Working with Graphics

The art of world building — that's what multimedia is all about. Every time you create a multimedia product, you are creating the illusion of a completely self-contained world that can be as detailed as Cyan Interactive's *Riven* or as colorful as Mercer Mayer's *Just Grandma and Me*. To pull off this trick, you need images and graphics — for buttons, backgrounds, and characters — that can take on the expressiveness of actors. Using Director, you can build and integrate these pictures into an incredible array of possibilities: documentaries, cartoons, or three-dimensional extravaganzas in which the graphics seem to pop off the screen.

Getting organized

To take advantage of Director's imaging possibilities, you first have to create the images, and this involves a rather incredible amount of work. Fortunately, Director has long recognized that in most cases, 80 percent of the process of creating a multimedia presentation involves making the graphics for it. What Director offers you for this colossal task are a serviceable paint program for creating bitmap artwork, and a vector drawing program to create Bézier-based vector graphics. Director also provides several options for integrating preexisting artwork, photographs, and other graphical resources into your movies.

Creating a concept

If you're like me, you probably find it very difficult just to sit down at a computer and start drawing without giving some thought to the result you want. In this regard, Director can be dangerously seductive. With all that power at your fingertips, it's really tempting just to sit down and "create," taking off without giving any forethought to your ultimate creative destination. Unfortunately, what you come up with in this case

usually has to be abandoned halfway through. The upshot to all of this: Even with a simple animation that doesn't require any programming, you should still plan everything ahead of time.

Rob Martin, one of this book's authors, has been creating a Web site and CD-ROM about the colonization of the planet Mars in his spare time. One of the lead actors of this production is a rocket called a "Ballistic Hopper," which is a futuristic version of a bush plane, hauling people and supplies all over the planet. A primary element in Director is the sprite, which in most situations is a graphic element that is placed on the Stage, and then performs various tasks (see Figure 2-1). Because the rocket is a mobile object, we thought it would be a good example of a sprite to use in this book.

Figure 2-1: The rocket in this scene is a graphic element that becomes a sprite when the graphic is placed on the Stage.

Actually, part of the reason for using the rocket is to illustrate how to design and create some very complex animations in which you can use two or more sprites together. For example, the rocket has distinct components: the rocket itself, and the flames and smoke coming out of the bottom of the rocket. The flames should flicker independently of the rocket.

A rocket flies, of course, and the animation should feature that prominently. To keep the resources down, the whole animation is set against a static backdrop with a landscape scene rendered in a 3D application called Bryce. The rocket flies in from the upper-right, and it lands on a stretch of ground in the lower-left foreground. When the smoke clears, a logo appears, and then the rocket flies off, leaving the logo behind as a static image.

The animation itself consists of four different sprite layers: the rocket, the flames, the logo, and the background. In this chapter, you learn to create some of these pieces. Then, in Chapter 3, you work on implementing the animation.

Planning your presentation

A good theatrical director should know the dimensions of the stage that he or she has to work with, and multimedia work is no different in that respect. One standard size for the Director Stage is 640 pixels wide by 480 pixels high (640 × 480), which is

exactly the size of the lowest screen resolution that a computer capable of playing Director multimedia applications can display.

Because setting the Stage size is more relevant for sprites than for cast members, this topic is covered in detail in Chapter 3. Take a quick look at the numbers now, however, simply to help in the creation of the graphics. The rocket is in the foreground, so it will occupy roughly half the height of the screen. The logo element will be about half as high and about 180 pixels wide.

Tip When it comes time to place these elements in your movie, use Director's new Guides feature to place guides on the Stage to help position the elements.

A good idea at this point is to draw a preliminary sketch showing the pieces in place at various points in the animation. This technique, called *storyboarding,* is an invaluable tool for developing a convincing animation. Figure 2-2 is an example of a storyboard for an animation sequence.
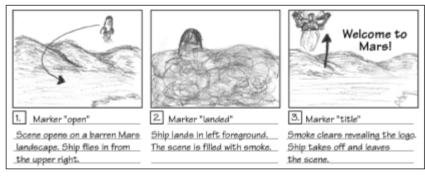

Figure 2-2: A storyboard is a comic book-like sequence that shows where all of the pieces are at various times in the animation.

On the CD-ROM Blank storyboard templates in PDF format can be found on the CD-ROM in the folder called STORYBOARDS.

Storyboards highlight one of the basic principles for designing computer projects: You should not fail to use your special analog model number 2, wireless data development device with the semiautomated Undo feature — also known as a pencil. Pencil and paper haven't completely disappeared from design processes (thankfully), in great part because the very process of drawing or painting with a computer forces you into a computer-oriented design mode. And in that mode it's hard not to think more about the tools you're using than about the concepts you're trying to explain. So, blocking out your concepts with squares and circles — even if you're not a good artist — will make a world of difference in the fluidity of the final animation.

The other purpose of the storyboard is to give you an idea of how many particular pieces will be needed for an animation. In this sequence, the animation will require a certain amount of hand drawing (with the exception of the flames, which can be created once and then warped within Director to the appropriate shape, as explained in the Chapter 3 section on *tweening*). You can use the storyboard to pick out the major positions (often called *keyframes*) and determine how many intermediate steps will be necessary to ensure that the animation will move smoothly.

Bitmap versus vector

Director enables you to create and import two kinds of graphic elements: bitmap and vector (see Figure 2-3). Each has its own strengths and weaknesses.

Figure 2-3: The graphic on the left is a bitmap image and is composed of individual pixels. The image on the right is a vector graphic and is a series of mathematical coordinates drawn on the screen.

Bitmap graphics are composed of a series of individual dots (called *pixels*) that make up the entire graphic. Programs such as Adobe Photoshop and Microsoft's PhotoDraw 2000 create bitmap images. Bitmap graphics tend to have more detail and can look more photorealistic (in fact, photos scanned into a computer are bitmaps). When bitmaps are resized, the number of pixels in the image has to change. Director has to guess, or interpolate, what the best colors should be for each new pixel. This resizing usually results in a loss of image quality.

Vector graphics are actually a series of mathematical coordinates stored in memory and then drawn on the screen. When a vector graphic is resized, the coordinates are recalculated and the image is redrawn correctly at the new size. Because a vector graphic is stored as a mathematical description, it usually requires less disk space and memory than an equivalent bitmap graphic, which is described as a matrix of individually colored pixels.

Working in the Paint Window

Director's graphics editor, the Paint window, has been a part of the program since its earliest days. Although not as full-featured as many commercial paint programs, the

Paint window has been optimized for use as an animation editor. Creating successive frames of an animation is relatively easy to do with the Paint window, and it offers several unique tools, such as onion skinning and registration points, to help you.

Paint tools overview

You can open the Paint window at any time within Director by pressing Command+5 (Ctrl+5) or choosing Window ➪ Paint from the menu bar. If no cast member was selected, then the Paint window automatically creates a fresh canvas on which to paint. (Cast members are discussed in the section "Sorting the Cast Members," later in this chapter.) If you did select a cast member before opening the Paint window, it will open with that cast member at the ready, as shown in Figure 2-4. Unless your images use an external editor (another subject that's discussed later), you can also double-click a bitmap cast member to open it up in the Paint window.
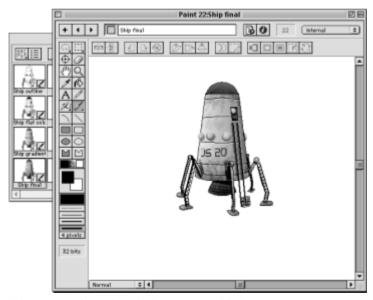

Figure 2-4: The Paint window opens with the current cast member, if you select it first.

The various brushes and other tools used in the Paint window are likely to be familiar to anyone who has used another paint program. They are represented by the double vertical column of buttons in the Tools palette located on the left side of the Paint window. These tools are summarized in Table 2-1, along with the single keystroke that you use to select each tool.

Table 2-1
Paint Window Tools

Tool Icon	Tool Name	Paint Operation	Single-Key/ Quick Key
	Lasso	Free-form selection tool. Used to select irregularly shaped areas. Also can be set to Shrink in order to exclude background colors.	L
	Marquee	Rectangular selection tool. This is the required selection mode for most special effects. Can be set to Shrink, in order to exclude background colors.	M or S
	Registration Point	Determines the "registration point" of the graphic when drawn on the Stage. Double-click this button to set the registration point to the center of the graphic.	G
	Eraser	Paints the graphic with the selected background color. Double-clicking the button erases the whole screen.	E
	Hand	Used to move the graphic around. Especially useful with the Magnifying Glass tool.	H or Spacebar
	Magnifying Glass	Doubles the current magnification of the image, up to eight times. If the Shift key is held down, clicking the image with this tool active zooms back out, in increments of 50 percent, to the original size of the image.	Z
	Eyedropper	Sets the foreground color to the color under the Eyedropper's tip.	I
	Paint Bucket	Fills all contiguous pixels of the same color and pattern with the foreground color and pattern.	F or K
	Text	Places text into the graphic. This text can only be edited while the insertion point is active; after that, it becomes part of the graphic.	T

Tool Icon	*Tool Name*	*Paint Operation*	*Single-Key/ Quick Key*
	Pencil	Draws a line 1 pixel wide. If any color but the foreground color is selected, the line is drawn in the foreground color; otherwise, the background color is used.	Y or . (period)
	Air Brush	Creates a random pattern of dots of varying sizes. Can be used for texturing effects, but doesn't work as well as airbrushes in other programs.	A
	Paint Brush	Paints the graphic with the foreground color, using the selected ink (explained in an upcoming section). By clicking and holding down the mouse button, you can select an alternate brush.	B
	Arc	Draws an arc, using the currently selected line width to draw the curve. Click and drag to establish the starting tangent, and then drag to the end point.	C
	Line	Draws a line. Click to establish the line, and then drag to pull it to its full length. Constrain the line horizontally, vertically, or to a 45-degree angle by pressing the Shift key while drawing the line.	N or / or \ or |
	Filled Rectangle	Paints a filled rectangle, using the current foreground color and pattern. If a nonzero line width is selected, the rectangle will have a border of that width.	Shift+R
	Rectangle	Paints a hollow rectangle, using the current foreground color and line width.	R

Continued

Tool Icon	Tool Name	Paint Operation	Single-Key/ Quick Key
		Table 2-1 *(continued)*	
	Filled Ellipse	Paints a filled oval, using the current foreground color. If a nonzero line width is selected, the oval will have a border of that width.	Shift+O
	Ellipse	Paints a hollow oval, using the current foreground color and line width.	O
	Filled Polygon	Paints a filled polygon, using the current foreground color, pattern, and line width. Click once at each vertex of the polygon, and then double-click to complete the shape.	Shift+P
	Polygon	Paints a hollow polygon, using the current foreground color and line width. Click at each vertex of the polygon, and then double-click to complete the shape.	P

Colors and gradients

The collection of paint swatches, patterns, and lines at the bottom of the Tools palette can be a little bewildering at first. Figure 2-5 identifies each button.
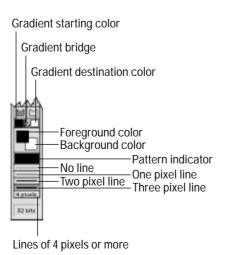
Gradient starting color

Gradient bridge

Gradient destination color

Foreground color
Background color
Pattern indicator
No line
One pixel line
Two pixel line
Three pixel line

Lines of 4 pixels or more

Figure 2-5: You can select colors, patterns, and gradients from the swatches and buttons at the bottom of the Tools palette.

Let's start with the two large, color squares that overlap. These are your primary work colors: the top-left square gives you the foreground color, and the bottom-right square shows your background color. If you've never worked with paint programs before, here is what these concepts mean:

◆ The foreground color is what you can think of as your primary paint color — when you're painting an area in the canvas, you will generally use this color.

◆ The background color, on the other hand, is the color used for erasing. This color has the most influence in terms of the Pencil tool. When you activate the Pencil tool and start drawing with it, the default color laid down will be the foreground color. If you start drawing on a part of the bitmap that already has the foreground color, however, Director automatically replaces it with the background color. In this way, you can "erase" the color that you're working with simply by starting on a foreground pixel. Usually, you will keep the background color set at the default, which is white.

Note   You work with foreground and background colors fairly extensively in Director. Often, you'll see them referred to in Director literature as the forecolor and backcolor.

Director has a number of basic gradient tools that are covered a little later in this chapter. For now, just become familiar with the gradient switches, which are just above the foreground and background color squares. The left swatch in the gradient is always the same as the foreground color. The right swatch can be any color, and it represents the other extreme of the gradient. Click the area between the two swatches — the *gradient bar* or *gradient bridge* — to see a small pop-up list showing the various types of gradients that you can use.

Setting the color of the foreground, background, or gradient target swatch is as simple as clicking and holding the swatch. When you do this, a palette of colors pops up, as shown in Figure 2-6, that displays the colors of the current palette that is being used in the movie. At the top of the palette are 16 default colors (referred to as the Favorite colors) that can be user defined. Because these colors are independent of the actual color palette, they remain the same even if a different palette is active. You can also access the system color picker to choose a color that is not displayed on the palette by selecting the Color Picker option.
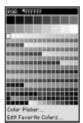

Figure 2-6: Choose colors from the current palette used for the movie, a custom color, or select a new color from the system color picker from this menu.

You can adjust the 16 Favorite Colors found at the top of the color palette so that they are the colors that will be used most often in your graphics.

Adjusting the Favorite Colors

1. Open the Paint window by choosing Window ⇨ Paint Window or by pressing Command+5 (Ctrl+5). Click the foreground or background color swatch and choose the Edit Favorite Colors option located near the bottom of the pop-up window. This brings up the Edit Favorite Colors dialog box.

2. Click one of the color swatches at the top of the dialog box. There are three ways to select a new color:

   a. Click the color swatch and choose a new color from the current palette.

   b. Type in a hexadecimal number for the new color.

   c. Choose a new color from the system color picker by clicking the Color Picker button.

3. Repeat the preceding step with the next color swatch at the top of the dialog box until you have defined all 16 of the colors or modified the ones that you need.

Tip   Use this technique to assign the 16 most commonly used colors in your movies to assure that colors used for common elements, such as backgrounds and headers, are consistent throughout your project.

Patterns

Below the foreground/background color swatches is a larger button that probably seems right now to be the same as the foreground color. This is the pattern swatch. If you click and hold this button, an array of 64 possible patterns pops up. For each pattern, the foreground colors are used to color the foreground pixels and the background color is used to color the background pixels in each pattern swatch. Select a pattern, and your paintbrush will paint in two colors, reproducing the pattern as the brush moves over the Cast window canvas.

You can also select more exotic patterns, called *tiles,* from the bottom of the pattern palette. The last eight patterns contain full-color chips that are useful for introducing tiled backgrounds into your movie. The eight tiles that are supplied can be used for general effects, but in all likelihood, you'll want to create new color tiles from cast members.

Tip   Patterns are a great way to save file size in your movies. Because a tile is a small cast member repeated many times, they are a great way to create backgrounds for movies that you are going to be putting on the Web as Shockwave applications.

Creating Tiles from Cast Members

1. Using a paint program (such as Photoshop, Paint Shop Pro, or xRes), create a rectangular graphic with sides that measure 16, 32, 64, or 128 pixels. (That is, the image can be sized in any combination of these measurements — 32×128, or 16×32, or whatever you want, as long as you use those four dimensions.) Preferably, tile this image so that there are no seams where the top and bottom, or left and right, meet.

2. Import the image into Director or open the movie called TILES.DIR, which is in the EXERCISE:CH02 (EXERCISE\CHO2) folder on the CD-ROM.

On the CD-ROM

You'll learn how to import images later in this chapter. For now, you can use the TILES.DIR movie in the following steps. This movie already includes several imported graphics (based on 16×32a.pct, 16×32b.pct, 64×32a.pct, 64×32b.pct, 64×32c.pct, and 64×32d.pct). The entire file is on the companion CD-ROM in the EXERCISE:CH02 (EXERCISE\CH02) folder.

3. Select one of the imported images in the Cast window, and open the Paint window. Click the Pattern button in the Tools palette. This brings up a pop-up palette of all the patterns, as well as two other selections: Pattern Settings and Tile Settings, as shown in Figure 2-7.
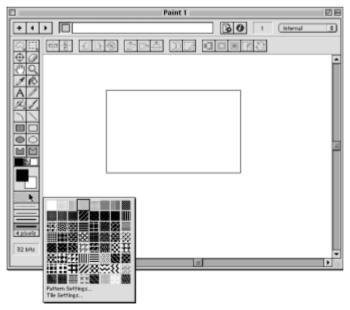

Figure 2-7: The Pattern and Tile settings palette

4. Choose Tile Settings. The Tile Settings dialog box appears (see Figure 2-8).

Figure 2-8: Choose settings for a tile from the Tile Settings palette.

5. In the Tile Settings dialog box, you can select Cast Member or Built-in as the source of the image to tile. Choose Cast Member to use the graphic you just imported. Click the left and right arrows to step through all the graphics to find the one you want.

6. Set the width and height of the boundary box by clicking the drop-down list and choosing any one of the values (16, 32, 64, or 128). The boundary box rectangle used for selecting the tile changes size to match those dimensions.

7. You can also drag the bounding rectangle in the left panel of the Tile Settings dialog box around the graphic. This can be used to select different portions of the graphic to be used as your tile. After you have selected the tile or the area of the graphic that you want to use as a tile, click OK.

8. After you've created the tile, you can select it from the pattern palette and paint with it, using the Paint Brush or Fill tool.

9. After you've created a new tile, be sure to click the New Cast Member button in the Paint window before using the pattern. Otherwise, you'll edit the graphic upon which your tile is based, rather than create a new cast member using the pattern.

Tip

Building effective tiles takes some practice, but the results are worth it. If you have chosen an icon to repeat as a tile, the smaller sizes (16 or 32 pixels) work out best as the tile size. On the other hand, if you are trying for the illusion of a continuous field (such as water, grass, or a rocky beach), then make your tile as large as possible because the eye is remarkably adept at seeing patterns in graphics.

Caution You can edit any of the eight tiles shown at the top of the Tile Settings dialog box. To reset a swatch that you've changed, select the swatch and then click the Built-in radio button. This returns the swatch to Director's built-in pattern.

Line widths

Below the Pattern button are the line-width indicators. These work in conjunction with the Rectangle, Oval, and Polygon tools, regular and filled, to set the border width of these shapes. The first button, showing a dotted line, is a little deceptive — rather than a dotted line, it actually indicates that no line will be drawn. (There's no easy way to draw a dotted line, unfortunately.) The next four line-width buttons draw lines 1, 2, 3, and 4 pixels wide, respectively. If you need a border of a different width than the widths shown, double-click the button for 4 pixels to bring up the Paint Preferences dialog box, and change the width with the appropriate slider.

Color depth indicator

The *color depth* (the number of colors that can be displayed within a given graphic) indicator tells you the current color depth of the graphic you are creating or editing. Double-clicking in the color depth box brings up the Transform Bitmap dialog box, enabling you to change the color depth, remap the graphic to a new palette, and modify the size of the graphic. Transforming bitmaps is covered in detail later in this chapter.

Painting with light and shadow: the ink effects

One of the things we like about computer graphics is that the definition of computer paint is so . . . well . . . fluid. Director has dozens of different paints, some for making washes or blends, some for painting opaque layers on top of other colors, and a few that paint with the colors of the previous cast member or paint only the lighter of two colors.

In Director (as with most "paint" programs), the inks are essentially miniprograms that instruct the current brush on how to interact with the color directly underneath the brush in the Paint window. Normal paint, for example, will just cover the image with the foreground color and the applied pattern. Transparent ink, on the other hand, will let the background of a pattern or text show through.

The ink effects list is placed (rather awkwardly) at the bottom-left of the Paint window frame; unfortunately, this corner is usually difficult to access on smaller screens. The available ink effects change depending on which tool is currently selected. The Paint Brush, for example, has the full complement of effects, whereas the Pencil is much more limited.

Tip

You can switch among several different brushes. In addition to changes in shape and size, each brush (as well as each Tools palette tool) retains its own ink settings. The safest procedure to get the desired ink effect is to always select the tool that you want to use first, and then check the ink effects setting, changing it if necessary.

Table 2-2 lists all the possible ink effects, and the tools with which they work.

Table 2-2
Paint Window Ink Effects

Ink Name	Effect	Available Using Following Tools
Normal	This is the default ink. It paints the current forecolor on top of the background, using the currently active pattern.	All tools
Transparent	Makes the backcolor of a selection transparent. Especially useful for working with text for buttons.	Text, Air Brush, Paint Brush, Arc, Line, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Reverse	Converts a white or colored image to black, and black to white. A useful ink for making masks.	Text, Air Brush, Paint Brush, Arc, Line, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Ghost	Draws using the background color.	Text, Air Brush, Paint Brush, Arc, Line, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Gradient	Creates a smooth transition from one color to another. You can set the properties of the gradient by clicking the gradient bridge between the gradient start and end colors.	Paint Bucket, Text, Paint Brush, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Reveal	Reveals the contents of the previous graphical cast member.	Paint Bucket, Text, Air Brush, Paint Brush, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Cycle	Each time the brush moves, the color changes to the next color in the palette.	Air Brush, Paint Brush

Ink Name	Effect	*Available Using Following Tools*
Switch	Uses the gradient target color (the color at the right end of the gradient bar) as the replacement color whenever the brush passes over pixels that contain the forecolor. This is one way of cutting down on the halo of near-white colors resulting from images produced in other graphics programs that have *antialiased* edges against a light-colored background. This works the same way as the Switch color button located in the Special effects toolbar, which is explained later in this chapter.	Paint Brush
Blend	Blends the current foreground color with what's already been painted on the screen. Choose File ➪ Preferences ➪ Paint to set the blend value between 0% and 100%.	Text, Air Brush, Paint Brush, Arc, Line, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Darkest	Compares the foreground color with the pixels in the background, and then chooses the darker of the two colors to paint with.	Text, Air Brush, Paint Brush, Arc, Line, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Lightest	Compares the foreground color with the pixels in the background, and then chooses the lighter of the two colors to paint with.	Text, Air Brush, Paint Brush, Arc, Line, Filled Rectangle, Rectangle, Filled Ellipse, Ellipse, Filled Polygon, Polygon
Darken	Ignores the foreground color, darkening the background image at the rate shown in the paint dialog box (choose File ➪ Preferences ➪ Paint).	Paint Brush
Lighten	Ignores the foreground color, lightening the background image at the rate shown in the paint dialog box (choose File ➪ Preferences ➪ Paint).	Paint Brush
Smooth	Smoothes or blurs the pixels of the background image, ignoring the foreground.	Paint Brush

Continued

	Table 2-2 *(continued)*	
Ink Name	**Effect**	**Available Using Following Tools**
Smear	Pushes around the pixels of the background image, ignoring the forecolor. The effect is much like the smearing you get when finger painting.	Paint Brush
Spread	Combines smoothing and smearing into one operation.	Paint Brush
Clipboard	Used to turn a brush into a "stamp." Select a region of the graphic with the Marquee or Lasso tool, and save it to the Clipboard (choose Edit ⇨ Copy or Edit ⇨ Cut). After you change the ink selector to this effect, you can use the saved image like a brush. This is similar to the "Rubber Stamp" tool found in graphics programs such as Photoshop.	Paint Brush

Using Reveal and other special inks

Animation is the process of creating the illusion of movement through (mostly) very tiny adjustments in position. Especially with computer animation, it's often more useful to retain most of an image and just draw what's changed from one frame to the next. This is where the Reveal ink comes in handy.

Reveal uses the previous bitmap cast member in the cast library (that is, the next lower numbered bitmap cast member) as its "paint." When you set the ink to Reveal and then paint with that, whatever is "under" the current graphic is added to the picture. For example, a horse walking at a canter is, for the most part, static above the legs. With Reveal ink, you can paint the portion of the horse that doesn't move, and then change the position of the legs afterward. This technique works especially well with the onion skinning feature of Director, which enables you to see the previous layer as a transparent image beneath the current layer. (See Chapter 3 for more details about how to use the Onion Skin feature and Reveal ink.)

The Clipboard ink is another powerful effect, although it comes with a few significant limitations. You can select a portion of a graphic by using either the Marquee or the Lasso tool, and copy the selection to the Clipboard, either by pressing Command+C (Ctrl+C) or by choosing Edit ⇨ Copy. Choose the Clipboard ink (with the Paint Brush tool only), and the item you selected will then be drawn as a "stamp" — each time you click in the Paint window, a copy of the image is rendered there.

Tip
You can copy any graphic or any portion of a graphic to the Clipboard by using an image-editing program, such as Photoshop or PaintShop Pro. Then use the Clipboard ink to stamp the image one or more times onto the Paint window canvas—you are not limited to copying and stamping images only from within Director.

The one major problem with the Clipboard ink is that you cannot make the ink transparent. That is, you cannot create an irregularly shaped "stamp," only a rectangular one. If you need the latter capability, you should use the Lasso tool and the Paste feature instead.

Cycle ink is perhaps one of the most complicated inks to use successfully. After you take the time to understand this ink, however, you can use it to create some eye-catching special effects. The trick to using Cycle is to create a gradient in the gradient bridge. The foreground color should be the first color in the cycle, and the gradient target (the right end of the gradient bridge) should be the last color in the cycle. Then, each time you hold down the mouse button and move the mouse over the picture, the next color in the color palette is drawn by the brush, and then the next, until you come to the last color. The number of colors that exist in the selected gradient determines the number of cycles. When the drawn color reaches the last color in the cycle, it either jumps back to the first color or to the preceding color in the palette, depending on which option you have set in the Paint Preferences dialog box.

Note
Cycle and Gradient inks may seem similar until you actually use them. Gradient ink blends smoothly from the foreground color (shown on the gradient bridge) to the target gradient color. On the other hand, with Cycle ink selected, the Paint Brush tool cycles through all colors in the current color palette from the current foreground color to the target gradient color. On a Windows system, if the foreground color is set to black and the target gradient color is white, the cycle of colors goes through all 256 colors in the color palette—so a slow, long brush stroke will include more colors than the rainbow!

On its own, Cycle ink is good for creating "pipes"—in which overlapping colors seem to move closer to the viewer, providing a quick-and-dirty solution to making something "pop out of the screen." In addition, you can actually create animation effects (in some situations) by turning on color cycling, as discussed in Chapter 8. Cycling through a limited range in the color palette, makes your cycled colors seem to pulse and writhe eerily.

Basic Painting Techniques

Having all these tools at hand is a prerequisite for painting a picture, but you must know some basic painting techniques, because no tool in the world is going to create your artwork for you. Some people can sit at a computer with a mouse (or drawing tablet) and drawing program and create from scratch. Others need to draw their original concepts on paper and then either scan in the images or use them as references for new work.

Note   Director doesn't provide direct support for scanners. However, you can use other paint programs or scanner utilities to scan your sketches and then import them into Director as files. More about this later, in the "Importing Images" section.

Drawing a graphic

The following exercises show some techniques for creating artwork within Director. Although the tools that Director offers in the Paint window aren't as versatile as image-editing programs such as Adobe Photoshop, they do offer some advantages for creating artwork for animation, especially in conjunction with the program's onion skin techniques.

Creating an Outline Drawing

1. Before you begin, it might be worth sketching out the concept on paper. This will give you a clearer idea of what you want to work with.

On the   For practice drawing images in this chapter, you can use the PAINTING.DIR movie
CD-ROM   on the CD-ROM in the EXERCISE:CH02 (EXERCISE\CH02) folder. This file includes several drawings that you can copy.

Tip   Another way to go about this is to scan in a drawn image, and then use the onion skin technique (discussed in Chapter 3) to view a ghost of the image.

2. Create or activate a bitmap cast member by doing one of the following things:

   a. To create a new bitmap cast member, select an empty cast member in the current cast library, and then press Command+5 (Ctrl+5) to launch the Paint window.

   b. Edit an existing cast member by selecting it in the Cast window and pressing Command+5 (Ctrl+5), or by double-clicking the cast member's icon in the Cast window or the Score.

   c. If you are editing an existing bitmap, you can create a new one by clicking the New Cast Member (+) button in the Paint window's main toolbar to create an empty cast member.

3. In the Cast Member Name box at the top of the Paint window, enter a descriptive name for the graphic. This makes the cast member much easier to use with Lingo commands, and it also makes it easier to distinguish between cast members when you're looking at them from the Cast window.

4. Select your outline color (most often, this will be black) as the foreground color. To set a foreground color, click and hold the foreground color square (the topmost of the two overlapping squares) until the color palette pops up. Then click the sketching color you want.

Tip

In choosing an outline color, it's often a good idea to try to closely match the final colors you anticipate for your backgrounds. Dark blues, grays, dark greens, or greenish browns work well because they have a neutral appearance against most colors

5. Click the Pencil tool. This gives you a 1-pixel-wide line to draw with. Normally, the Pencil draws in the foreground color. If the first pixel that the pencil encounters is the shade of the foreground color, however, then Director automatically swaps to using the background color. Keep this in mind as a quick way to erase simple mistakes without having to change tools.

6. Check for broken outlines by zooming in on the image. At this stage, it's best to work with outlines only; leave solid shading to later in the process. But in preparation for future shading, you'll want to be extremely careful to make sure that all lines enclosing the regions of your work are unbroken. Even one pixel missing from a line will cause any paint that you add later to spill (often referred to as *leak*) through to the outside.

7. If you need a sense of scale, you can display the rulers set in pixels by choosing View ⇨ Rulers or by pressing Command+Shift+Option+R (Ctrl+Shift+Alt+R). Change the default ruler measurement setting by clicking the word Pixel at the conjunction of the horizontal and vertical rulers (see Figure 2-9). This indicator will cycle through Inches (in) and Centimeters (cm) before returning to Pixels.

Note

You can also reset the origin (zero) point of the horizontal and vertical rulers by clicking in the horizontal or vertical ruler and dragging the line to the point in the Paint window that you want to be the new origin point of the ruler.
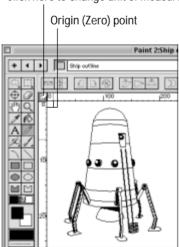
Click here to change unit of measure

Origin (Zero) point

Figure 2-9: You can set the rulers to Pixels, Inches, or Centimeters, and adjust the origin (zero) point of each ruler.

8. After you have the basic figure drawn (see Figure 2-10 for an example), save your movie by choosing File ➪ Save (Command+S or Ctrl+S).
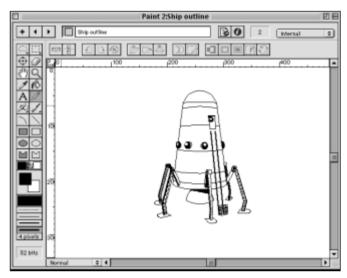

Figure 2-10: Before you begin painting your figure, make sure its outline is unbroken.

9. In addition to taking the precaution of saving your movie at this early stage, you may also want to keep a duplicate of the sketch. Chances are good that you'll change your mind at least once about the direction in which your work is going. Or you might need a basic template for future images. Press Command+D (Ctrl+D) to create a duplicate of the cast member in the next open cast member slot.

10. Note that the cast member number in the title of the Paint window changes. You are now working on the duplicate image, not the original sketch. It's a good idea to change the name of the duplicate as well.

This preliminary drawing will provide a fundamental canvas for you to work with in the next few exercises. It gives you boundaries and regions to fill with colors and gradients. You'll be able to flesh out your animation more quickly than if you had introduced color from the outset.

Painting a graphic

After your "sketch" is done, you can start painting. In general, computer painting tends to follow its analog counterpart: You start by painting in the broadest strokes and work your way toward the details. Again, a little planning will go a long way. It's a very good idea to paint on a duplicate of your original cast member. That way, you can start over or try several different techniques.

Painting Your Figure

1. Make sure the movie that you worked on in the preceding exercise is open. Alternatively, you can use a cast member from the PAINTING.DIR movie on the CD-ROM in the EXERCISE:CH02 (EXERCISE\CH02) folder.

2. Click the Paint Bucket tool.

3. Display the color palette by clicking the foreground color swatch. The palette represents the range of colors that you can use for your bitmaps. (Chapter 8 takes you through an in-depth study of working with colors and the color palette.)

Tip

You may want to modify the 16 "favorite color" selections (explained earlier in this chapter) that appear in the top of the color palette so that they are the colors that you will use for the objects in your project. With this modification, multiple pieces of artwork featuring the same character or object won't have colors changing unexpectedly from one frame to the next.

4. Click within the region you want filled with color (see Figure 2-11). Be careful — before you click the mouse, make sure the cursor (the end of the drip coming out of the bucket) is not over part of the outline. If you do accidentally fill the outline, or if your graphic had a break in the outline that causes the fill to flood the screen, press Command+Z (Ctrl+Z) to undo the color fill and start over.
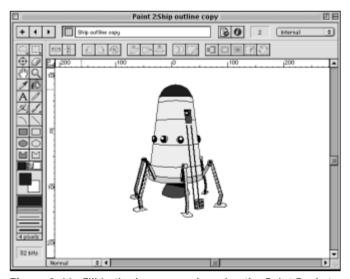

Figure 2-11: Fill in the large areas by using the Paint Bucket tool, which enables you to work quickly and provide uniformity between images.

Caution   When filling an area with a solid color, be sure the pattern indicator in the Tools palette is set to solid black.

If you want to modify more than one cast member in the Paint window, you can move between cast members without having to close the Paint window. Click the Previous or Next Cast Member buttons at the top of the Paint window.

5. After you have filled the object (or objects) with the selected color, you can either select another color to fill another object or you can close the Paint window. Your work will be immediately visible in the cast menu and on the Stage, if the cast member you were modifying has been placed on the Stage.

Now, for some texture, introduce color gradients.

Using Gradients

1. Double-click the Paint Bucket tool to bring up the Gradient Settings dialog box (see Figure 2-12). Here, you will choose the various settings for a gradient.
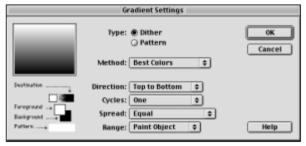

Figure 2-12: Setting up a gradient using the Gradient Settings dialog box

2. Click the Foreground swatch to choose the Foreground color. This is the starting color for the gradient.

3. Click the Destination swatch to choose the Destination color, which is the color into which the forecolor will blend.

4. Click the Direction field and choose the particular form or "flow" that you want the gradient to use. You can choose one of the preset directions (Top to Bottom, Left to Right, and so on). Alternatively, choose the Directional option; this enables you to draw a "rubber-band" line indicating the direction and length of the gradient fill. Click OK to close the dialog box.

5. Next, select one of the Paint window's tools that can use the gradient (Paint Brush, Paint Bucket, Filled Ellipse, Filled Polygon, or Filled Rectangle tool).

6. In the Ink pop-up menu, select the Gradient ink option. (As explained earlier in the chapter, the Ink pop-up menu is at the bottom-left of the Paint window.)

7. Use the selected tool to draw (or fill, if using the Paint Bucket tool) an object on the Paint window canvas.

Take a look at the other settings in the Gradient Settings dialog box:

◆ Unless you're planning on using color cycling, you'll probably want to keep the Method set to Best Colors, because this provides the smoothest gradient.

◆ The Cycles setting enables you to create multiple cycles of a gradient. Creating a gradient with four cycles, from dark maroon to rich red, gives the illusion of hanging drapery.

◆ You can control the progression of the colors' sliding into one another by changing the Spread setting to More Foreground, More Middle, or More Destination. This setting, in turn, controls the "tightness" of the gradient at boundary points.

Tip   For some really wild effects, try changing the Pattern setting in the Gradient Settings dialog box. This is an inexpensive way to get checkered gradients, scales, rivers of parallel lines, and so forth.

Even with color gradients, the figures you have now are flat. This may very well serve your purposes if you're looking for a cartoonlike effect. More realistic imagery, however, requires a certain amount of tweaking, which you can accomplish with the Paint window's Brush tool. The brush actually provides five distinct brushes, each of which can be customized to a different size, shape, and painting effect.

Choosing a Brush

1. To paint with the currently selected brush, simply click the Brush tool and start painting the graphic. The area of the graphic is painted with the foreground color in the size and shape of the selected brush.

2. Try some of the other brushes. Click and hold the Brush tool icon until the list of five brushes pops up, and then click the brush you want to use.

3. You can also modify the characteristics of the brushes. In the Brush tool pop-up, choose a brush to customize, and then double-click the Brush tool again. Or choose Settings from the Brush tool pop-up; this brings up the Brush Settings dialog box (see Figure 2-13).

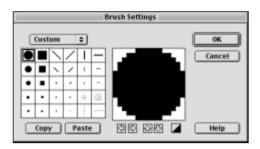4. Click any one of the 30 standard brush shapes on the left of the dialog box. Try one or two now.

Figure 2-13: Use the Brush Settings dialog box to select a brush shape or to create your own.

Tip

Most of the time, you'll probably want to use the circular or square brush shapes for painting, but some of the others can produce some interesting and amusing results. You can use the angled brushes, for instance, for calligraphy if you move the brush very slowly to avoid breaking up the lines. The dotted brushes in the lower right portion of the palette make for interesting nonuniform textures, especially when used in conjunction with patterns (discussed earlier in this chapter).

Custom brushes

It's possible to create a custom brush by modifying one of Director's standard brushes to create a new brush. This technique can be useful, for example, if you want to paint a brick pattern.

Creating a Custom Brush from Scratch

1. Open the Paint window either by selecting the Paint Window button on the main toolbar or by pressing Command+5 (Ctrl+5).

2. Double-click the Brush tool to open the Brush Settings dialog box. Open the drop-down list at the top and select Custom.

3. When you select Custom, all the standard brushes shown in the left pane are available for editing. Select one of the current brushes that you want to serve as the starting point for your custom brush. An enlarged version of the currently selected brush appears in the right pane of the dialog box.

4. When you click in the right pane, pixels in your custom brush are turned ON and OFF. (Clicking on a black pixel turns it white, so it won't paint when you use the custom brush. Clicking on a white pixel turns it black, so it will paint.) If you click the Copy button, it will copy the pixels of the current brush to the Clipboard; Paste will replace the brush with the one on the Clipboard.

5. You can also navigate around the custom brush by using the Scroll Left/ Right and Scroll Up/Down buttons (see Figure 2-14).
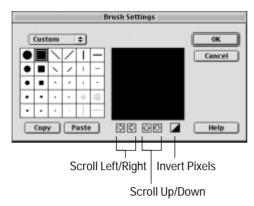
Figure 2-14: Using the arrow buttons at the bottom of the Brush Settings dialog box, you can isolate a selection to modify when building your custom brush.

Scroll Left/Right | Invert Pixels

Scroll Up/Down

6. You can select an area and then completely invert that section of the custom brush (from black to white or vice versa) by using the Invert Pixels button (see Figure 2-14). Try this to see how it works.

7. Now, use these tools to change the shape of your custom brush to approximate the image in Figure 2-15. After you have the brush shaped the way you want it, click OK. The brush that you created appears as a cast member in the first available cast window slot.
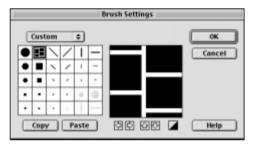

Figure 2-15: A completed custom brush

8. As you move your cursor around on the Paint window, it has the shape of the brush you just created and paints strokes to match its shape.

9. Don't get "stuck" using only your custom brush. You can choose another brush shape. Simply click and hold the Brush tool and select a brush from Brush 1 through Brush 5. (You can also reassign the brush shape for any of these brushes. Just select it, double-click the Brush tool, choose Standard in the list box at the top of the dialog box, and assign a new brush shape by selecting one of the 30 standard shapes shown in Figure 2-13. Then click OK.)

Note   The Paint window in Director supports pressure-sensitive digitizer tablets from man-
ufacturers such as Wacom. The more pressure you apply to the tip of the digitizer,
the bolder the stroke. Lessen the pressure, and you get a lighter stroke. This same
effect is simulated when using a mouse. The more slowly you move the mouse, the
closer together the points are placed from the brush, and vice versa. It may take
some practice and more than a little patience to get the hang of this feature.

Using the paint (ink) effects

Each brush in the Brush tool's list retains not only its own shape information, but
also the ink style that you select for that brush. After you've chosen a brush, you
can set this ink style by using the Ink pop-up list at the lower left of the Paint win-
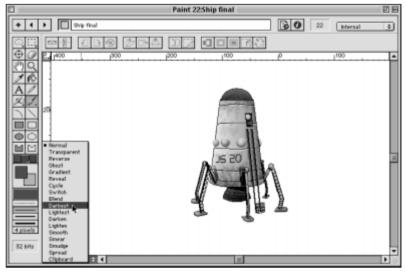dow (see Figure 2-16). The ink effects were listed in Table 2-2.

Figure 2-16: The Ink pop-up list provides a variety of painting (ink) effects.

The paint styles provide a wide range of effects. For example, you can retain the
black lines of your graphic by selecting the color that you want to paint with and the
ink effect called Darken. This paints the area you're working in with a 10 percent sat-
uration of black. Every time you click and drag the brush over the area that has a
Darken ink effect, it darkens in additional increments of 10 percent per stroke. The
Lighten ink does the same thing, lightening in increments of 10 percent per stroke.

Note The current settings of the foreground, background, and gradient destination colors have no effect on the results of using the Darken and Lighten inks. Using these inks decreases and increases a color's brightness, respectively.

Caution You can use the Smooth, Smear, and Smudge effects to soften lines in your drawing. But watch out—unless your graphic is going to be playing against a white background, you should avoid smearing the outer edges. This prevents problems with jagged edges (known as *aliasing*) and stray pixels (which give a halo effect) appearing around the edge of the graphic.

Techniques for selecting the graphic

With electronic media, you have a number of advantages over the traditional paints and pencils and ink-soaked pens. Perhaps the most significant innovation to come from the world of pixels is the concept of the selection. A *selection* is a piece of an image (or, for that matter, a piece of just about any kind of file) that you can move from one place to another on the desktop, copy multiple times, distort out of all recognition, flip, rotate, and otherwise transform. Selections play an integral part in animations, especially because animations, by their very nature, are subtle transformations from one state to another.

Director has two types of selection tools, the Lasso and the Marquee. You use the Lasso for a more free-form style of selection, whereas the Marquee constrains your selection to a rectangular shape. In addition to the type of tool, four options define the way the selection will be made:

- ❖ **Shrink:** Causes the selection to shrink, containing only the graphic elements chosen
- ❖ **No Shrink:** Includes all pixels selected
- ❖ **Lasso:** Tightens the Marquee around the graphic, like the Lasso tool, and selects the pixels according to the color of the pixel beneath the crosshair when you start to drag
- ❖ **See Thru Lasso:** All pixels that are the same color as the first chosen become transparent

Tip Use the See Thru Lasso option when you need to select text that will be pasted onto another color because the holes inside letters like "O" and "A" will be transparent.

First, you should to learn how to zoom in closer to get a better look at what you need to select. Quite frequently, you will need to get a closer look at a graphic, especially if your screen is set to 1024×768 or higher. The Magnifying Glass in the Tools palette helps you do just that.

Zooming In and Out

1. Click the Magnifying Glass tool on the Tools palette and then click the image on the Paint window canvas. The point where you click becomes the center of a magnified view of the image, with the image at its normal size displayed in a window at the upper right (see Figure 2-17). By clicking repeatedly with the Magnifying Glass tool on the canvas, you can go to an 8:1 scale.

Tip   You can also choose View ⇨ Zoom to zoom quickly to 100%, 200%, 400%, or 800% of the original image size.
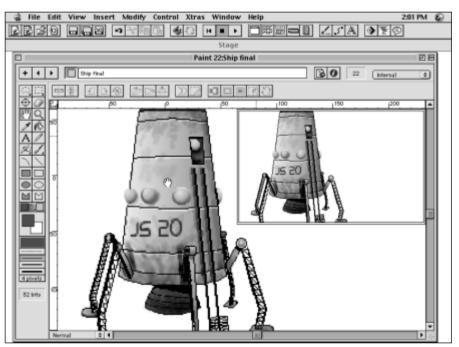

Figure 2-17: Zoom in and out with the Magnifying Glass tool, and use the Hand tool to adjust your viewpoint of the image in the Paint window.

2. You'll likely want to move around in the magnified view of your image, to make selections, apply paint, and so forth. Use the Hand tool for this. Try it now: Activate the Hand tool by holding down the spacebar. When the Hand icon appears, drag the mouse to move the "canvas" right, left, up, or down to get a better look at the portion of the image you're working on.

3. You can return to the normal image size by clicking with the Hand tool on the floating inset window in the upper-right corner of the Paint window.

4. When you've finished experimenting, set your onscreen image to the view that you want to use for continuing these exercises.

If your hand is steady, the Lasso is easily the most versatile selection tool. With it, you can draw a path around or within a graphic, and everything within the path becomes the selection. The area thus selected will have a marquee that conforms with the path you drew around the area. The Lasso actually has three possible states: No Shrink, Shrink, and See Thru Lasso.

Selecting with the Lasso

1. Try the Lasso tool's No Shrink option first. Click and hold the mouse on the Lasso tool to display the pop-up list, and select No Shrink. Then draw the selection path; it will correspond exactly to the shape you create. If you don't return to the starting point in your path, the rest of the selection will be a straight line between the starting and ending points.

2. Try the Shrink option. This is useful for "lazy selection." You draw a selection path around an object with the Lasso, and the selection then shrinks in to select the smallest possible boundary around the image.

3. Next, try See Thru Lasso. It works the same way as the Shrink option, but it also cuts out holes in the image where the background color is used. This option is especially useful for selecting text, which usually has "enclosed bowls" and other shapes that can retain background color when you don't want the background color.

Tip

Here's another helpful technique that you can use with the Lasso. With the Lasso tool selected, hold down the Option (Alt) key, click one point, and then click a second point. The selection expands to include the line between the two points. To complete the selection, you need to click the starting point or double-click at the last point, to join the start and end points. In this way, you can quickly capture parts of an object that have straight edges but which aren't rectangular.

Next, practice with the Marquee tool. You can use it for selecting rectangular regions, and it has some additional useful functionality beyond that. This tool offers four options: No Shrink, Shrink, Lasso, and See Thru Lasso.

Selecting with the Marquee Tool

1. Like the Lasso tool, you display the Marquee tool's pop-up menu by clicking and holding the tool button. Do this now, and select the No Shrink option. Drag to select, and you'll find that it creates a rectangular selection that is exactly the size that you drag.

2. Next, try the Shrink option. When you work with this option, it shrinks down to the smallest bounding box that will encompass the entire image.

3. Before you stop experimenting with the Marquee tool, try the Marquee Lasso See Thru option. It works exactly as it does for the Lasso tool, wrapping to fit the boundaries of the image as tightly as possible. The only real difference is that the Marquee tool's initial shape is rectangular.

Tip
Here's a handy trick when you need to transform a number of graphics. Double-clicking the Marquee tool automatically draws a Shrink Marquee boundary around the entire graphic in the Paint window. (Be sure you do a fast double-click, or Director will think you want the Marquee options pop-up list instead — which can throw off your rhythm when you're trying to warp 39 objects in the same movie!)

Caution
The Marquee tool's See Thru Lasso option really switches to the Lasso tool in See Thru mode. It is an excellent tool for grabbing text.

Flipping, rotating, and applying effects to the graphic

In the area directly above the canvas are tools that enable you to flip, distort, rotate, and apply special effects to a graphic (see Figure 2-18).
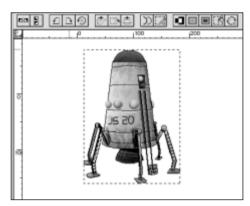

Figure 2-18: The tools above the canvas rotate, flip, distort, and apply special effects to a selection.

Some types of selection do not work for certain tools. Table 2-3 lists each of the operations, how to perform them, and what selection technique works for each tool.

Table 2-3
The Flip, Rotate, Distort, and Special Effects Tools

Tool Icon	Tool Name	Tool Operation	Type of Selection
	Flip Horizontal	Flips the selection horizontally.	Marquee set to Shrink or to No Shrink
	Flip Vertical	Flips the selection vertically.	Marquee set to Shrink or to No Shrink
	Rotate Left	Rotates the selection 90 degreeso the left.	Marquee set to Shrink or to No Shrink
	Rotate Right	Rotates the selection 90 degreeso the right.	Marquee set to Shrink or to No Shrink
	Free Rotate	Drag any of the handles that appear in the corners of the selection to rotate any amount.	Marquee set to Shrink or to No Shrink
	Skew	Dragging either of the upper handles of the selection skews the image to the left or right from the top. Dragging either of the lower handles skews the image to the left or right from the bottom.	Marquee set to Shrink or to No Shrink
	Warp	Drag any of the handles that appear at the corners of the section to a new position.	Marquee set to Shrink or to No Shrink
	Perspective	Drag any of the handles that appear at the corners of the section to the left or right.	Marquee set to Shrink or to No Shrink
	Smooth	Smoothes (antialiases) the selection.	Marquee and Lasso at all settings
	Trace Edges	Creates a 2-pixel-wide outline of the selection. The colors of the outline are based on the colors that appear at the edges of the selection.	Marquee set to Shrink or to No Shrink
	Invert	Inverts the colors of the selection to their complementary (opposite) colors.	Marquee and Lasso at all settings

Continued

Tool Icon	Tool Name	Tool Operation	Type of Selection
		Table 2-3 *(continued)*	
	Lighten	Makes the colors within the selection lighter. This effect is only visible if it's applied to an 8-bit cast member or is used after the Darken filter was applied.	Marquee and Lasso at all settings
	Darken	Makes the colors within the selection darker.	Marquee and Lasso at all settings
	Fill	Fills the selected area with the current foreground color.	Marquee and Lasso at all settings
	Switch Color	Changes all of the pixels in the selection that contain the foreground color to the current destination color.	Marquee and Lasso at all settings

Caution   Although these effects can be very useful, they can also totally destroy a graphic that you've just spent a considerable amount of time creating. It's always a good idea to perform any of these operations on a duplicate version of the original graphic.

Moving, copying, cutting, and pasting selections

To move a selection, you have a couple of options. If you just drag it, then the region behind it will become white. On the other hand, if you hold down the Option (Alt) key while dragging the selection, Director automatically makes a copy of the selection and moves the copy. The original is unchanged.

If you cut or copy a selected region to the Clipboard, Director retains positional information with the copied graphic. In short, you can create a new cast member with the New Cast Member (+) button, and then you can paste the graphic into that new cast member. It will be exactly aligned with the previous cast member.

Tip   This feature is also very useful for recovering part of a graphic that you have made a mistake on that you are not able to recover with the Undo command. If you've taken our advice and are working on a duplicate cast member, just go to the original one, select the area that you want to recover, and choose Copy. Then advance to the duplicate cast member and choose Paste. Presto! The mistake is reversed.

Floating and pasted selections are sensitive to the Paint characteristics. Typically, the Normal paint is the active one, and the pasted image will completely cover the background. However, you can change the paint (ink) characteristic to Transparent, Blend, or any other of the effects in the pop-up list in the lower-left portion of the Paint window.

Tip
If you pick up and move a rectangle of text that's on a white background, you can select the Transparent ink to let anything behind the background of the text (the white area that is now made transparent) show through. Blend will make the selection translucent, showing a percentage of the background behind it. You can set the percent showing by altering the Blend property in your Paint preferences (choose File ⇨ Preferences ⇨ Paint). You can also access the Paint Window Preferences by double-clicking the Variable Line Width button.

Optimizing the Paint window

You probably already know how important it is to become familiar with your tools before you try to use them — especially before you attempt to create serious (or even comical) works in Director. The program's powerful tools have some idiosyncrasies that can wreck the best of intentions. However, after you *do* understand Director's features, using the following techniques in design and production can help make your graphics the best that they can be:

◆ Even if you are planning "painterly" graphics, you should start out with a line drawing. This serves several purposes: You can lay down broad swaths of paint, fills, or gradients without having to fiddle with painting individual pixels. You can make easy alterations to animated figures without losing quality. In addition, it helps prevent ghosting along the edges.

◆ When you work with a scanned image, you're probably better off tracing the image instead of using the scanned image itself. In this way, you can simplify the drawing down to a set of enclosed regions without having to worry about pale, but not white, pixels corrupting your work.

◆ Cartoons work best when your images have variation in their line widths, as is typical in comic books. Let the weight of the line suggest the shading. This technique gives flat color images more depth than they would have with uniform line weights, and it cuts down on the amount of shading you need to do in the paint phase.

◆ Try to create the graphic at the actual size that you want it to be in your movie. Reducing or enlarging a bitmap graphic often results in poor image quality.

◆ Early on, establish a working color palette that specifies the colors to be used by major portions of the image. Modifying the 16 favorite color swatches located in the top of the color palette is one of the best ways to do this.

✦ If your final images are going to be 256-color (8-bit) graphics, then you should set your monitor to 8-bit color when you paint these graphics. At higher resolution, Director introduces colors that fall outside your current palette. (There's more on color coming up in this chapter as well as in Chapters 3 and 8.)

✦ Beware of adding too much detail too early. After the underdrawing is done, add the fill colors, the paint colors for the larger brushes, and gradients — before you add fine detail. This rule becomes especially important when you have a number of nearly identical cast members, as is usually the case with animation.

✦ Duplicate often. There's nothing more frustrating than destroying a graphic that you have spent hours creating, perhaps by applying a filter multiple times or painting with the wrong brush. Before performing an operation or technique that you are not sure about, create a duplicate of the graphic.

✦ Keep an eye out for places where you can add patterns. Patterns can simulate colors that aren't in your palette, but you also can use them to add texture without the cost of painting in the texture by hand.

Director's Paint window works best for creating graphics that have flat colors and strongly delineated boundaries. If you are in need of more realistic images, use a high-end image-editing program such as Photoshop or Painter, scanned images, or a 3D graphic image instead, and then import the images into Director. It's often quicker, easier, and far more effective. You will also often get more realistic looking images with these techniques. The "Importing Images" section later in this chapter introduces you to the process of importing images for use in Director.

Playing with Fireworks

Many of you are probably aware of Macromedia's image-editing and -creation application named Fireworks. What you may *not* have realized is that Fireworks, aside from being a great application for creating and processing graphics for the Web, is also a very valuable tool for creating graphics that you can use in your Director movies. Director now includes a feature in the Properties window that enables you to reduce a graphic's file size by using Fireworks' powerful image-optimizing capabilities. This feature is covered in detail in Chapter 8. However, there are many more roles that Fireworks can play in creating and processing graphics for use in your Director movies.

Fireworks' native file format — called PNG — is one of the best file formats for graphics that are used in Director. Its alpha channel (transparency) is far superior to the alpha channel created by Adobe Photoshop; in fact, we use Fireworks to process all of our Photoshop graphics that will use an alpha channel before importing them into Director. One more advantage to the PNG format is that the file compression for 32-bit images is better than most of the other file types, such as PICT, that support this bit depth.

Tip

Macromedia has made available a new Xtra that enables Fireworks layers, slices, and behaviors to be imported into Director. The Fireworks Import Xtra can be download from the company Web site at www.macromedia.com/software/downloads/. The Xtra comes with very detailed instructions on how to install and use this feature in both Fireworks and Director.

Working in the Vector Shape Window

Graphics created in the Vector Shape window tend to look smoother and simpler than bitmap graphics, but you can resize them without losing any of their original quality. Another very exciting feature of vector graphics is that they can be modified — even created out of thin air while the movie is playing — using Lingo, Director's scripting language. Another advantage to vector graphics is that they can be antialiased without the halo problems that bitmaps often have.

You can create two types of vector graphics in the Vector Shape window: free-form Bézier shapes, and basic geometric shapes, such as rectangles and ellipses.

You can open the Vector Shape window, shown in Figure 2-19, at any time by choosing Window ➪ Vector Shape Window or by pressing Command+Shift+V (Ctrl+Shift+V). If no vector cast member is selected, then the window opens with a blank canvas. If a vector cast member is selected when the window is opened, the graphic is visible, and the points that can be edited are displayed in blue.
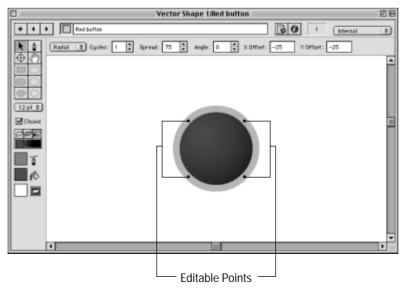

Editable Points

Figure 2-19: The points of the vector graphic that can be edited are highlighted in blue.

You use the tools shown in Figure 2-20, which appear on the left side of the Vector Shape window (refer to Figure 2-19), to create free-form (Bézier) and geometric shapes, such as circles and squares. The tools that control attributes such as fill and background color, fill style, line width, and color are also located in this section of the window.
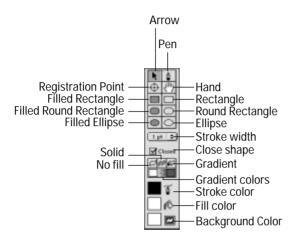

Arrow

Pen

Registration Point ——
Filled Rectangle ——
Filled Round Rectangle ——
Filled Ellipse ——

—— Hand
—— Rectangle
—— Round Rectangle
—— Ellipse
—— Stroke width

Solid ——
No fill ——

—— Close shape
—— Gradient
—— Gradient colors
—— Stroke color
—— Fill color
—— Background Color

Figure 2-20: Use the tools on the left side of the Vector Shape window to create shapes and modify their attributes.

Table 2-4 summarizes the function and keyboard shortcut for each tool.

	Table 2-4		
	The Vector Shape Window Tools		
Icon	*Tool Name*	*Vector Operation*	*Keyboard Shortcut*
	Arrow	Selects a point on the graphic. Dragging a bounding box around the graphics selects all the points.	0 (zero)
	Pen	Draws a series of points to create a Bézier shape.	6
	Registration Point	Sets the registration point of the graphic. Double-clicking automatically sets the registration point to the center of the graphic.	G

Icon	*Tool Name*	*Vector Operation*	*Keyboard Shortcut*
✋	Hand	Moves the canvas to adjust the view.	H
▣	Filled Rectangle	Creates a solid rectangle. Holding down the Shift key while drawing the shape constrains the shape to a square.	Shift+R
▭	Rectangle	Creates an outlined rectangle. Holding down the Shift key while drawing the shape constrains the shape to a square.	R
⬭	Filled Round Rectangle	Creates a solid, rounded-corner rectangle. Holding down the Shift key while drawing constrains the shape to a square.	Shift+P
▢	Round Rectangle	Creates an outlined, rounded rectangle. Holding down the Shift key while drawing constrains the shape to a square.	P
⬤	Filled Ellipse	Creates a solid ellipse. Holding down the Shift key while drawing constrains the shape to a circle.	Shift+O
◯	Ellipse	Creates an outlined ellipse. Holding down the Shift key while drawing constrains the shape to a circle.	O
1 pt ⬍	Stroke Width	Sets the stroke (outline) width of the graphic.	none
☑ Closed	Close Shape	Clicking the checkbox creates a closed shape when using the Pen tool.	none
◸	No Fill	Creates a shape that has no fill.	none
◿	Solid	Creates a shape that has a solid colored fill.	none
◿	Gradient	Creates a shape that has a gradient fill.	none
▭▨■	Gradient Colors	Sets the start and destination colors of a gradient.	none

Continued

Table 2-4 *(continued)*			
Icon	*Tool Name*	*Vector Operation*	*Keyboard Shortcut*
■ ⊤	Stroke Color	Sets the stroke (outline) color.	none
☐ ⊘	Fill Color	Sets the fill (solid) color.	none
☐ ⬀	Background Color	Sets the background color for the graphic.	none

The Pen tool functions much like its counterparts in programs such as Freehand and Photoshop. It enables you to draw free-form shapes by creating a line — usually referred to as a *path* — that's composed of a series of points that the path passes through. These points can be either corner or curve points. If a path containing four points is composed entirely of corner points, it will appear as a rectangle. If the same path is composed entirely of curve points, it will appear as an oval.

New Feature   In Director 8, it is possible to create more than one path in the Vector Shape window. Unlike other vector drawing programs, such as Freehand, multiple paths within a vector cast member all have to be of the same type—open or closed. They must also share the same properties, such as fill stroke color and gradient.

Drawing Bézier Shapes with the Pen Tool

1. Press Command+Shift+V (Ctrl+Shift+V) or choose Window ➪ Vector Shape Window to open the Vector Shape window if it's not already open.

2. Select the Pen tool and then click near the upper-left corner of the canvas. This creates a corner point. This point is colored green, indicating that it is the first point on the path.

3. Click near the middle of the canvas. Then, without releasing the mouse button, drag it down toward the bottom of the canvas. Two vertical handles should appear, originating from the point that you created. This is a curve point. The handles are called Bézier handles.

4. Click near the bottom-left corner of the canvas, underneath the point that you created in Step 2. Don't worry about being exactly underneath the upper point; you can adjust it later.

5. Click the check box next to the word Closed on the toolbar located on the left side of the window. You can also close the shape by clicking in the same point as the first one you created, but this can make editing the shape difficult because it's possible to have two points *appear* to be in the same position. Your image should look similar to that in Figure 2-21. Note that the point you added in the preceding step is now red. This indicates that it is the last point in the path.

6. Click the ends of the handles and move them around to see how they affect the way the line curves through the point. Drag any of the points themselves to move them. Holding the Shift key down constrains the movement horizontally, vertically, or at 45 degrees.

7. Now add a second path by clicking on the canvas to deselect the current path, and then click on the Pen tool and repeat Steps 2, 3, and 4. Note that the path automatically closes as you draw.
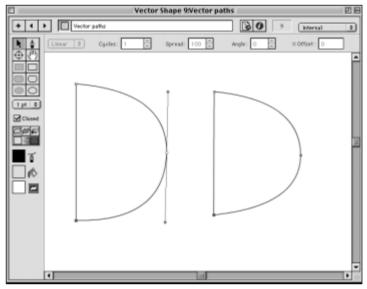

Figure 2-21: A new feature in Director 8 is the capability to add multiple paths in the Vector Shape window.

You can create three types of geometric shapes in the Vector Shape window. They are rectangles, rounded rectangles, and ellipses. You can edit the points of these shapes just like shapes created with the Pen tool. You can also add points to the shape, enabling you to create complex free-form shapes. In the next exercise, you create a circle, and then you add more points to turn it into a heart shape.

Drawing Basic Shapes

1. Open the Vector Shape window by choosing Window ➪ Vector Shape Window or click the + button in the upper-left corner of the window to create a new shape if the window is already open.

2. Click the color swatch next to the Fill (paint bucket) icon on the left side of the window and choose a nice red. Then select a stroke width of zero from the Stroke Width pull-down menu.

3. Click the Filled Ellipse icon, press the Shift key, and draw a circle in the middle of the canvas. If the graphic is not centered in the canvas, click the Hand tool (or press H) and drag the canvas until the shape is in the middle.

Tip

You can scale the shape by selecting the arrow tool and clicking on one of the points. Then, while holding down the Option+Command (Ctrl+Alt) keys, drag the image to the new size you desire.

4. Select the Pen tool, and then press the Option (Alt) key and click the top of the circle. A blue point appears at the top of the circle. With the Option (Alt) key still pressed, click the bottom of the circle. Another blue point appears at the bottom of the circle.

5. Select the arrow tool, click the point at the top of the circle — the point turns white when you have selected it — and drag it down about a third of the way toward the bottom of the circle. Click the point at the bottom of the circle, and drag it down toward the bottom of the canvas until the shape looks roughly like a heart.

6. We always like to believe that most people have a big heart, so let's make it a little fatter. With the Arrow tool still selected, draw a rectangle around the two points that are on the left side of the shape to select them. Click one of the points, and then press the Shift key and drag them to the left a little bit. Repeat the same technique for the points on the right side of the shape. Presto! You've created a nice big heart that looks like Figure 2-22.
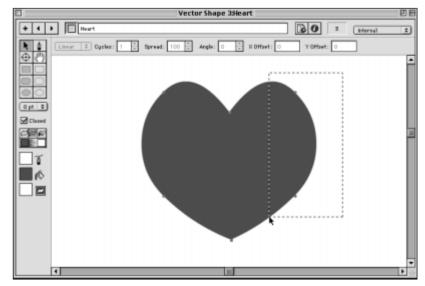

Figure 2-22: You can select several points at the same time by using the Arrow tool to draw a rectangle around the points that you want to select.

Now add a little depth to the vector shapes. You can accomplish this task by assigning a gradient fill to the shape. Several properties can be set for a gradient fill:

✦ **Gradient type:** This property determines the type of gradient, Linear or Radial. A linear gradient fills the shape with the two selected colors at the chosen angle. A radial gradient fills the shape with the two selected colors in a circular fashion.

✦ **Cycles:** Cycles enables you to set the number of times the gradient will change colors within the shape.

✦ **Spread:** The spread percentage determines the rate at which the gradient shifts between colors. A setting of 100% uses the entire height and width of the shape to fill the color. A smaller percentage causes a more abrupt shift in colors, and a setting higher than 100% extends the fill beyond the boundaries of the shape, causing a subtler shift in colors.

✦ **Angle:** This property rotates the direction of the fill within the shape. The angle affects only linear gradients.

✦ **Offset:** The offset determines the origin point of the gradient. The X Offset determines the horizontal offset. The Y Offset determines the vertical offset. A setting of zero in both the X and Y settings centers the fill in the shape.

Creating and Adjusting Vector Gradients

1. Open the Vector Shape window, or click the + button in the upper-left corner to create a new shape if the window is already open.

2. Draw a closed shape with either the Pen tool or one of the geometric shapes. If you are using the Pen tool, make sure the Closed check box is checked.

3. Select a stroke width either by clicking the up and down arrows next to the stroke width indicator, or by clicking the stroke width indicator and selecting a width from the drop-down menu. Select a stroke color by clicking the color swatch to the left of the stroke (Pen) icon and choosing a color from the palette. You can also select a background color for the shape by clicking the color swatch to the left of the Background color icon located at the bottom of the tool panel.

Note
When you apply a background color, the whole canvas fills with that color. When the shape is placed on the Stage, however, the background color appears only within the bounding box (rectangle) of the sprite.

4. Click the Gradient button, and then choose a starting and destination color from the color swatches located below the fill settings buttons.

5. Choose either Linear or Radial from the gradient type drop-down menu located in the right-hand corner above the canvas.

6. Experiment with the other settings shown in Figure 2-23 that control the number of times the gradient cycles, the Spread (range) of the gradient, the angle, and the X and Y offset by clicking the up and down arrows or by manually typing a number in each field. Use negative values to move the X and Y offset to the left and toward the top of the shape.
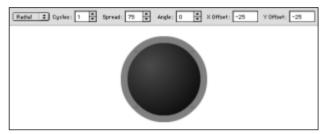

Figure 2-23: Adjust these settings to modify the attributes of the gradient fill.

Note   The angle setting has no effect if the gradient type is set to radial.

Although not as robust as vector graphics created with programs such as Macromedia's Freehand or Adobe Illustrator, a powerful feature of Director's vector shapes is the capability to create new or modify existing Vector cast members with Lingo. Manipulating vector shapes with Lingo is discussed in Chapter 15.

Creating Graphics with the Floating Tool Palette

Bitmap graphics and complex vector shapes are useful for a great number of things, but there are times when all you need is a simple shape: a rectangle, a circle, or a line. You can create these shapes with the Floating Tool palette (see Figure 2-24). Open the Floating Tool palette by choosing Window ➪ Tool Palette or by pressing Command+7 (Ctrl+7).

These shapes usually take up less memory than ones created in the Paint or Vector Shape windows, and, more than anything else, they are useful as masks. Although they are vector-based graphics, you cannot edit them in the Vector Shape window and you create them directly on the Stage. The following exercise is designed to give you a quick overview of how to create simple shapes and modify their patterns and colors.
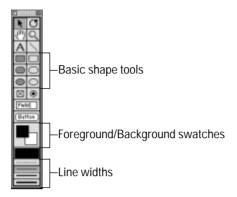
Figure 2-24: The Floating Tool palette offers a convenient way to create simple rectangles, circles, and lines.

—Basic shape tools

—Foreground/Background swatches

—Line widths

Creating a Simple Shape

1. Make sure the Stage is visible. If it's not, open it by choosing Window ⇨ Stage or by pressing Command+1 (Ctrl+1), and then open the Floating Tool palette by choosing Window ⇨ Tool Palette or by pressing Command+7 (Ctrl+7).

2. Select one of the filled shapes from the palette, and then draw the shape on the Stage. With the shape still selected, click the Foreground color swatch (the upper-left color square on the palette) and choose a new color.

Note   If none of the changes appear on the shape you create, it has been deselected. Select the shape again by clicking it. A bounding box appears around the shape, indicating that it is active.

3. Select a pattern from the pattern pop-up menu located below the foreground/background color swatches, and choose a new pattern.

4. Choose a new background color by clicking the background color swatch (the lower-right color square) and selecting a new color from the palette.

5. Adjust the line width of the shape by clicking one of the line width buttons located at the bottom of the palette.

Cross-Reference   Chapters 3, 4, and 8 discuss more advanced techniques that can be applied to basic shapes, as well as the other operations available in the Floating Tool palette that are not mentioned in this section.

Importing Images

Although Director has the capability to create bitmap and vector graphics, the editors provided for creating these types of graphics are not nearly as powerful as dedicated image-editing programs, such as Adobe Photoshop and Macromedia's

Fireworks. There is also no easy way to create 3D animation sequences, which programs such as Strata Studio Pro or Electric Image are designed to do.

Because of these limitations, and because we encounter media from more sources than just Director's Paint and Vector Shape windows, the program has long supported the capability to import a wide variety of graphical formats. Indeed, the list is quite extensive: Macintosh PICT formats, Microsoft BMP bitmaps, JPEGs, CompuServe GIF images, most TIF formats, and PCX images. What's more, with the help of special import filter Xtras, it's possible to bring in nearly every file format, including animated GIFs, Flash movies, and PowerPoint presentations. Director also supports alpha channels (transparency), enabling you to import 32-bit graphics created with programs that support this feature. Table 2-5 lists the types of media that you can import into Director.

Table 2-5 **Supported Media Types**	
File Type	*Supported Formats*
Image	BMP, GIF, JPEG, LRG(xRes) PhotoShop 3.0 or later (supports transparency and alpha channel) , MacPaint, PNG (supports alpha channel), TIFF, PICT (supports alpha channel) Targa
	Windows only: Photo CD, PCX, WMF, PostScript
Animation and Multimedia	Flash movies, animated GIFs, PowerPoint, Director movies, Director external cast files
Multiple image files	Macintosh: PICS, Scrapbook Windows: FLC, FLI
Sound	AIFF, WAV, MPEG3, Shockwave audio (SWF), QuickTime audio, Sun AV, IMA compressed and uncompressed formats
Video	QuickTime, QuickTime VR
	Windows only: AVI
Text	RTF, HTML, ASCII (.txt)
Palette	PAL, Photoshop, CLUT

Importing a file into Director requires a few steps, but it is not unduly complicated.

On the CD-ROM   As you practice importing images in this chapter, you can use several graphic images that we've built for you. The files on the CD-ROM are BUTTON_ALPHA.PCT, CABLE.PNG, RUIN.TIF, GLOBE.GIF, SEPIA.TGA, SHIPPSD.PSD, SHIP_OUTLINE.BMP, SHOVEL.PCT, and ZION.JPG. They are in the EXERCISE:CH02 (EXERCISE\CH02) folder.

Importing Images into Director

1. Launch Director; then choose File ➪ Import or press Command+R (Ctrl+R). The Import Files dialog box appears (Figure 2-25).

Figure 2-25: The Import Files dialog box provides an extensive set of options for specifying how your image is to be imported.

2. Click the Show button (Mac) or the Files of Type list box (Windows) and choose Bitmap Image. Selecting this format filters out any files that Director doesn't consider to be bitmapped images.

3. Use the file navigation controls at the top of the box to locate the file you want to import. Select the file by clicking it. To import several files, click Add after you select each file. To add every image in the entire folder, click Add All.

4. The File List box in the lower part of the dialog box contains the files in the order in which they are imported into Director. If you are working on the Windows platform and want to change the default order, select the file you want to move, and then click Move Up or Move Down to shift it in the order of the files.

Note

You can also import a file from the Internet by clicking the Internet button in the Import Files dialog box. This brings up another dialog box in which you can type the URL of the file. This capability is particularly handy for Shockwave movies that contain images that may change over time.

5. In the media drop-down list, set to Standard Import by default, select a medium for storing the imported image. The four options available are explained in Table 2-6.

6. When you have all of the files arranged the way that you want, click Import to begin importing the files.

Note As Director encounters different image formats, the Image Options dialog box appears, prompting you to select options for the image. These options are covered in the next section, "Specifying options for imported images." For the purposes of this exercise, click the OK button when a dialog box appears, and the images will be imported with their default settings.

Tip Director also supports drag and drop, meaning that you can drag files from an open folder directly into the Cast window.

Table 2-6
Import Media Options

Media Option	Import and Storage Process
Standard Import	The complete graphic is stored within the movie's internal cast library. You can edit the graphic by using the Paint window, and the graphic is no longer directly connected to its source file.
Link to External File	Loads a temporary version of the file into Director's cast library, but when the movie is later opened and run, the cast member is reloaded from the external file rather than from the internal cast. This option is useful when the source graphic is subject to change, comes from the Internet, or is generated through a third-party utility. Note: If the source graphic is a QuickTime still, then you must import it by using this option, because QuickTime resources use streaming to load images.
Include Original Data or Editing	Like the Link to External File option, this option creates an external link, but it also retains internal information about how the file was defined. This enables editing of layered images, such as those created in Photoshop. Note: to use an external editor, the imported file format must have an associated editor defined in the Editor Preferences dialog box (choose File ➪ Preferences ➪ Editors).
Import PICT File as PICT	PICTs are the native format that Director uses on the Macintosh. They play slightly faster if imported into this format, but they may be unpredictable when played on a Windows platform.

Specifying Options for Imported Images

Director offers a multitude of options for determining how your imported images will look in their new environment.

Tip
There's a certain amount of redundancy in Director. The program offers two ways of transforming images. One way is to work with them when they are first imported, using the Image Options dialog box that appears after you click the Import button in the Import Files dialog box. Alternatively, you can use the Transform Bitmap dialog box from the Cast or Paint windows. For mapping images to palettes, it's better to use the Import Options dialog box. Resizing images, on the other hand, can only be done with the Transform Bitmap dialog box. It's your choice; both techniques are discussed in this section.

After you select all your files for importing, you need to designate how you want imported images converted into native Director format. After you click the Import button in the Import Files dialog box, you see the Image Options dialog box. Here you designate how the files are stored internally in Director, and you specify whether you want to dither the images, convert them to a different color palette, or both. Table 2-7 outlines these options.

| Table 2-7 | |
| **Import Image Options** | |
Option	*Description*
Color Depth	This option determines the number of bits used for each pixel in the image. See the sidebar "How Director Handles Color" for more information on color depth and palettes. Also used to specify if you want to use an image's alpha channel.
Palette: Import	Imports an 8-bit color palette with the imported image. (This option is grayed out if a movie's color depth is not 8-bit and its image isn't an 8-bit indexed color image.) Director will import the palette for the image and store it as a cast member, separate from the image.
Palette: Remap To	Remaps the image to one of the 8-bit color system palettes (System-Win, System-Mac, and so on) available within Director. Use the field following the radio button to select the desired system palette.

Continued

Table 2-7 *(continued)*	
Option	*Description*
Dither	If Dither is turned on, Director attempts to approximate the colors in the image by using mixes of the colors in the current palette. Otherwise, Director maps the colors with no mixing. If the colors in the palette closely match those in the image, the latter is usually the preferable method; otherwise, you should dither the image.
Same Settings for Remaining Images	If more than one image was selected in the Import Files dialog box, then the images imported after the current image use the same palette and color depth settings as the current image. Otherwise, the Import Options dialog box appears for each image.

How Director handles color

Director has two ways of specifying color: palette index and RGB color. RGB color, introduced in version 7, is a much more reliable way to specify colors. It is also the same color system that's used by most Web browsers.

When you use the RGB color option, Director identifies each color of an image as a set of hexadecimal numbers that specify the amounts of red, green, and blue required to create the color. When a computer monitor is set to display thousands or millions of colors, the colors are displayed with their original RGB values. When a monitor is set to display 256 colors, Director substitutes the color in the active palette that most closely matches the RGB values. RGB is the best color system to use for most applications because it enables you to use 24- and 32-bit images with alpha channels that display beautifully at higher monitor resolutions, yet still display reasonably well on monitors set to 256 colors.

Palette index is the color system that Director has been using for years. If you've used previous versions of the program, you have probably run into the limitations of this color system many times. When Director is using the palette index option, colors are assigned a specific index number in a 256-color palette. This works fine if every image in a movie is indexed to the exact same palette. The trouble comes when an image is used in the movie that is indexed to a different palette. Color 12 may be the color blue in one palette and the color green in another, so an image that is using a different palette from the one that is currently active in the movie will probably be displayed with the wrong colors. Although it's possible to change palettes in a movie, managing multiple palettes and making sure all the images that are on the Stage are indexed to the active palette can become a nightmare. This color system is best for creating movies where file size or playback speed is the main concern, because indexed graphics tend to display faster and use less disk space than 32-bit graphics.

Specifying color depth

Especially with imported images, it may happen that you need to map an image to a different palette, change the color depth of the graphic, or resize it. Director gives you an easy-to-use utility for doing just that, by choosing Modify ⇨ Transform Bitmap.

On the CD-ROM

If you want to practice these next steps and transform the color depth of specific images, you can use the images found in the BITMAPS.DIR movie. This movie contains several types of bitmap images that you can convert. The BITMAPS.DIR movie is on your companion CD-ROM in the EXERCISE:CH02 (EXERCISE\CH02) folder.

Transforming Bitmaps

1. Open the Cast window and click the image in the Cast window or list. Or, to select multiple images, Command+click (Ctrl+click) on the images you want to transform.

2. Choose Modify ⇨ Transform Bitmap to open the Transform Bitmap dialog box (see Figure 2-26).

Figure 2-26: The Transform Bitmap dialog box enables you to resize an image and set its color depth and palette.

Tip

You can also display the Transform Bitmap dialog box by double-clicking the color depth field found in the lower-left corner of the Paint window.

3. To scale the image to a specific size, type the new percentage size in the Scale text box. As an alternative, you can change the width or the height, which will proportionally change the other dimension. If you want to resize the graphic in one dimension only, deselect the Maintain Proportions check box.

Caution

Resizing a bitmap often results in a severe loss of quality. It might be acceptable if the bitmap is part of an animation sequence and will only be on the Stage for a brief period of time. If it will be a static image on the Stage (such as a button), it's better to resize the graphic in another program, such as PhotoShop.

4. To set color depth, choose the appropriate entry in the Color Depth drop-down list box.

5. To change the palette of an 8-bit image, select the new palette you want from the Palette list box. This list includes not only the standard Macintosh and Windows palettes, but also a variety of specialized palettes (including metallic colors, for instance); it also includes any cast member palettes that might have been imported.

6. Select Remap Colors if you want Director to find colors within the new palette that most closely match the previous colors of the image. If you have two palettes that are almost identical, this may be the preferred option. For palettes that are distinctly different, you will probably want to turn on Dither instead.

7. When you have all your options set, click Transform to start processing the images.

Caution   Be careful: This last step—clicking Transform—is destructive to the cast member. You can't undo a transform change with Command+Z (Ctrl+Z).

After the operation has finished, you will notice that there is a dot next to the cast number column, indicating that the cast member has been modified since it was imported. The date and time the member was modified is listed in the Modified column.

Those nasty halos

In religious iconography, halos are considered signs of perfection and holiness. For the Director developer, however, halos are a major nuisance. Especially when an indexed image is created in an external paint program with an airbrush, the graphic may have pixels along its outer edge that appear white to the naked eye, but they aren't quite. When the image is imported and used with a Background Transparent or Matte ink effect on the Stage (see Chapter 3 for details), the near-white pixels appear as an unsightly pixelated halo. Take a look at Figure 2-27.

You can fix halos with a number of techniques, but these options work best:

✦ The easiest way to eliminate this problem is to use images that contain alpha channels. Alpha channel effects, which assign partial levels of transparency to different parts of the graphic, work well for special effects, but you can also use them to give a smooth edge to irregularly shaped graphics. If you need to use 8-bit images that cannot contain an alpha channel, you have to use one of the other techniques listed here.

✦ The mask ink explained in Chapter 3 enables you to use a grayscale image that has antialiased edges as a mask, which works very much like an alpha channel does.

✦ If you create a graphic in another program that has a rubylith feature (which uses a red mask to control areas that are painted), then select the region outside the graphic you're importing and switch to the mask view. This will show you areas that are "near misses" around the image.

◆ If the program you're using enables you to resize the mask or lasso selection, reduce the size by 1 pixel. This works only reasonably well, however. It tends to strip the depth of border colors, making them appear jagged.

◆ If your Director background has a dominant color, you can use that color as a fill around the graphic while you're working in it, and then remove just the one shade of the background color. This might make your image appear to have a nonwhite halo, but the graphic will be relatively seamless on the Stage. If the background is complex, think about using a midrange gray, brown, or green for the background color. These colors tend to blend in well.

◆ If you're working in Photoshop, create a selection around your graphic, and then choose Select ➪ Matting ➪ Defringe. (The border may look a little irregular.)

◆ If you can, convert images with a higher color depth to 8-bit color before importing them into Director. Then load the image with its associated palette. This method helps avoid remapping or dithering, both of which contribute to halos.

◆ After the graphic is in Director, if you still have halos, use the Paint Bucket tool to fill the background of a graphic cast member with a color not found in the graphic (bright greens work really well for this). You'll be able to see pinhole pixels that can then be removed by running the Pencil tool over them with the same bright color. When you're finished, select the whole region by double-clicking the marquee tool (you have to do this quickly, because otherwise it brings up the Marquee pop-up menu instead). Then click the Switch Colors button in the Effects toolbar to map the image back to white.

Figure 2-27: Halos can make even the best artwork look bad.

Sorting and Organizing Cast Members

As you work on your own applications, at some point you will probably discover that your cast has become unwieldy. Cast members that you've deleted leave holes in the Cast window. New cast members may end up occupying these blanks as they are filled with bitmaps, scripts, or other resources. For a small animation, this isn't a major issue, but if you have more than 30 cast members, the importance of keeping some sort of order for the cast escalates. A large multimedia project can have thousands of cast members; the absence or misplacement of even one of those might be enough to crash your program.

The Cast window List View

Using Director 8's new List View option (shown in Figure 2-28) for the Cast window enables you to view cast members in a list format — similar to the list view option used when viewing contents of a folder on your computer's hard drive so that you see details about the member, such as revision date, media type, comments, and so on. Select the List view by clicking on the Cast View Style button located in the upper-left corner of the Cast window. You can also make this view the default by choosing File ⇨ Preferences ⇨ Cast and selecting the List View option.

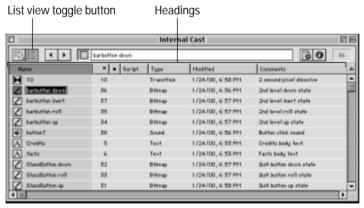List view toggle button   Headings

Figure 2-28: The List View option in the Cast window displays the cast members in a list view similar to the folder list display option that is used by your computer's operating system.

The List View has several headings; they are listed in Table 2-8. It's possible to customize the heading that you want to be displayed in the List View by choosing File ⇨ Preferences ⇨ Cast and selecting the headings to display. To sort the List View in the Cast window, click on the heading by which you want the list to be sorted.

Note   Rearranging the List View does not affect the order in which the cast members appear in the thumbnail view.

Table 2-8
List View Headings

Heading	*Description*
Name	Lists the name of the cast member
# (Number)	Lists the cast window slot number that the member occupies
• (Modified)	Identifies members that have been modified after they were imported into Director
Script	Defines the type of script that is associated with the cast member
Type	Describes the member's media type
Size	Lists the file size of the member in kilobytes or megabytes
Created	Displays the date that the cast member was originally created
Modified Date	Lists the modification date of the member
Filename	Displays a linked cast member's path and filename
Comments	Displays comments about a cast member that have been added with Property Inspector

The Sort command

Sorting cast members in the List View doesn't solve the problem of having an unorganized view of the cast members in the thumbnail view of the Cast window. Those with highly developed organization skills will still want to clean up the cast libraries so that there aren't any blank thumbnails and so that they are sorted alphabetically, by media type, and so on. If you choose Modify ➪ Sort, Director gives you the option of sorting selected cast members in any given cast library, or of sorting a part of a cast library. Table 2-9 summarizes the various sorting options.

Tip   The Sort feature helps you organize your cast resources, but in general, you should combine Sort with a descriptive naming convention for both cast members and cast libraries.

<table>
<tr><td colspan="2" align="center">Table 2-9
Sort Options</td></tr>
<tr><td>*Option*</td><td>*Results*</td></tr>
<tr><td>Usage in Score</td><td>Places the cast members in the order in which they appear in the Score (the cast member of sprite 1 in frame 1, the cast member of sprite 2 in frame 1, and so forth). Director doesn't rely on cast order for retrieving resources, so this option won't make your movie more efficient. However, it will give you a pretty good clue about when specific cast members are called.</td></tr>
<tr><td>Media Type</td><td>Places the cast members in order by media type (bitmaps, then scripts, then text members, and so on). For example, if you have three bitmaps, followed by a sound, followed by another bitmap, then sorting by media type moves the bitmaps together and puts the sound at the end, without otherwise changing the order. This is not an alphabetical sort.</td></tr>
<tr><td>Name</td><td>Places the cast members in order by name, in alphanumeric order. Unnamed cast members appear at the end of the list, in the order they're found in the cast.</td></tr>
<tr><td>Size</td><td>Places the cast members in order by size, based on the number of bytes in the member, from largest to smallest. This is a handy way to determine whether a given bitmap is taking up an inordinate amount of disk space and memory.</td></tr>
<tr><td>Empty at End</td><td>Retains the current order, but removes any empty cast members from the cast selection, thereby compacting the cast in the cast library.</td></tr>
</table>

You can sort any cast members that are currently selected. Choosing Modify ⇨ Sort brings up the Sort dialog box, shown in Figure 2-29, from which you can choose any of the radio button options that are listed in Table 2-9. One of the more useful techniques in sorting is to sort twice: first by alphabetical order, and then by media type. This gives you blocks of alphabetically sorted bitmaps, followed by blocks of alphabetically sorted sounds, and so forth.

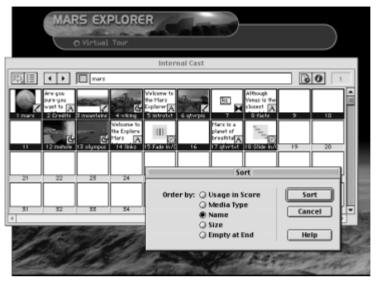Note   You can sort cast members in either List or Thumbnail View.

Figure 2-29: Along with an effective naming convention for your cast members, the Sort dialog box helps keep your cast library in order.

Summary

Following is a quick review of some of the ways that images can be created and imported into Director:

✦ Director offers three ways to create images: the Paint window for creating bitmap graphics, the Vector Shape window for creating vector-based graphics, and the Floating Tool palette for creating simple vector-based shapes.

✦ You can import images from other sources into Director, and then edit them within the program or by means of an external editor.

✦ You can import 32-bit images that contain alpha channels into Director, thereby retaining their original transparency.

✦ Director supports RGB color, enabling colors to be displayed more accurately.

✦ Images are kept within cast libraries, and you can move, sort, and save them for later retrieval.

Now that you have a better understanding of Director's graphics capabilities, you can read the next chapter to learn about the program's powerful animation capabilities.

✦   ✦   ✦