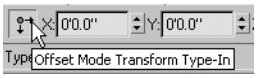
This tool helps prevent the accidental loss of a selection due to a mouse click. It also allows you to use the transform tools without actually placing the cursor on the selected objects. You can also toggle this tool on and off by clicking it or by pressing the spacebar while in a selection mode.

As you see, moving an object in VIZ is fairly straightforward. But what if you want to move an object a specific distance or to a known position? The following exercise demonstrates how this is done.

1. With the box still selected and the Select and Move tool still active, click the Absolute/Offset Mode Transform Type-In button at the bottom of the VIZ window.



   The tool changes to show that the Offset mode is active.



   When the Absolute/Offset Mode Transform Type-In button is in the "up," or Absolute, mode, you can enter the specific coordinates of the point where you want to move your object. When it's in the "down," or Offset, mode, you can enter a relative distance from the object's current location.

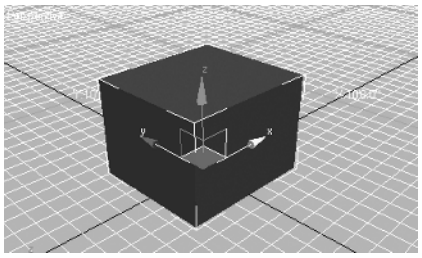
2. Click in the X input box in the coordinate readout and type **10**↵. The box moves 10 inches in the positive X direction.

3. Click and drag the Z axis coordinate readout spinner up. The box moves vertically.

4. Click the Absolute/Offset Mode Transform Type-In button to switch to Absolute mode. Then click in the Z coordinate readout input box and enter **1**↵. The box moves so that its base is exactly at 1″ for the Z coordinate.

5. Right-click the X coordinate readout spinner. Remember that right-clicking a spinner converts the value associated with the spinner to its lowest value, which is 0 in this case. Notice that the box moves to 0 for the X coordinate.

6. Right-click the spinners for the Y and Z coordinates in the coordinate readout. The box moves to the center of the screen at the origin (coordinates 0,0,0).



Just as with the spinners in the command panel, the transform type-in spinners let you set values by clicking and dragging. You can also return to the default values of zero by right-clicking the spinners. When in Offset mode, the spinners automatically reset to zero because the values represent numerical values away from the current, baseline location. The spinners in the coordinate readout appear when you turn on the Select and Move, Select and Rotate, or Select and Scale tool from the Main toolbar.

ACCESSING THE TRANSFORM TYPE-IN DIALOG BOXES

If you are used to earlier versions of VIZ, you can still use the floating Transform Type-In dialog boxes that appear when you right-click the Select and Move, Rotate, and Scale tools.

Rotating and Scaling Objects

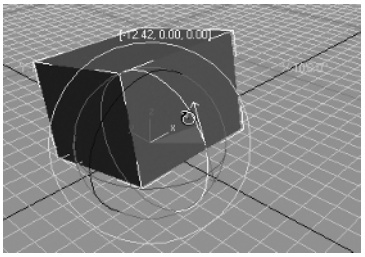
Besides the Move tool, the transform tools also include the Rotate and Scale tools. Try the following set of exercises to see how these tools work.

USING THE TRANSFORMS FROM THE QUAD MENU

You can also activate the Move, Rotate, and Scale tools by right-clicking on an object and selecting Move, Rotate, or Scale from the transform section of the quad menu that appears. You can access the Transform Type-In dialog boxes by clicking the icon to the right of the transforms listed.

1. With the box selected, click the Select and Rotate tool in the Main toolbar. A graphic known as the Rotate Transform gizmo, a kind of virtual trackball, displays, showing rings for rotation about the X, Y, and Z axes.

2. Place the cursor on the red ring that circumscribes the X axis. Notice that the ring is highlighted in yellow. Click and drag the X axis ring up. The box rotates about the X axis. A tangent indicator arrow will appear, indicating the direction of rotation, and a transparent red slice along with a text tooltip will appear, displaying the amount of rotation.



   Make sure the Absolute/Offset Mode Transform Type-In button is in the Absolute mode and look at the coordinate readout. Notice that the X value is not zero, because you rotated it in step 2. It now shows a number of degrees.

3. Right-click the X spinner in the coordinate readout to set the X value rotation back to zero. Notice that the box snaps back to its original orientation.

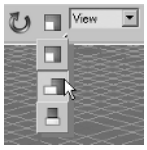
The Select and Rotate tool's methods are the same as those for the Select and Move tool. You can rotate an object graphically by clicking and dragging the object, or, with an object selected, you can enter

an exact rotation value in the coordinate readout. When the Absolute/Offset Mode Transform Type-In button is in the Absolute mode, you can control the orientation in relation to the object's original orientation when it was created. In the Offset mode, you can control the orientation relative to the object's current orientation.

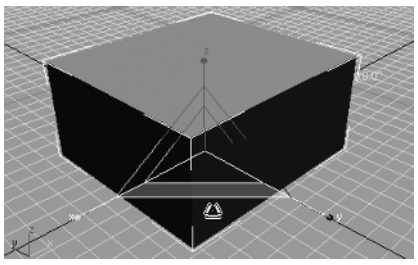
Now try out the Scale tool:

1. With the box selected, click the Select and Uniform Scale tool in the Main toolbar. The Scale Transform gizmo appears, showing the X, Y, and Z orientation of the box in relation to the viewport.

2. Click in the center of the Scale gizmo that appears or the box itself and drag up. The box grows uniformly in size.
3. Click and hold the Select and Uniform Scale tool. Then, from the flyout select the middle tool, which is the Select and Non-uniform Scale tool. This step is not absolutely required; it is presented here to clarify the concept. The axis handles alone can be used to scale an object nonuniformly.



4. Drag the XY plane handle of the Scale gizmo (highlighted in yellow) to nonuniformly scale the box in the XY plane in this case. Similarly, the axis handles can be dragged to constrain the scaling of an object to one axis.



Now, take a look at the coordinate readout. The values you see are percentages of scale. When the Absolute/Offset Mode Transform Type-In button is in the Absolute (up) position, the values are percentages of the original size of the object. When it's in the Offset position, the values are the scale in relation to the current size, and are immediately reset to 100% when you release the mouse button.

1. With the Absolute/Offset Mode Transform Type-In tool in the Absolute position, click and drag the Z spinner up. Notice that the box grows in the Z axis.
2. Right-click the Y axis spinner. The box distorts to a 0 value in the Y axis.
3. Click in the X value input box and enter **100**↵. The box's X value is restored to its original size.

How VIZ Sees the Scale Transform

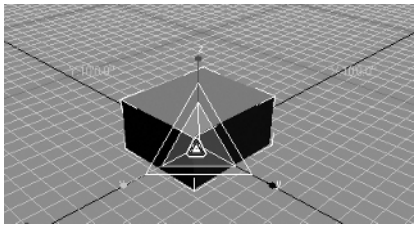
Look at the box's Length, Width, and Height values in the Parameters rollout in the command panel. They all read 5´0.0˝ even though the box has been scaled. This is an important indicator as to how VIZ handles object data. For example, if you have a box that is 1 unit long on each side and then scale it to twice its size, VIZ does not now see this as a box that is 2 units on each side; it sees it as a 1-unit box with a 200% scale factor applied.

4. Press the Tab key to move to the Y value input box and enter **100.**↵.
5. Press Tab again to move to the Z input box and enter **75.**↵. The box is now slightly shorter than it is wide and long.

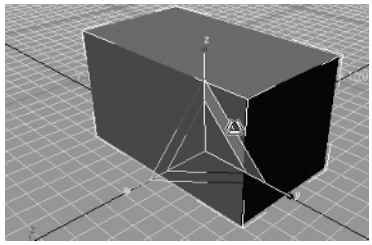
The Select and Scale tool works in a slightly different way from the other two transform tools. For one thing, a zero value in the coordinate readout doesn't return the selected object to its original shape. This is because the values in the coordinate readout represent percentages, where 100% is the original size.

The Scale gizmo allows you to both uniformly and nonuniformly scale an object by automatically switching between scale modes. Which operation you perform depends on which part of the Scale gizmo you drag.

1. Try dragging the center of the Scale gizmo. You will see the object get uniformly bigger or smaller, when you drag up or down.

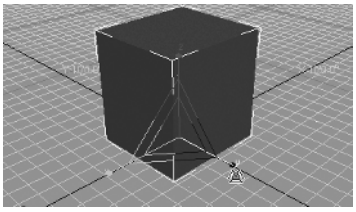


2. This time, put your mouse over one of the edges of the Scale gizmo. When you drag over one of the plane handles, you are performing a nonuniform scale in two directions at once. Look closely at the gizmo and you can see the axes labeled. Try nonuniformly scaling the box in the YZ plane.



3. The last operation you can perform using the Scale Transform gizmo is a nonuniform scale in one direction. To accomplish this, put your mouse directly over the axis handle at the tip

of an axis. For example, put your mouse over the green dot at the end of the Y axis and drag to scale in that direction only.

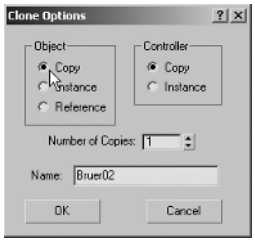


Once you master the mechanics of the new transform gizmos, you will find that you have much finer and more intuitive control over your objects as compared to earlier versions of VIZ.

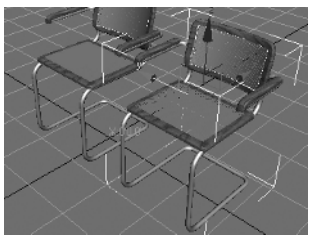
Copying an Object

You've covered just about all the ways of moving, rotating, and scaling an object in the Perspective viewport. If you want to copy an object, you use the same methods you would use to move, rotate, or scale objects—with the addition of holding down the Shift key. Try the following steps to see how copying, or cloning as it's called in VIZ, works. (Copying is one of the forms of a more general function called *cloning*.)

1. From the File menu, choose Open. The Open File dialog box appears. Navigate to the Chapter 1 files on the Sybex website. Select the `Chair.max` file and then click the Open button.
2. Click the Select Object button in the Main toolbar and then select the chair.
3. Click the Select and Move button.
4. While holding down the Shift key, drag the chair to the left. A second chair appears.
5. Release the mouse button. The Clone Options dialog box displays. This dialog box lets you control the quantity and type of copies you're making as well as the name of the new objects.



6. In the Object group of the Clone Options dialog box, select Copy.
7. Click OK. The new chair is added to your model.



Create a Copy in the Same Location as the Original

You may experience times when you want to make a copy of an object in exactly the same location as the original object. To accomplish this, first select the object you wish to copy, and then select Edit ➢ Clone from the menu bar or press Ctrl+V on the keyboard. You see a Clone Options dialog box similar to the one that you saw in the preceding exercise. Set your options and click OK. Note that the new copy doesn't appear at first, because it occupies the same space as the original. (You can accomplish the same thing by Shift-clicking on an object with the Select and Move tool or by selecting Clone from the transform quad menu, which can be accessed by right-clicking the object.

In step 6, you selected the Copy option in the Clone Options dialog box. This option creates a distinct copy of the original object. The other two options, Instance and Reference, create clones that are linked to the original, so that changes in one object affect the other. You'll learn more about these options in Chapter 2.

Real World Scenario

Parking Curbs and Bollards

Every project has features in it that vary from interesting and cool to mundane and repetitive. Although we all like to work on the exciting projects, we'll all do our share of the latter. When those less-than-exciting projects pop up, it's best to crank them out quickly and accurately and then move on to the next portfolio-quality project down the line.

While the main effort of our company was being applied to the creation of a mall, complete with an entertainment center and several freestanding buildings for restaurants and other shops, someone had to work on the parking lot. I was hired to accurately place several thousand parking curbs and bollards (vertical posts used to restrict vehicular traffic) throughout the parking lot and around the entrances to the structure. Parking curbs are usually identical and placed equidistant from each other (usually 9´0˝), so the layout wasn't difficult. After modeling the simple curb, I placed one at the end of each parallel run of parking spaces. I selected the first curb on each run, held the Shift key down, and moved it 9´ in the proper direction. In the Clone Options dialog box, I set Number Of Copies to the number of curbs in the longest run and then deleted any superfluous curbs.

This process was repeated several times for the remaining curbs, and then a similar process was used to place the bollards. Upon receiving the completed work, the company assigned me the task of creating the traffic islands and the screen walls around the service areas. I'm sure one of these days they'll give me a fun job to do.

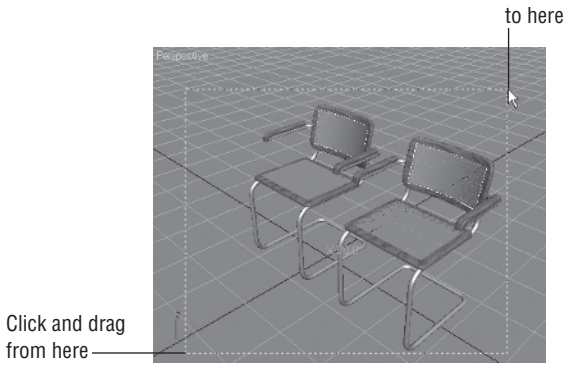
Selecting Multiple Objects

You've now learned how to select, move, and copy a single object, but what do you do if you want to move or copy several objects at once? You can select multiple objects, or *selection sets* as they are called in VIZ, using two methods. The first is one that is also employed in other graphics programs.

1. Click the Select Object tool on the Main toolbar.
2. Click on a blank area of the viewport to clear any selections you may already have.

3. Click and hold your mouse at a point below and to the left of the original chair. Then drag to the right and up. Notice that a dotted rectangle follows your cursor, as shown in Figure 1.14.

FIGURE 1.14
Placing the selection rectangle around the chairs

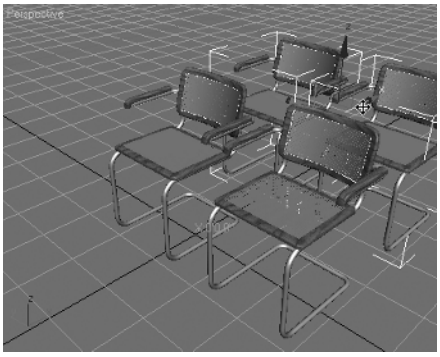


4. Continue to drag the cursor up and to the right until it encloses both chairs. Then release the mouse button. Both chairs are selected.

Notice that selection brackets (or bounding boxes) appear at the corners of both chairs, and a gizmo appears between them, indicating that the two objects are selected. You can select objects in a couple of other ways, which you'll learn about in a moment, but first, let's use the current selection to make a few more copies of the box.

1. Click the Select and Move tool in the Main toolbar.
2. Hold the Shift key down and drag the X axis arrow of the Move Transform gizmo back so that copies of the two chairs appear in the location shown in Figure 1.15. (You don't need to be exact about the placement of the copies.)

FIGURE 1.15
Place the copies just beyond your first two boxes.

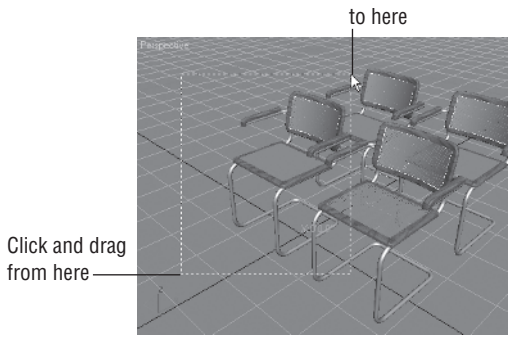


3. When you have the copies in place, release the mouse button.
4. In the Clone Options dialog box, make sure Copy is selected in the Object group and click OK.

The four chairs help to demonstrate some of the other selection methods available to you. First, let's look at another property of the selection window.

1. Click the Select Object tool, or right-click and choose Select from the quad menu.
2. Click a blank spot in the viewport to clear your selection set.
3. Click and drag the cursor from the point indicated in Figure 1.16.

FIGURE 1.16
Selecting points for a crossing window

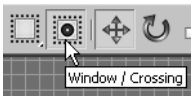


4. Drag the rectangle up and to the right so that it completely encompasses one chair but just a portion of two other chairs, as shown in Figure 1.16. Then release the mouse button. Three of the four chairs are selected.

Notice that you didn't need to enclose the chairs completely to select them. In the current selection mode, you only need to have the selection window cross over the desired objects. This is known as a *crossing window*. If you're an AutoCAD user, this type of window should be familiar to you.

You can change the way the selection window works by using the Window/Crossing Selection tool. The following exercise demonstrates this.

1. Click on a blank area in the drawing in order to clear your selection set.
2. Click the Window/Crossing Selection tool in the Main toolbar.



Notice that the icon highlights in yellow and changes to one showing a sphere that's completely within a dotted rectangle. This tells you that you are now in Window Selection mode.

3. Click on a point above and to the left of the front left chair in the foreground, as shown in Figure 1.17.
4. Drag the rectangle down and to the right until it completely encompasses the two chairs in the front, as shown in Figure 1.17. Then release the mouse button. Notice that the only objects selected are the two chairs in the front.

When you use Window Selection mode, only objects that are completely within the selection window are selected. Unlike with the crossing window, objects that are partially inside the selected window are omitted from the selection.

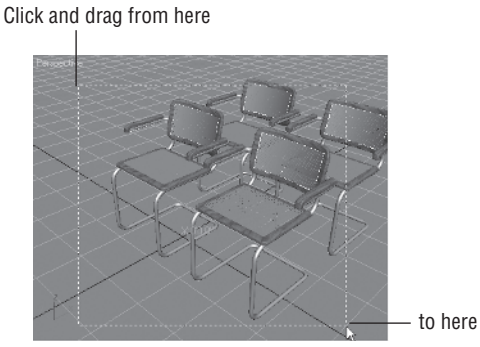


FIGURE 1.17
Placing a selection window

You can use the Ctrl key in conjunction with any selection method to continue to add more objects to your selection set. You can also remove objects from your selection set by using the Ctrl key. Let's see how adding and subtracting from selections works:

1. Switch back to the Crossing Selection method, then Ctrl-click and hold a point above and to the left of the chair near the top of the viewport, as shown in Figure 1.18.

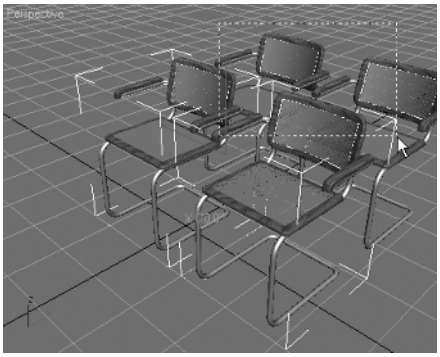


FIGURE 1.18
Adding objects to your selection set using the Ctrl key and a window

2. Drag the window down and to the right so that it encloses a portion of the two chairs in the back. Then release the mouse button. Now all four chairs are selected.
3. Hold down the Ctrl key and then click the chair in the upper right of the screen, as shown in Figure 1.19. Now all chairs except the upper right one are selected.

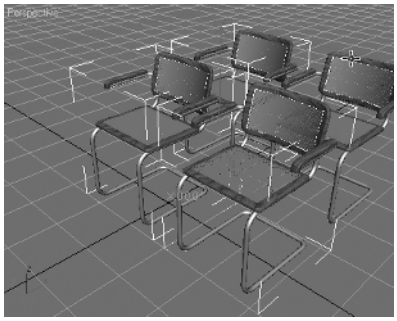
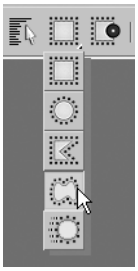


FIGURE 1.19
Removing an object using the Ctrl key

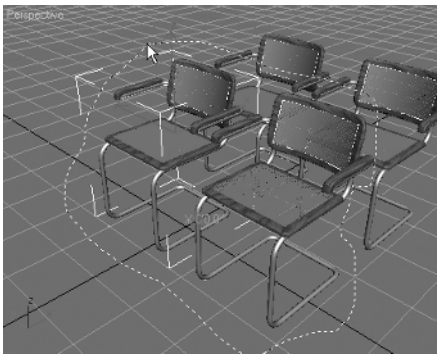
You can change the shape of your selection window to help select objects. There are rectangular, circular, polygonal, lasso, and paint selection region options. The next exercise explores the lasso selection region that allows freeform sketching for a selection.

1. Drag open the selection window flyout and click the Lasso button.



2. Switch back to the Window selection option.
3. Sketch a lasso selection region by dragging the mouse in a freeform manner around two of the chairs to select them, as shown in Figure 1.20.

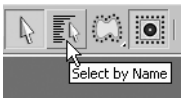
FIGURE 1.20
Selecting objects using a lasso selection region



Right now, you have only a few objects in your model, but as your model develops, you'll find that selecting objects in a crowded model becomes more of a challenge. Knowing about the different selection modes you've just used will go a long way toward making your work easier.

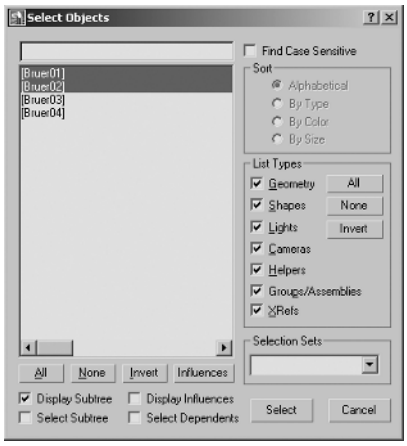
One more selection method will be an invaluable tool as your model becomes more complex. You can select objects by their names, using the Select Objects dialog box. The following is a quick exercise that will introduce you to this important tool.

1. Click the Select by Name tool in the Main toolbar or press H on the keyboard.



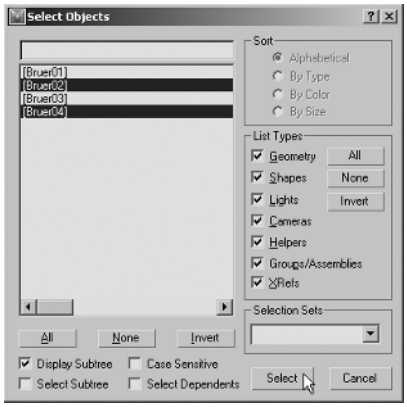
The Select Objects dialog box displays. Notice that it contains a list showing the names of the objects in your drawing with the currently selected objects appearing in blue (see Figure 1.21). Groups of objects appear in brackets. Right now, the list shows the default names given to the objects by VIZ. You can always change the name of an object in the command panel. (You can rename an object on every tab except Utilities.)

FIGURE 1.21
Selected objects appear in blue in the Select Objects dialog box.



2. Click the None button near the bottom left of the dialog box. This clears the selection set.
3. Click [Bruer02] and then Ctrl-click [Bruer04] in the list of object names. This list lets you select multiple names as you would in a typical Windows list box. You can Shift-click to select a group of adjacent names or Ctrl-click to select a group of individual names. Figure 1.22 shows the Select Objects dialog box with the new selection.

FIGURE 1.22
The Select Objects dialog box with the new selection



4. Click the Select button. The two chairs are selected.

The preceding exercise showed you how to select objects based on their names, but it also indirectly showed you the importance of the names of objects. Giving objects meaningful names helps you locate and select them more easily, especially in a crowded model.

EACH OBJECT HAS ITS OWN NAME AND PARAMETERS

VIZ is a parametric, object-oriented program, and every object has its own name. Each object has its own parameters that can be accessed from the Modify tab.

Whenever you create an object in VIZ 2008, you have the opportunity to give the new object a name. If you don't indicate a new name, VIZ provides a name for you. If the new object is a copy of an existing one, the new name that VIZ provides is the name of the original object, with a number appended to its name. If you don't give an object a meaningful name when you create it, it's easy enough to change the name later. Just select the object, and then enter a new name in the object name input box at the top of the Modify tab or in the Name and Color rollout of the Create tab.

Naming Selection Sets

Suppose you've gone through a lot of effort selecting a set of objects, and you know you will want to select the same set of objects again at a later time. VIZ offers the Named Selection Sets tool, which lets you name a selection set for later recall. Here's how it works:

1. Make sure two of the chairs are selected. It doesn't matter which two, because you're just practicing using the Selection Sets tool.
2. Click inside the Selection input box that's just to the left of the Mirror tool in the Main toolbar.

3. Type the name **Sample**↵. You've just given the current selection set a name. (You can enter a selection set name up to 15 characters long.)
4. Click in a blank area of the viewport to clear the current selection set.
5. In the Main toolbar, click the down arrow to the right of the Named Selection Sets input box. Select Sample. The two boxes you selected earlier are now the current selection set.

In these early stages of learning VIZ, the concept of named selection sets may seem simple, but it's one tool you'll likely use quite a bit as you expand your skills.

OTHER METHODS FOR SELECTING OBJECTS

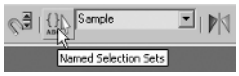
The Edit option in the menu bar offers some additional selection commands, such as Select All, Select None, and Select Invert. You can also use the Edit ➢ Select By cascading menu to select objects by color or name.

Editing Named Selection Sets

Named selection sets are not set in stone. You can add to or subtract from them, or you can delete them entirely through the Named Selection Sets dialog box.

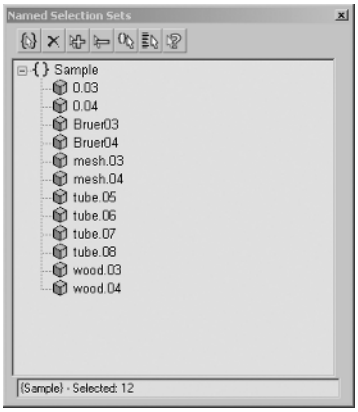
1. Open the Named Selection Sets dialog box by choosing Edit ➢ Edit Named Selection Sets, or by clicking the Named Selection Sets button just to the left of the Named Selection Sets input

box you used before. The Named Selection Sets dialog box appears with a list of all of the selection sets that have been created.

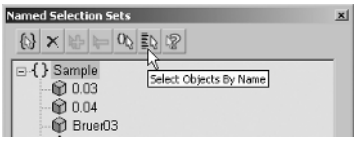


2. Click the plus (+) symbol next to your Sample named selection set to see which objects are contained within this set, as shown in Figure 1.23.

FIGURE 1.23
The Named Selection Sets dialog box showing the contents of the Sample selection set

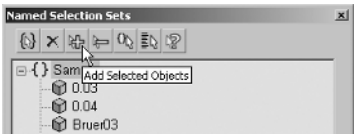


3. Click Sample in the list. Then click the Select Objects By Name button in the Named Selection Sets toolbar.



4. The Select Objects dialog box displays. Select one of the names in the list that doesn't already appear in the Named Selection Sets dialog box, as shown in Figure 1.24, and then click the Select button. This selects the listed objects in the scene.

5. Click the Add Selected Objects button in the Named Selection Sets dialog box.



The name of the object you selected now appears in the list of objects contained in the selection set, as shown in Figure 1.25.

6. Close the dialog box and deselect all by clicking off to the side in the viewport.

FIGURE 1.24
Selecting an object with the Select Objects dialog box

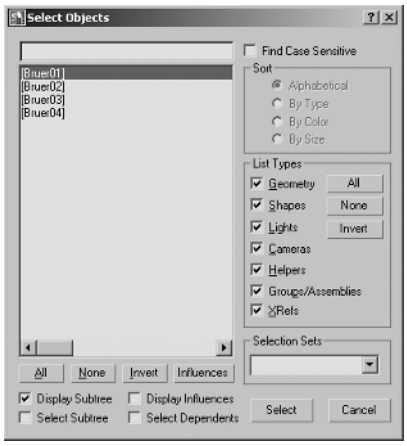
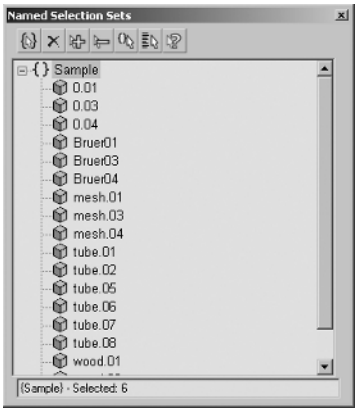


FIGURE 1.25
The expanded list of objects in the Named Selection Sets dialog box



7. Select Sample from the Named Selection Set drop-down list. Now you see that three of the boxes are selected.

8. Click on a blank area of the viewport to clear the selection set.

There are several other tools in the Named Selection Sets dialog box. These tools let you select objects from a set, highlight selected objects, delete objects from a set, or remove a set altogether. You can also create new named selection sets using the Create New Set tool at the far left of the Named Selection Sets toolbar.

You've now seen most of the selection tools you'll need to get started with VIZ. You'll learn about a few other selection tools as you work with VIZ, and you'll also get a chance to apply the tools you've already learned as you start to build and edit 3D models in later chapters.

In the next section, you'll learn about the tools that enable you to view your model from different angles, and how these different views can aid you in creating and editing your model.

Named selection sets can also contain selections of subobjects, such as vertices, edges, or polygons, the components that make up an object. You will learn about subobjects in Chapter 4. When a subobject named selection set is created, it is only available when that object is selected and the subobject level is accessed.

Getting the View You Want

So far in this chapter, you've done all of your work without making any modifications to the *point of view* of your model. Now let's take a look at ways you can control your view. Understanding the viewport controls is essential for manipulating objects in your model, so take some time to become familiar with all the tools discussed in this section.

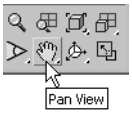
Understanding the Perspective Viewing Tools

If you look at the viewport tools in the lower-right corner of the VIZ window, you'll see some tools that are common among most graphics programs. These include the magnifying glass and the hand. Other tools in this area may be a bit more mysterious. In this section, you'll learn how these tools let you get around in your model.

Panning and Zooming Your View

Let's start by looking at the tool with the hand icon, known as the Pan tool. Like similar tools in other programs, the Pan tool displaces your view up or down, or to the left or right. But in VIZ's Perspective viewport, you're also changing your point of view. Do the following to see what this means.

1. Click the Pan tool.



2. Click and drag the viewport to the left and up until the boxes are roughly centered in the viewport.
3. Click and drag the viewport in a circular fashion. Notice that your view of the model appears to change as if you were moving sideways while looking at the boxes.

Next, try the Zoom tool.

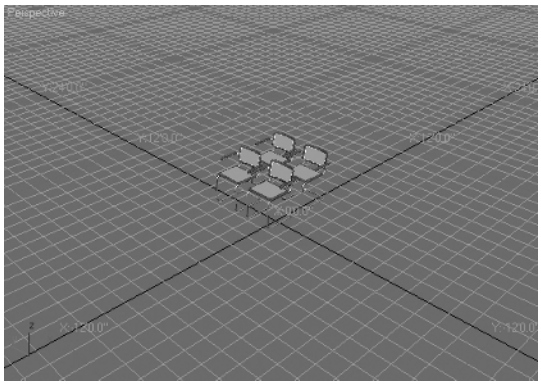
1. Click the Zoom tool.

2. Click and drag the Zoom tool up from the center of the viewport. Notice how you appear to get closer to the boxes.
3. Click and drag the cursor down in the viewport. Now you appear to be moving away from the boxes.
4. Continue to click and drag down until your view looks similar to the one shown in Figure 1.26.

You may have also noticed that, as you moved farther away, the grid became denser. Then, at a certain point, the grid changed to a wider interval. VIZ does this so that the grid doesn't overwhelm the view when it becomes too dense.

Again, as with other graphics programs, the Zoom tool enlarges or reduces your view. In addition to the Zoom tool, the wheel of the mouse can be used to zoom in and out within a viewport. In VIZ's Perspective viewport, zooming has the effect of moving you closer to or farther away from the objects in your model.

FIGURE 1.26
Zooming out to view a larger area



Now, suppose you don't like the last view change you made and you want to go back to the previous view. Try the following steps to return to the previous view:

1. Choose Views ➢ Undo View Change. You return to the previous view. (Alternatively, press Shift+Z.)
2. Choose Views ➢ Undo View Change or press Shift+Z again. Your view returns to the view prior to the last view.
3. Choose Views ➢ Undo View Change a third time. You return to the view you had before you panned your view.

The Views ➢ Undo View Change command lets you step back to a previous view in case the last view change you made is one you don't like. Views ➢ Undo View Change undoes any view change, regardless of which viewport tool you used last.

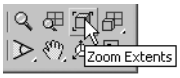
UNDO VIEW IS DIFFERENT FROM UNDO

Don't confuse Views ➢ Undo View Change with the Edit ➢ Undo command. Edit ➢ Undo undoes creation and editing operations but not view changes.

SAVING A VIEW YOU LIKE

If you happen to get a view that you know you want to go back to later, you can save the view with the Views ➢ Save Active command from the menu bar. Use it in the next exercise to save a view that you'll return to later in this chapter. And, as you'll see in Chapter 8, you can also create a camera object and align it to an existing view.

1. Click the Zoom Extents tool to set up your view for the next exercise. Zoom Extents causes the viewport to display the entire model.



2. Save this view by choosing Views ➢ Save Active Perspective View.

The Zoom Extents tool repositions your view so that the entire model just fits within the viewport, filling the viewport as much as possible. If you're an AutoCAD user, you're familiar with this tool, because its counterpart in AutoCAD performs the same function.

RESETTING THE PERSPECTIVE VIEW

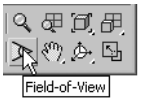
You can restore the default perspective view (the one you see when you open a new file) in a blank file by clicking the Zoom Extents tool or by choosing File ➢ Reset to reset the scene.

CHANGING YOUR VIEWING ANGLE

Two other tools are specifically designed for viewing 3D objects: Field-of-View and Arc Rotate Selected. The Field-of-View tool changes your field of view. The Arc Rotate Selected tool lets you rotate your view around a selected object.

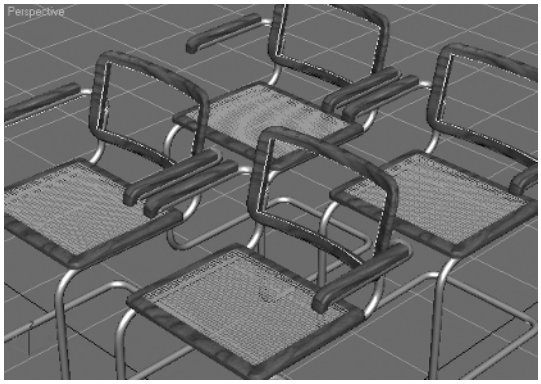
The Field-of-View tool appears to do the same thing as the Zoom tool, but as you'll see in the following exercise, there is a significant difference between the Zoom and Field-of-View tools.

1. Save the current view by choosing Views ➢ Save Active Perspective View. This lets you return to the current view later.
2. Click the Field-of-View tool.



3. Place the cursor in the viewport and click and drag down until your view looks similar to Figure 1.27.

FIGURE 1.27
Appearance of the Perspective viewport after increasing the field of view

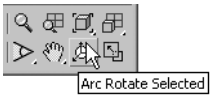


In one sense, it appears as though you've zoomed out from the chairs, but if you compare this view to the zoomed-out view in the previous exercise, you'll notice a difference. When you use the Zoom tool in the Perspective viewport, your view changes as though you were physically moving closer to or farther away from the chairs. As the name implies, the Field-of-View tool widens or narrows your field of view, much as a zoom lens on a camera does. You're not actually changing the

distance from the object; instead, you're changing the area that your viewport displays. The Field-of-View tool has the potential to distort your view, just as a super-wide-angle fish-eye lens or a super-telephoto lens tends to distort a photograph. Until you find yourself in a situation where you really need to change the field of view, you may want to refrain from using the Field-of-View tool.

Now let's take a look at the Arc Rotate Selected tool:

1. Return to the view you had before you used the Field-of-View tool by selecting Views ➢ Undo View Change.
2. Click the Select Object tool, then click on a blank space in the viewport to clear any selections that may be active. In the next exercise, you'll see why this is significant.
3. Click the Arc Rotate Selected tool.



   You see a yellow circle with squares at each of the four cardinal points on the circle. If you place the cursor inside the circle, the cursor looks like two overlapping ellipses.
4. Place the cursor on the square at the far left of the circle. Notice that the cursor changes shape to what looks like a horizontal ellipse.
5. With the cursor on the square, slowly click and drag the cursor to the right. Notice how the view rotates.
6. Place the cursor on the square at the top of the circle. Now the cursor changes to a vertically oriented ellipse.
7. With the cursor on the square, click and drag the cursor down. The view now rotates in that direction.

The squares on the yellow circle are like handles that you can grab and turn to change your view orientation. The left and right squares constrain the rotation to the horizontal plane, and the top and bottom squares constrain the rotation to the vertical plane. If you prefer, you can adjust the view freely without constraint in the vertical or horizontal direction by clicking and dragging the cursor anywhere within the circle. You can also rotate the view by clicking and dragging anywhere outside the circle. The following exercise demonstrates these features. Pay attention to the shape of the cursor in each step.

1. Place the cursor anywhere within the circle. Then slowly click and drag in a small, circular motion. Notice how the view changes as if your point of view were rotating around the group of chairs.
2. Place the cursor anywhere outside the circle. Then slowly click and drag in an up-and-down motion. Now the view rotates around the circle as if you were tilting your head from side to side.

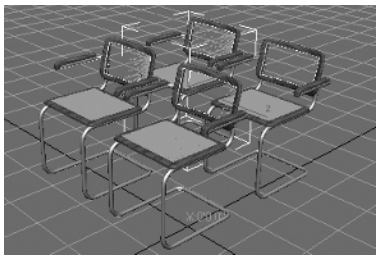
You may have noticed that the cursor changes, depending on whether you're inside or outside the circle. This gives you further cues regarding the way the Arc Rotate tool affects your view.

You've been introduced to nearly all of the viewport tools. However, there's one more feature of the Arc Rotate Selected tool that you'll want to know about before you move on. The Arc Rotate Selected tool uses the center of the viewport as the center about which it rotates when no object is

selected. But the Arc Rotate Selected tool works in a slightly different way when objects are selected. Try the following exercise to see how this variation works.

1. Choose Views ➢ Restore Active Perspective View to restore the view you saved earlier.
2. Click the Select Object tool from the Main toolbar.

3. Click the chair on the left side in the back row.



4. Click the Arc Rotate Selected tool again.
5. Slowly click and drag the cursor within the circle. Notice how the view appears to be fixed at the center of the selected chair.
6. Slowly click and drag the cursor in a vertical motion outside the circle. The view appears to rotate around the selected chair.

7. Return to the saved view by choosing Views ➢ Restore Active Perspective View.

If you click and hold the Arc Rotate Selected tool, you'll see two other Arc Rotate tools in the Arc Rotate flyout. The tool at the top, called simply the Arc Rotate tool, rotates the view about the view center, regardless of whether an object is selected. You've already seen how the second tool, the Arc Rotate Selected tool, works. The tool at the bottom of the Arc Rotate flyout is the Arc Rotate Sub-Object tool. This tool rotates a view about a subobject-level selection. You'll learn about subobject-level editing in Chapter 4.

Arc Rotate on the Fly

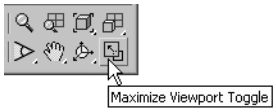
You can Arc Rotate on the fly, without leaving the current command, by holding down the Alt key on the keyboard and dragging the wheel button of your mouse in a viewport. Don't turn the wheel, but drag it as if the wheel were a middle mouse button. This is a huge timesaver because you'll find that you don't have to spend time clicking the Arc Rotate button when you want to rotate your viewing angle.

By being able to select an object or set of objects as the center of rotation for your view, you are better able to set up your views for rendering or editing. The combination of the Zoom, Pan, and Arc Rotate tools allows you to obtain just about any view you may need as you work within VIZ's Perspective viewport. But you aren't limited to a perspective view of your model. In fact, there are many situations where the perspective view is not ideal, especially when editing your model. In the next section, you'll look at other viewport types that give you greater flexibility in creating and editing objects in your model.

Using Multiple Viewports

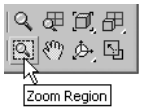
So far, you've done all your work in the Perspective viewport, but this isn't the only view you have available. You saw earlier how you can divide the VIZ window so that it displays four equal viewports, each representing a different view. Let's go back to that viewport arrangement to explore the uses of some of VIZ's display tools. The first item you'll look at is the way that the Field-of-View tool changes when your active viewport changes.

1. Click the Maximize Viewport Toggle in the set of viewport navigation controls.



   The VIZ window changes to display four viewports.

2. Right-click anywhere in the viewport labeled Top in the upper-left corner of the display. Notice that the Field-of-View tool changes to a magnifying glass with a rectangle. This is the Zoom Region tool.



   Also notice that the Top viewport now shows a thick yellow border around it, indicating that it is the current, active viewport.

3. Click the Zoom Region tool.

4. Click and drag the cursor on a point below and to the left of the chairs, as shown in Figure 1.28. As you drag the cursor, you see a rectangle appear. Don't release the cursor just yet.

5. Position the rectangle above and to the right of the bottom row of chairs, as shown in Figure 1.28, and then release the mouse button. The view enlarges to the region you just indicated with the Zoom Region tool.

The Zoom Region tool acts like the magnifying tools in many other graphics programs. Also, the Zoom and Pan tools perform the same functions in orthogonal views in VIZ as they do in other programs, allowing you to zoom in and pan over the view.

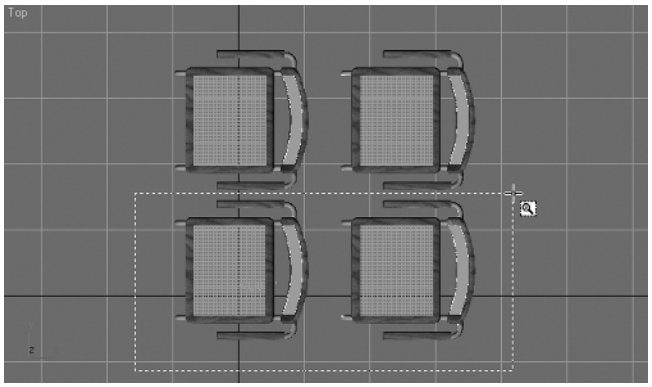
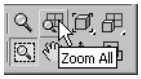


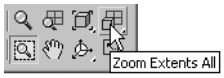
FIGURE 1.28
Selecting a view to enlarge with the Zoom Region tool

You may have noticed two other tools in the viewport navigation controls that haven't been discussed yet: the Zoom All and Zoom Extents All tools. Now that you have multiple viewports displayed, you can try out these two tools.

1. Click the Zoom All tool.



2. In any viewport, click and drag the cursor up. Notice that the view in all of the viewports is enlarged to take in as much of the four chairs as can be displayed.
3. Click and drag the cursor down, and the views expand to show more of the model area.
4. Click the Zoom Extents All tool.



All of the viewports change to display enlarged views of the chairs, as shown in Figure 1.29.

Although not as frequently used as the other viewport navigation tools, the Zoom All tool and the Zoom Extents All tool can be helpful when you need to adjust the overall view of your model in multiple viewports.

You should be aware that the Arc Rotate Selected tool you used in the Perspective viewport also works in the other viewports. Try it out on the Top viewport in the next exercise.

1. Click the Arc Rotate Selected tool.
2. Click and drag the cursor from the center of the Top viewport up and to the right, so it shows a view similar to Figure 1.30.

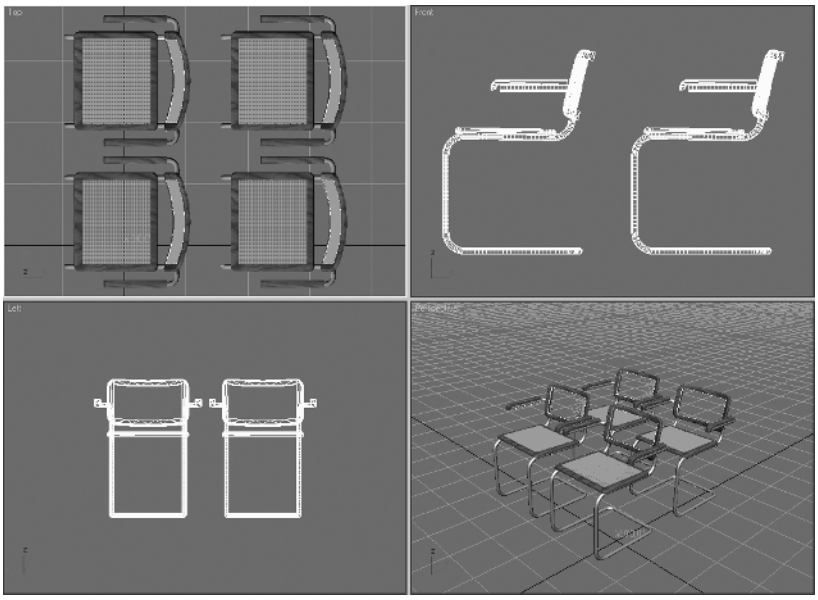
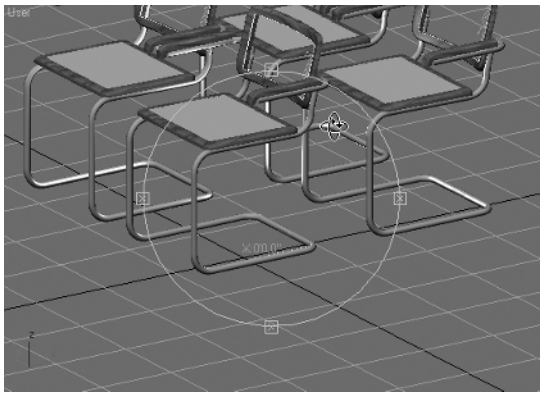


FIGURE 1.29
The four viewports after using the Zoom Extents All tool

FIGURE 1.30
Top view after using Arc Rotate Selected



The view changes to a type of 3D view known as an *isometric projection.* Also notice that the label in the upper-left corner of the viewport now reads User. This indicates that the view is a custom view based on your changes.

3. Click the Zoom Extents tool to center the view in the viewport.

The 3D view in the upper-left corner of the display differs in many ways from the perspective view. But, as you'll see in the next section, it's different only because a few of the settings for that viewport are different from those of the Perspective viewport.

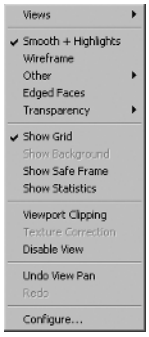
Changing the Viewport Display and Configuration

If you compare the User viewport with the Perspective viewport, you notice one thing that is different. As mentioned in the previous exercise, the User viewport shows a 3D orthographic projection. Parallel lines do not converge as the distance from the viewpoint increases, as they do in the Perspective viewport. You'll notice that the User viewport is shaded; the chairs appear to have visible faces rather than simple line outlines, called a *wireframe view.* These display characteristics can be modified for each viewport.

In the following exercise, you'll see how you can alter viewport settings to obtain specific view characteristics such as shading and perspective:

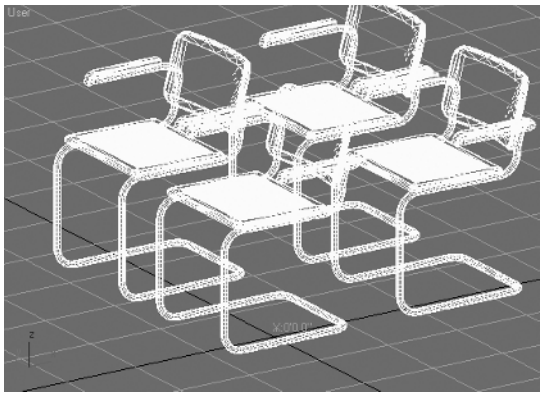
1. Right-click the User label in the upper-right corner of the User viewport. A pop-up menu appears, as shown in Figure 1.31.

FIGURE 1.31
The viewport context menu



2. Select Wireframe from the menu. The chairs now appear as lines (see Figure 1.32), just as they do in two of the other viewports.

FIGURE 1.32
The User viewport in Wireframe mode



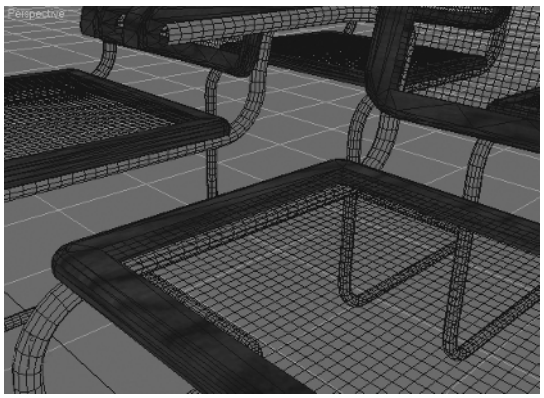
3. Change the User viewport back to the shaded mode by selecting Smooth + Highlights from the viewport label right-click menu.

New!

4. Right-click the Perspective viewport label, and then select Other ➢ Hidden Line from the pop-up menu. The Perspective viewport changes to reflect the contents in the new Hidden Line rendering mode.

5. Zoom in to the chairs to better see the appearance of the Hidden Line rendering mode. Your view should be similar to Figure 1.33.

FIGURE 1.33
The chairs in Hidden Line rendering mode



Notice that the pop-up menu is the same for both the User and Perspective viewports. This menu gives you control over the display characteristics of the viewport. Try out a few other options in the Viewport pop-up menu.

1. Right-click the User label, and then select Views ➢ Perspective. The User viewport changes to a Perspective viewport. Notice that the label changes to read Perspective so that you now have two Perspective viewports, as shown in Figure 1.34.

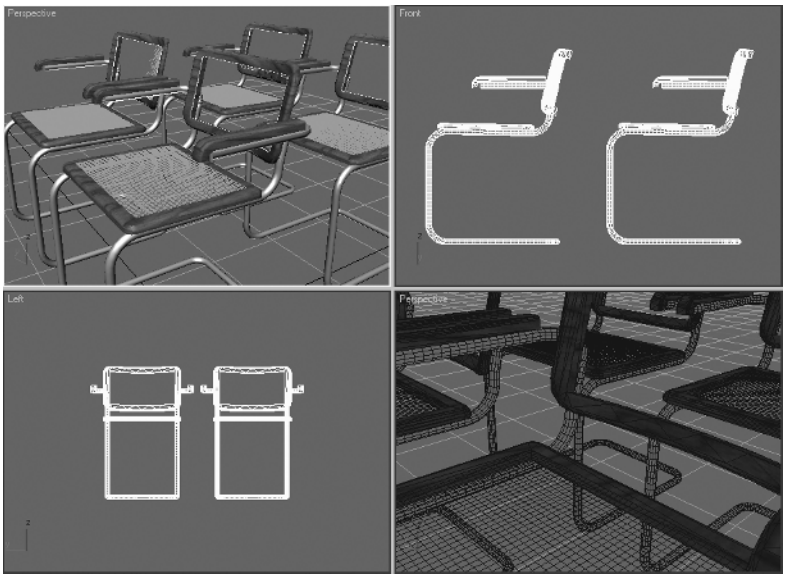


FIGURE 1.34
Two of the four viewports are now Perspective viewports.

2. Right-click the Perspective label of the upper-left viewport, and then select Views ➢ Top. The view now changes back to the original top view. Notice that the chairs are still in wireframe.
3. Right-click the Top label, then select Smooth + Highlights. The view returns to its original state.

Now two of the viewports still show wireframe views of the chairs. Wireframe views are often better for many types of editing operations. Wireframes also redraw faster when your model is very large and full of complex geometry. Another type of view, called *bounding box,* is even faster than a wireframe view, but bounding box views reduce the representation of objects to rectangular boxes. The Edged Faces mode, available when the viewport is in any of the available shaded modes, displays both the shaded mode and the edges of the visible objects.

Besides changing the way the viewport displays your model, wireframe view also gives you control over the layout of the viewports themselves. The following exercise shows you the variety of layouts you can create in VIZ.

1. Choose Customize ➢ Viewport Configuration. The Viewport Configuration dialog box appears, as shown in Figure 1.35.
2. Click the Layout tab. You see the current viewport layout. Above it is a set of predefined layouts, as shown in Figure 1.36.
3. Click the layout that looks like three small rectangles stacked on the left side with one large rectangle on the right (see Figure 1.37).
4. Click OK. The viewports change to the selected layout.

5. Click the Zoom Extents All button to zoom all the viewports to show the contents of the scene. Your viewports should look similar to the viewports in Figure 1.38.

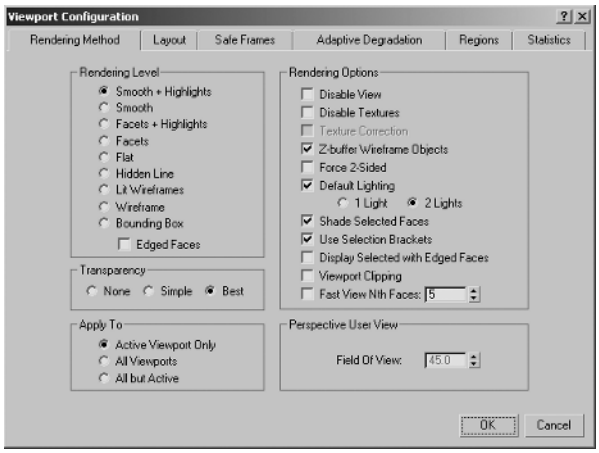


FIGURE 1.35
The Viewport Configuration dialog box

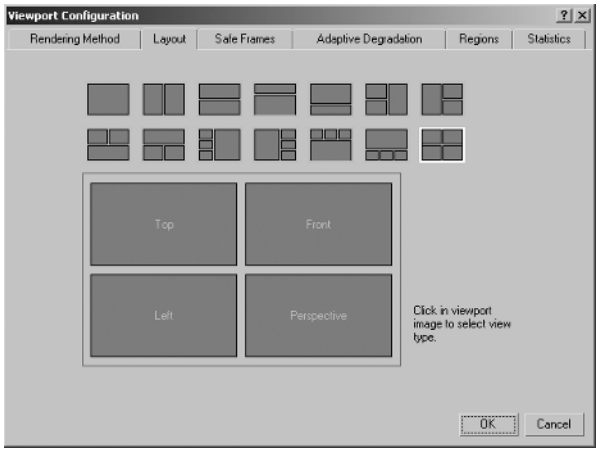


FIGURE 1.36
The Layout tab of the Viewport Configuration dialog box

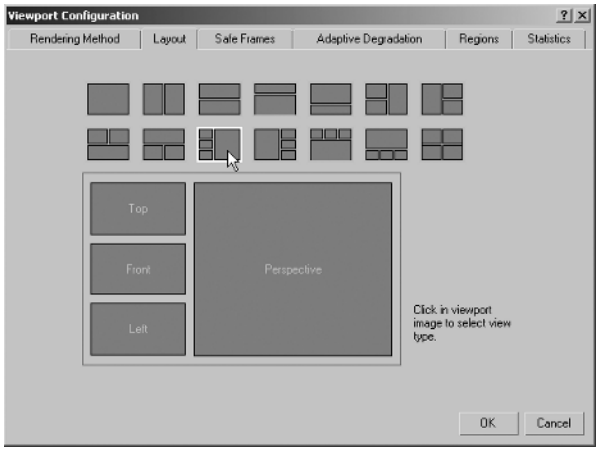


FIGURE 1.37
Select a layout from the samples.

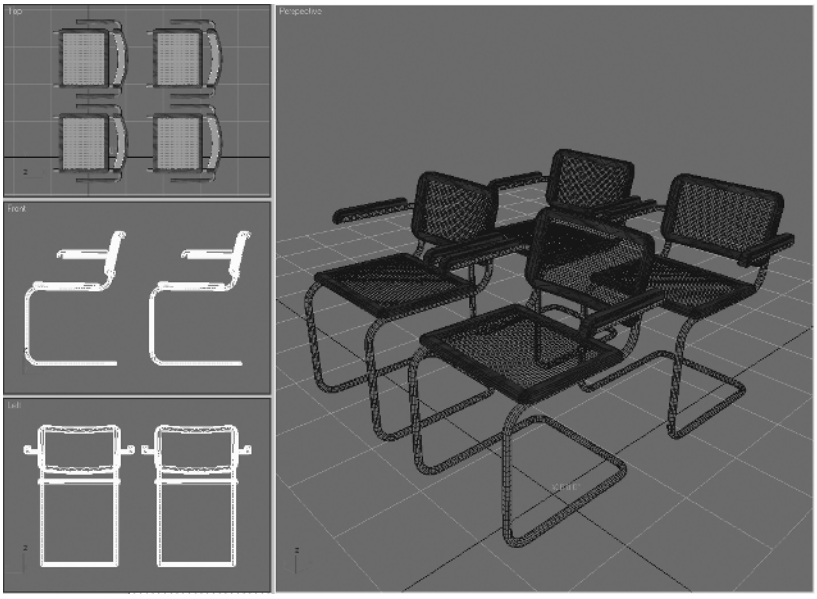


FIGURE 1.38
The viewports after changing the viewport layout

You aren't limited to the canned layouts either. You may decide that you want the layout to reflect a more traditional mechanical drawing layout, with a top, front, and right side view. Here's how you can set up such a viewport arrangement:

1. Choose Customize ➢ Viewport Configuration.
2. With the Layout tab selected, click the layout showing four equal viewports, which is the rightmost layout in the bottom row of layout options (see Figure 1.39).
3. Click the sample viewport labeled Front in the upper-right corner of the large sample layout and select Perspective in the pop-up menu, as shown in Figure 1.40.

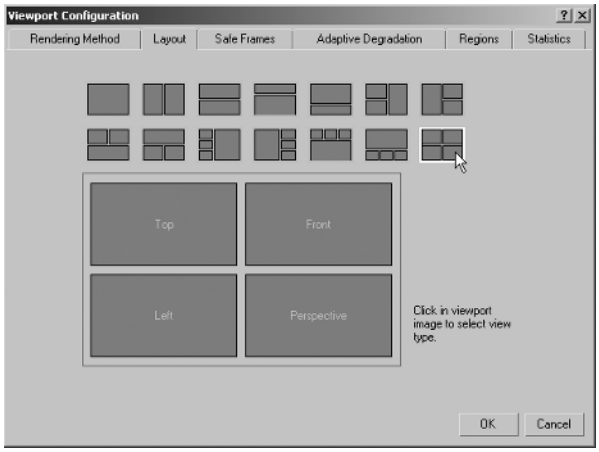
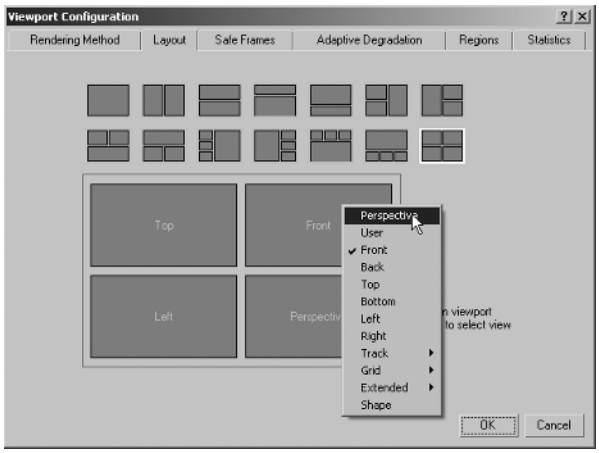


FIGURE 1.39
Selecting a four-viewport layout

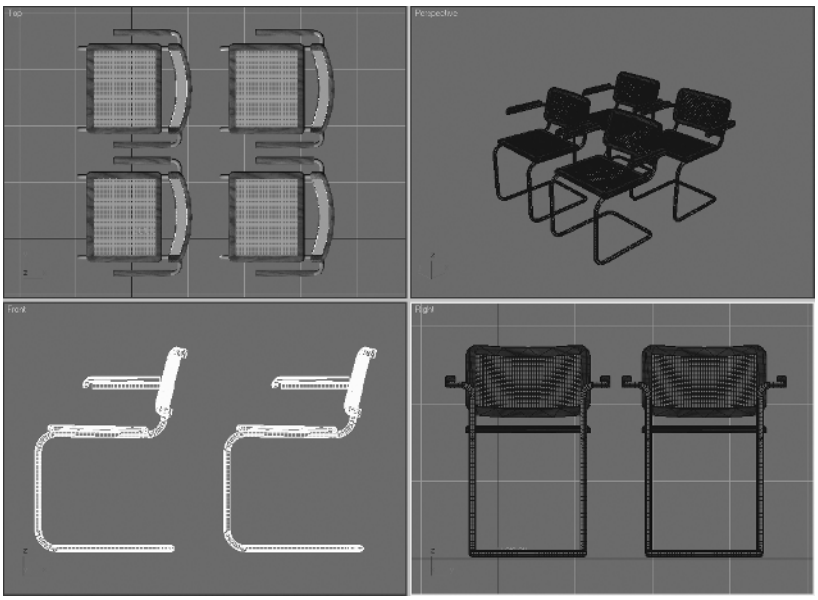
FIGURE 1.40
Changing a specific viewport's view



4. Click the sample Perspective viewport in the lower-right corner and select Right from the pop-up menu.
5. Click the sample Left viewport in the lower-left corner and select Front from the pop-up menu.
6. Click OK. Now you have a layout that shows the top, front, and right views, plus a perspective view, arranged in a more traditional manner. Perform a Zoom Extents All and your viewports should look like Figure 1.41.

As you can see from what you've learned so far, Autodesk VIZ 2008 provides a wide array of display options, but most of the time, you'll stick with one viewport layout that you are comfortable with. For the purposes of this book, you'll use the default layout that shows the four equal-size viewports.

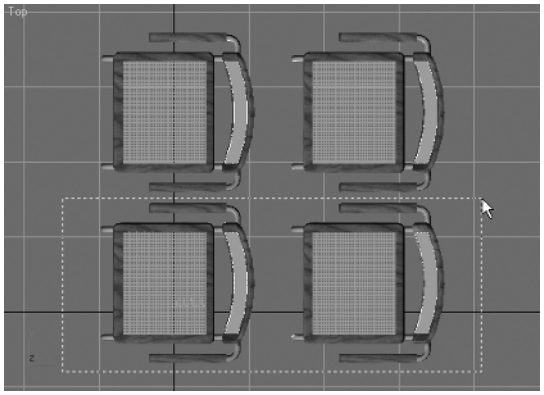
FIGURE 1.41
The four-viewport layout with modifications



Before you conclude your tour of the VIZ interface, let's see how the Move tool acts in the non-Perspective viewports. The following exercise will give you a feel for the ways that you can use multiple viewports.

1. Click the Select and Move tool.
2. In the Top viewport, click and drag the cursor from a point below and to the left of the bottom row of chairs.
3. Drag the selection region above and to the right of the two chairs in the lower row, as shown in Figure 1.42, so that they are enclosed in the rectangle. The two chairs are selected.

FIGURE 1.42
Drag a selection region around the lower chairs.



4. Right-click in the Right viewport.

RIGHT-CLICKING RETAINS THE SELECTION SET

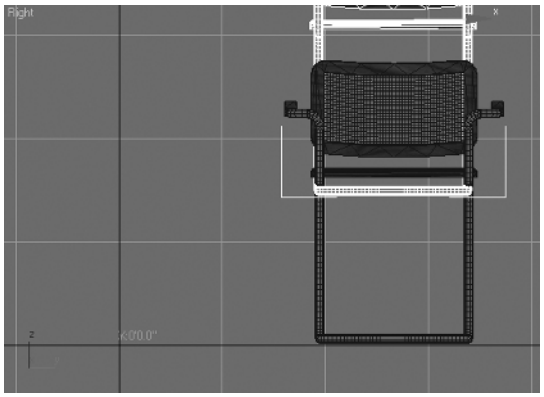
By right-clicking in a viewport, you can make it active without disrupting any selections you may have active at the time.

1. In the Right viewport, click and drag the green Y arrow up. Notice how the chairs move in the front and perspective views as you do this.
2. Position the chairs so they are higher by about one-half the height of a chair.
3. Click and drag the red X axis of the chairs to the right of the screen, so they merge with the chair to the right, as shown in Figure 1.43.
4. You can save or discard this file. You won't need it anymore.

In this exercise, you've seen a number of methods in action. First, the Select and Move tool can be used to select objects as well as move them. This can help you move objects quickly by reducing the number of clicks. But be careful, or you might select and move the wrong object when you're in a hurry.

You also saw how you can right-click in a viewport to make it active. Had you simply clicked in the Right viewport in step 4, you would have lost the selection set you created in step 3.

FIGURE 1.43
Move the selected chairs along the X axis.



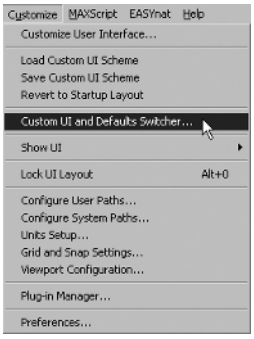
Finally, you saw how objects in VIZ don't conform to one of the basic rules of physics. In VIZ, more than one object *can* occupy the same space at the same time. This characteristic can be useful in a number of ways as you build models in Autodesk VIZ 2008.

Working with the Custom UI and Defaults Switcher

The Custom UI and Defaults Switcher provides an easy and unified method for managing all the myriad preference settings within VIZ 2008. Let's explore what the Custom UI and Defaults Switcher has to offer.

1. Choose Customize ➢ Custom UI and Defaults Switcher, as shown in Figure 1.44.

FIGURE 1.44
The Customize menu



2. Click on the DesignVIZ initial settings for tool options in the upper-left corner of the dialog box to see the settings listed in Figure 1.45.
3. Scroll down in the dialog box and read through the changes that the DesignVIZ settings represent in the HTML file that is part of the Custom UI and Defaults Switcher dialog box. There are two initial settings for tool options: DesignVIZ and DesignVIZ.mentalray (shown in Figure 1.46).

   The DesignVIZ settings are configured to provide you with good rendering performance in large scenes with many lights; this assumes you'll be using the radiosity renderer and photometric lights.

The DesignVIZ.mentalray initial settings are meant to be used in conjunction with the mental ray renderer. Each of these settings automatically configures multiple preferences in layers, the Material Editor, Lights, Daylight System, Rendering, Motion Blur, Cloning, Select by Name, i-drop, Inverse Kinematics, and Viewport Shading, and Real-World Texture Coordinates.

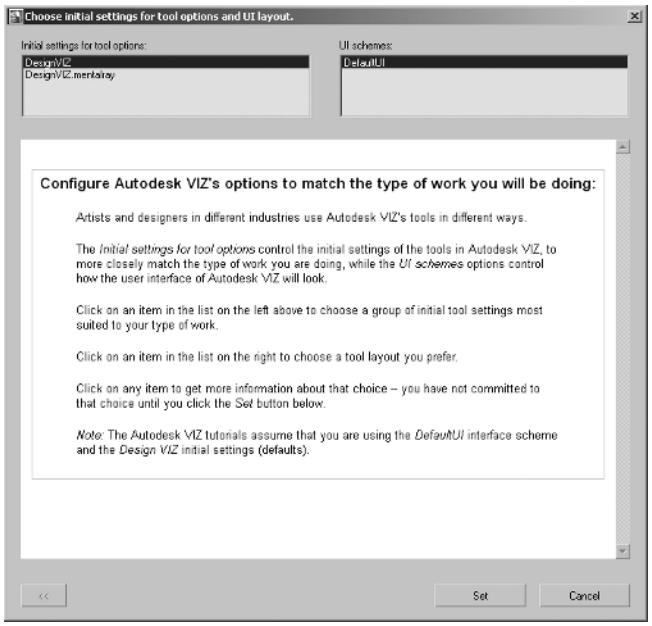


FIGURE 1.45
Custom UI and Defaults Switcher settings

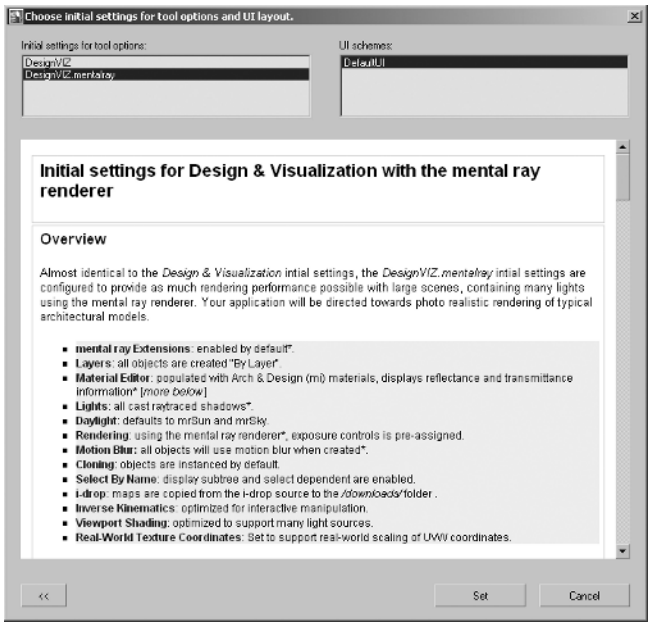


FIGURE 1.46
The default mental ray settings

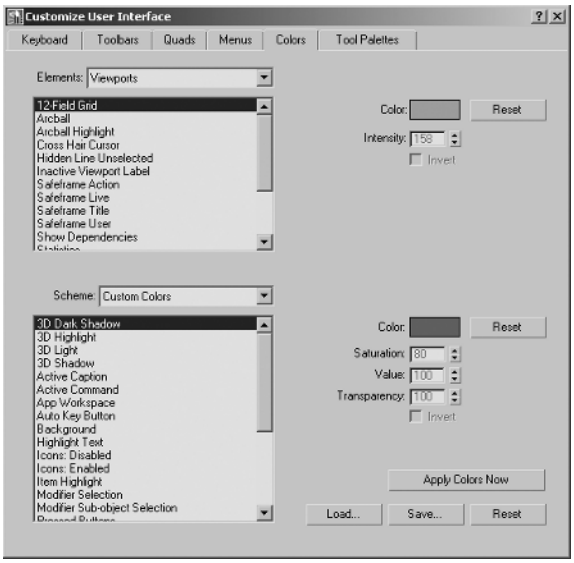
RENDERING AND MENTAL RAY

See Chapter 11 to learn more about the radiosity renderer and Chapter 12 to learn how to use the mental ray renderer.

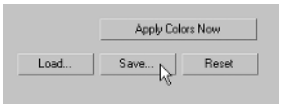
On the right side of the Custom UI and Defaults Switcher dialog box, you'll see a list of UI schemes you have already saved. Here, you can conveniently select which UI scheme you'd like to use. UI schemes hold in one place all the customization you can make to the keyboard hotkeys, toolbar, quad menus, standards menus, and color schemes. To make changes to an existing UI scheme, you'll use the Customize User Interface dialog box.

1. Choose Customize ➢ Customize User Interface to display the dialog box shown in Figure 1.47.

FIGURE 1.47
The Customize User Interface dialog box

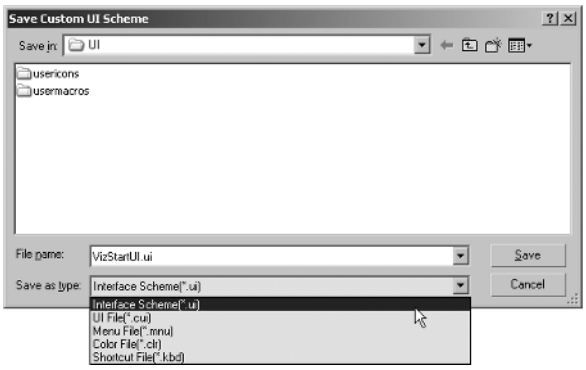


2. Click each of the tabs at the top of this dialog box to become familiar with all the ways you can customize your user interface (changes can be made to the keyboard, toolbars, quads, menus, and colors). If you do decide to make any changes, simply click the Save button on the tab in this dialog box to record your specific changes to disk. Each tab saves as a different file type which controls different aspects of the user interface.



3. Choose Customize ➢ Save Custom UI Scheme. Open the Save As Type pop-up as shown in Figure 1.48. You will notice five different file formats that can be saved (and loaded) through Save (and Load) Custom UI Scheme from the Customize menu. Each one of the lower four formats —UI File (`*.cui`), Menu File (`*.mnu`), Color File (`*.clr`), and Shortcut File (`*.kbd`)—corresponds to each of the tabs in the Customize User Interface dialog—Toolbars and Quads, Menus, Colors, and Keyboard, respectively.

FIGURE 1.48
The Save Custom UI Scheme dialog box



When you choose to save the first format in the Save Custom UI Scheme dialog (Interface Scheme format), you are saving a composite file that contains all the customization present in all the other formats combined. It is this Interface Scheme format (`*.ui`) that is displayed in the UI Schemes portion of the new Custom UI and Defaults Switcher.

The Bottom Line

Dock and float toolbars. The VIZ user interface has several customizable features, including the ability to hide or expose and dock or float the program's toolbars.

Master It Detach the command panel from the right side of the VIZ window and release it so that it floats in the middle of the VIZ window. Select the command panel again and attach it to the left side. Expose a hidden toolbar and dock it to the left of the command panel.

Copy objects and use the transform tools. The transform tools (Move, Rotate, and Scale) are the most commonly used tools in VIZ. With them, you can position, orient, and scale your objects as required in the scene. You can quickly create a copy in VIZ, a process called *cloning*, by holding down the Shift key while using any of the transform tools.

Master It Make a box that is 3′ long, 10″ wide and 8″ high. Make five instance clones of the box and rotate each clone 20 degrees more than the previous clone. Stack the boxes like a spiral staircase, with the greatest amount of swing with each stair and leaving no vertical or horizontal gaps in the stairs.

Create a named selection set. Whenever any objects are selected in VIZ, the selected objects are referred to as a selection set. Often, you may need to repeatedly select the same objects for different operations. By creating named selection sets, you can quickly select objects by selecting the selections set name from a drop-down list.

Master It Continuing from the previous Master It exercise, rename the boxes to Step1, Step2, Step3, and so on, starting with the top step. Make and test two named selection sets, one containing the lower three steps and another containing the even numbered steps.