CHAPTER 8

Fine-Tuning and Outputting Your Movies

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Fine-tuning your Director project can make the difference between a successful project and one that lacks that certain sophistication that distinguishes your movie from others. Adjusting the tempo, adding transitions between scenes, and animating palettes to add polish to your movie are all refinements that help make your Director projects successful.

After you've added the finishing touches to your movie, you can create a projector, a Shockwave movie, or a Java applet of your Director project. The success of your projector, Shockwave movie, or Java applet starts long before you get to that point, however. A successful project depends upon the planning stages that occur before you even start Director. In this chapter, you learn to apply finishing touches and to prepare your movies for distribution.

Changing the Tempo

The human eye can see minute differences in objects and motion. This capability is tempered, however, by perception. What we see is not the same as what we perceive. We mentally filter images to meet our perception of reality, based upon what we've learned to expect. The mind fills in gaps between events and skews the perception, to better understand the images it receives. For you to create animation, it's not necessary to become an expert on perception. It is helpful, though, if you understand that you can make perception work for you when you are creating an animation project.

The tempo of a Director movie has a great deal to do with perception of motion. *Tempo* is the frame rate at which an animation sequence moves. The major television technical standards used throughout the world are NTSC (National Television Standards Committee), PAL (Phase Alternation Line), and SECAM (Sequential Couleur Avec Mémoire). NTSC video or broadcast-quality video displays at a rate of 30 fps (frames per second). PAL and SECAM display video at 25 fps. Although it might seem ideal for your Director movies to display at these frame rates, or even at the maximum speed of 999 fps, it's unrealistic and unnecessary for them to do so. Because of the way we perceive motion, if a Director movie is well designed, it's doubtful that most people will notice the difference between a movie at 15 fps and one at 60 fps.

It takes a computer with substantial resources to render images at 999 fps, or even at 30 fps. High-end computers with fast processors, large amounts of RAM, and fast video systems might be able to render images at this rate. These machines are generally found on the desks of computer professionals, however, and they don't represent the typical user. The average home computer can reasonably expect to render images at a rate between 10 and 15 fps.

Director provides three ways to adjust the frame rate of a movie: through the Control Panel, in the Score window, and using Lingo commands. Regardless of which method you use to adjust the frame rate of your movies, it's important to understand that the frame rate is a *theoretical maximum*. For example, if you were to set the frame rate of a movie to 60 fps, it wouldn't mean your movie would play at that speed. The actual speed of the movie would automatically drop to whatever frame rate the computer is capable of displaying.

Operating the Control Panel

The Control Panel operates much like a VCR. Using the Control Panel's controls, you can view and control the playback of your movie. Choose Window ➪ Control Panel, or press Command+2 (Ctrl+2), to display the Control Panel (see Figure 8-1).

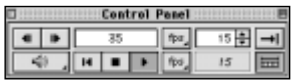


Figure 8-1: The Control Panel enables you to view and control the playback of your movie.

Each of the buttons and windows on the Control Panel has a specific function (see Table 8-1) to help you quickly adjust a variety of playback options. Changes you make using the Control Panel are global changes. Any settings you make here affect the entire movie, and can only be overwritten by settings made in the Score window or by using Lingo.

Table 8-1
Control Panel Functions

Control	*Description*
	Steps back one frame.
	Steps forward one frame.
	Frame counter: Displays the frame in the Score on which the playback head is sitting or through which it is passing currently.
	Enables you to choose whether to display frame rate as fps or as seconds per frame. Click the corner arrow to make your selection.
	Frame rate control: Enables you to adjust the frame rate of your movie. Click the up and down arrows to select a frame rate, or type a new frame rate into the box.
	In this position, the Loop Playback button is toggled to play a movie to the end and then stop.
	In this position, the Loop Playback button is toggled to play a movie to the end, loop back to the beginning, and play it again.
	Volume control: Click the arrow in the lower right corner, and choose a volume level.
	Rewinds your movie to frame 1.
	Pauses or stops your movie.
	Plays your movie or the selected range of frames.
	Displays the current frame rate. This is an instantaneous reading, not an average speed, and may vary widely depending on the content of the Stage at any moment.
	In this position, the Selected Frames Only button is toggled to play only the selected frames of a movie.
	In this position, the Selected Frames Only button is toggled to play all frames of a movie.

Checking for consistency: A valuable item on the Control Panel is the display of the current frame rate of your movie during playback. While you're testing a movie, it's a good idea to keep the Control Panel open and compare the current frame rate with the animation on the screen. Ideally, the frame rate of your movie should be consistent. The animation should move smoothly and at a consistent pace. Watch for fluctuations in the frame rate: Small ones are normal, but a dramatic change could indicate that you need to make an adjustment.

Specifying tempo settings in the Score window

Tempo is a design consideration whenever you create a Director movie. You may be aiming for anything from the relaxed pace of a slideshow presentation, to the "warp" speed of a starship racing across the galaxy. By specifying tempo settings in the Score window, you can

- Determine the maximum speed for your movie.
- Pause your movie for a specified period of time.
- Tell Director to wait for user interaction before continuing the movie.
- Wait for a cue point in a digital video or sound file. (Chapters 5 and 6 discuss cue points.)

The tempo in a Director movie can be changed as often as necessary. It's a good idea to set the base tempo at the start of your movie, however. This helps you to control the frame rate and reduce fluctuations in the playback of your movie. If you don't specify a tempo at the beginning, Director plays the movie at the maximum default frame rate of 30 fps. This can cause some significant fluctuations in the actual frame rate, depending on the available resources of the computer used to play the movie and the complexity of the movie. Although you can't completely eliminate fluctuations in the frame rate, you can minimize their visual impact in your movie by slowing the frame rate of more complex animation sequences.

Compensating for a slow playback

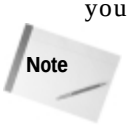
When you create an animation sequence in Director, you use a set of keyframes to describe the major movements of the object being animated. Suppose that you are animating the movement of the minute hand on a clock. If you create images that display the minute hand at the 12-, 3-, 6-, and 9-o'clock positions, you can use those images as keyframes for the animation sequence. Tweening between the keyframes simulates the movement of the minute hand.

When the tempo of your movie slows, animation sequences can become jerky. It might not be appropriate or possible to increase the frame rate, but you can compensate for jerky animation either by adding more tween steps or by increasing the number of keyframes. In the clock example, increasing the number of tween steps between the keyframes of the animation smoothes the motion of the minute hand. You can also obtain a smoother motion by creating keyframes every 10 minutes instead of every 15 minutes.

Specifying a frame rate

Controlling tempo is always important — and sometimes critical — to your movie. A polka would sound very strange if it were played to a disco beat. Similarly, if you are trying to build a suspenseful moment in your movie, you might want to slow the tempo of your movie over a selected range of frames.

As mentioned earlier, to help ensure a consistent tempo throughout your movie you can select a median frame rate at the beginning of your movie. In this first exercise, you do just that.



Whenever you specify a tempo setting, that tempo setting remains in effect until you change it.

You can use the marspics.dir Director movie on the companion CD-ROM for the next exercise. The marspics.dir movie is located in the EXERCISE:CH08 (EXERCISE\CH08) folder.

Setting the Base Tempo

1. Open the marspics.dir or any other movie in Director.
2. Choose Window ➪ Score to display the Score window.
3. Click the Hide/Show Effects Channels button to expand the Score window to display the Effects channels, if necessary.
4. Double-click the Tempo channel in the first frame of your movie (the Tempo channel is the one with a small clock icon). This displays the Frame Properties: Tempo dialog box (see Figure 8-2). You can also choose Modify ➪ Frame ➪ Tempo to get this dialog box.

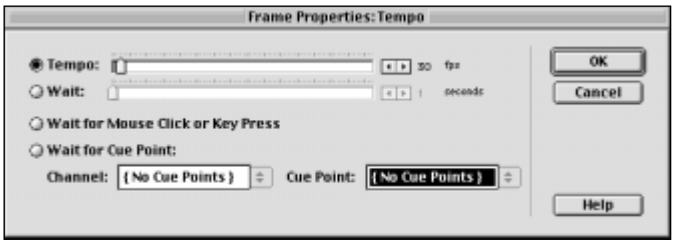


Figure 8-2: Use the Frame Properties: Tempo dialog box to specify the frame rate for your movie.

5. Select the Tempo radio button, and click the left and right arrows to slow down or speed up the frame rate for your movie. A frame rate of 15 fps is a good median rate.

6. Click OK to complete the operation and return to Director's main window. The frame rate stays at 15 fps (or whatever setting you selected) until you change it in a later frame of the Score or through a Lingo command.

You can create a dramatic moment in your movie by slowing the frame rate to 2 to 4 fps in the frames where you want the slowdown. Suppose that you want to show a heavy weight being hoisted to the top of a building and then dropping to the ground. By slowing the frame rate during the frames in which the weight is rising to the top of the building, you reinforce the illusion of weight. The drama of the event is further enhanced when the weight falls back to the ground at the normal (or faster) frame rate.

Tempo settings don't affect the duration of any transitions that you've set in the transition channel, and they don't control the speed at which a sound plays. They control the maximum speed at which the playback head moves from frame to frame.

Pausing a movie

Pausing a movie for a specified period is a useful technique if you are creating a presentation, and you want to stop the movie briefly while the user views the contents of the frame. A typical use for a tempo pause is a noninteractive kiosk presentation of a product line. During the three- to five-second pause while each product appears on the screen, the viewer sees an entire product line in a slideshow presentation.

Specifying a Pause in Your Movie

1. Open the marspics.dir or any other movie in Director.
2. In the Score window, double-click the Tempo channel in the frame where you want to insert a pause.
3. In the Frame Properties: Tempo dialog box, select the Wait radio button, and click the left or right arrows to specify the number of seconds you want your movie to pause (see Figure 8-3).

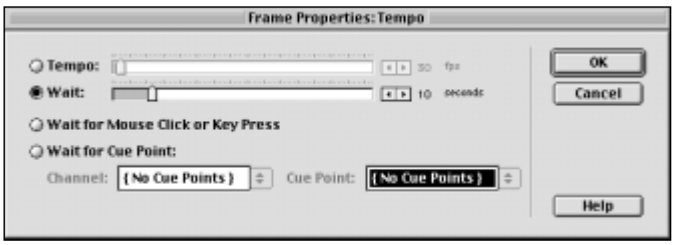


Figure 8-3: The Wait option pauses the move for a specified amount of time.

4. Click OK to complete the operation and return to Director's main window.
5. Rewind your movie and click the Play button to test the pause time.

If you want to duplicate your pause setting in another frame, you can quickly copy the tempo cell in the Score window by pressing Command+C (Ctrl+C). Then click the other frame and paste the tempo by pressing Command+V (Ctrl+V).

You might need to test and change the pause time to get the right pause length. What you're aiming for in this case is to give the user long enough to view the contents of the frame, without making the wait too long before the movie continues. Generally, a pause of three seconds is more than adequate for viewing a graphic. If you are creating a pause for a frame that contains text, you need to specify a longer time.

It's a good idea to have the frame reviewed by someone who's unfamiliar with the text. You probably know the text well and, as a result, may be inclined to set an insufficient pause time. Getting another point of view reduces the risk of this happening, and it allows for the variation in the speed at which people read.

Waiting for user intervention

Another tempo option is when you want to enable the user to control the pace. You can arrange for user control of a range of frames by using a wait setting in the Frame Properties: Tempo dialog box. A wait setting pauses your movie until the user presses a key or clicks the mouse button. Wait settings are especially useful if you need to display multiple frames with text and want the user to control the pace.

Specifying a Wait Setting

1. Open the marspics.dir or any other movie in Director.
2. Double-click the Tempo channel in the frame where you want to specify a wait setting.
3. In the Frame Properties: Tempo dialog box, select Wait for Mouse Click or Key Press (see Figure 8-4).

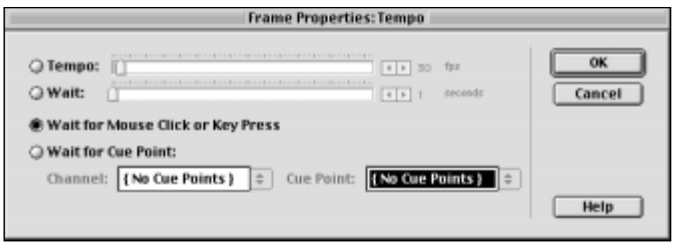


Figure 8-4: Selecting the Wait for Mouse Click or Key Press option pauses the movie until the mouse is clicked or a key is pressed.

4. Click OK to complete the operation and return to Director's main window.
5. Rewind your movie and click the Play button to test your wait setting.

The Wait for Mouse Click or Key Press setting works well for a Director movie that is used as a speaker support in a presentation. The Wait for Mouse Click or Key Press option enables the presenter to discreetly cue the next image by pressing a key or using a special "Air Mouse" (a mouse that doesn't need to be physically wired to the computer).

One drawback to specifying a wait setting in the Score window is that the user can click anywhere on the screen or press any key to continue the movie. If you want the user to click a special button or a specific key, you need to use a behavior or create a Lingo script.

For more information about using Lingo scripting to specify a wait setting, see Chapters 7 and 11.

Working with Transitions

Very few things can startle the viewer of a movie more than an abrupt change from one scene to the next. You can eliminate this problem by creating a transition between the frames. A *transition* is a technique by which some sort of passage connects two sequential frames in a movie. Figure 8-5 illustrates a transition; it shows two intermediate images that make up part of the passage between the starting and ending images. The transition in the figure uses a Dissolve effect, to create a blend of the two images as the intermediary Stages in the passage. Like many other elements in your Director movies, transitions are represented both in the Score window and as cast members in the Cast window.

There are two methods for creating transitions in Director. The first, choosing Transition in the Effects channel of the Score window, has been with the program since the very beginning. Director 8 introduces a new way of creating transitions: using the new Imaging Lingo feature. These transitions are actually applied to Sprites and are created with Lingo. Director 8 has several built-in sprite transitions that you can find in the Library Palette, where you choose Animation ➪ Sprite Transitions Category. Unlike the transitions applied in the Score window, these new sprite transitions can be applied to individual sprites on the Stage, allowing for some interesting effects that would have been very difficult to achieve in earlier versions of the program.

You learn to create your own sprite transitions, as well as many other dazzling effects, by using Director's new Imaging Lingo in Chapter 27.

Choosing a transition is mostly a matter of aesthetics. You can choose from a variety of transitions, ranging from the subtle to the dramatic.

Figure 8-5: Transition effects transform one image into another.

Choosing a transition

Although a complete transition effect takes only the span of a single frame in a Director movie, you can specify the amount of time for the transition and the smoothness of the transformation. You choose the effect you want to use from the library of transitions included with Director (see Table 8-2). Transitions in Director are grouped by category for ease of selection and use, but each transition is unique in the way it appears. In addition, some transitions — such as Dissolve and those in the Other category — consume more of the computer's resources than other transitions do. Because they require more memory to render the images to the screen, they can cause performance problems if your entire movie is resource intensive overall, or if your movie is playing on a computer with limited resources.

Table 8-2
Transition Effects

Transition Category	*Description and Available Options*
Cover	Covers the first image with the image in the subsequent frame by sliding the image over it. You can specify the direction of the transition, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.
Dissolve*	Dissolves from one image to the image of the subsequent frame, with a pixelated transition. You can choose the type of pixelation, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.
Other	Uses one of a miscellaneous collection of transitions, including checkerboard, random columns, random rows, blinds, and zoom effects, to change from one image to the image in the subsequent frame. You can choose the type, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.
Push	Pushes one image from view using the image from the subsequent frame. You can choose the type, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.
Reveal	Strips away one image to reveal the image in the subsequent frame. You can choose the direction, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.
Strips	Removes one image, a strip at a time, to reveal the image in the subsequent frame. You can choose the direction, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.
Wipe	Smoothly wipes one image away to reveal the image in the subsequent frame. You can choose the direction, the smoothness, the amount of time, and whether the transition applies to the changing area only or to the entire Stage.

*Dissolve transitions have a different appearance on the Macintosh and in Windows. If you are creating a cross-platform movie, you should test the transition on both platforms.

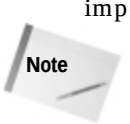
In addition to the transitions packaged with Director, a number of third-party vendors offer additional transitions that you can add to Director as Xtras. Xtra transitions are indicated with special icons in the Frame Properties: Transitions dialog box. You

install Xtra transitions by placing them in the XTRAS folder in the Director application folder (see Chapter 24 for more information). After they are used in the Score's transition channel, they appear in the Cast window just like any other cast member.

Transition Xtras, like other Xtras, must be included with your movie when it's distributed.

Applying and controlling a transition

Transitions — like tempos, palettes, and sounds — have a channel set aside for them in the Score and are placed in the frame where you want the transition to begin. Before you select the frame in which you want to set a transition, it's important to understand how transitions work.



A transition always takes place between the end of the current frame and the beginning of the frame where the transition is set. If you want to add a transition between two scenes, you must place the transition in the first frame of the second scene, *not* in the last frame of the first scene.

If you want to use sound during a transition, place the sound in a frame earlier than where the transition is placed. This gives the sound time to decompress and load prior to the rendering of the transition. It makes for a smoother transition.

When you apply a transition, you can set a variety of options that affect the appearance of the transition. Each transition has a particular set of options; only the options available for a specific transition are available in the Frame Properties: Transition dialog box. (The Description column of Table 8-2 includes the options available for each category of transition.)

Descriptions of the available controls in the Frame Properties: Transition dialog box are:

- **Duration:** You can specify the amount of time, in seconds, over which you want the transition to render to screen. Shorter transition duration creates more abrupt changes; longer duration creates gradual changes and is more resource intensive.
- **Smoothness:** By adjusting the smoothness, you can control the chunk size of the transition. *Chunk size* is the number of pixels affected at a time. (Although the Smoothness slider in the Frame Properties: Transition dialog box doesn't reflect numbers, you are actually choosing a chunk size between 1 pixel and 128 pixels.) You adjust the Smoothness slider to the right to reduce the number of pixels and increase the smoothness of your transition. Adjust the slider to the left to increase the number of pixels in the chunk size. Smoother transitions use up more resources and render more slowly than transitions that use a larger chunk size.

- **Affects: Entire Stage:** This option changes the entire Stage. Although this is a slower and more resource-intensive transition, it is more attractive when the background is a bitmap image.
- **Affects: Changing Area Only:** This option changes only that portion of the Stage that actually changes. It is a good choice when transitioning to a digital video, or when changing text on the Stage.

To increase the speed of a transition, consider enlarging the chunk size of the transition instead of reducing the duration. The number of pixels has more impact on speed than does the number of seconds for the transition.

In addition to these options, others may be available if you are using an Xtra as a transition. If an Xtra has other options, the Options button is highlighted in the Frame Properties: Transition dialog box.

You can use any movie you want for the next exercise, or you can use the marspics.dir movie on the CD-ROM in the EXERCISE:CH08 (EXERCISE\CHO8) folder.

Adding a Transition

1. Open your movie in Director if it's not already open.
2. Open the Score window by choosing Window ➪ Score.
3. Double-click the Transition channel in the frame in which you want to place a transition. The Frame Properties: Transition dialog box appears (see Figure 8-6).

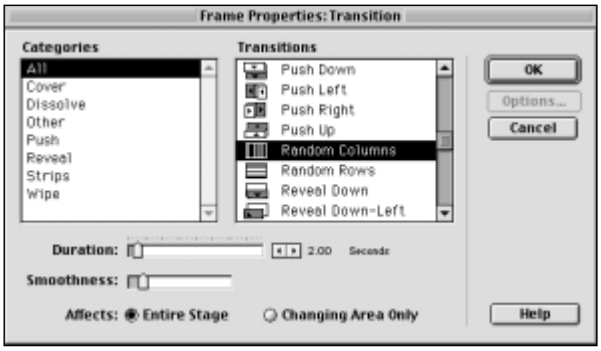


Figure 8-6: Select and control transitions in the Frame Properties: Transition dialog box.

4. Choose the transition category and transition you want to use. If you click All in the Categories list box, all the available transitions appear in alphabetical order in the Transitions list.
5. Set the Duration, Smoothness, and Affects options.

6. Click OK to complete the operation and return to Director's main window.
7. Rewind your movie and click the Play button to test your transition. If you want to change the transition, double-click the transition in the Score window, and make any changes you want.

After you set a transition, it appears in the Cast window as well as in the Score. If you want to reuse the transition later in your movie, simply drag the transition from the Cast window to the Transition channel of the frame in which you want the transition to start.

If you double-click the transition member in the Cast window, you can modify settings for the transition. This globally changes the settings to every transition in the Score window that is based on the selected cast member. It's also a good practice to give the transition cast member a more meaningful name to make it easier to identify the transition later on in the movie-creation process.

Transitions may not be preserved if you are exporting your file to digital video, and they are ignored when used with movies in a window (MIAWs). To ensure the successful distribution of your movie, test your transitions carefully to make sure they function in a digital video. For more information about transitions and MIAWs, see Chapter 23.

Sprite transitions

Until the release of Director 8, users of the program were limited to using the built-in transitions or relied on Xtras to add some variety to their movies. If you wanted to create a transition such as a soft edge-wipe, where one image wipes on top of another as a series of blended images (a technique used often in the days of large multiprojector slide shows), you had to build each transition as a series of composited bitmaps that were then played over several frames in the movie. Not only did it take hours to hand-build these effects, but it greatly increased the movie's file size, because each transition was made up of several large bitmap images. Then you hoped and prayed the art director didn't decide to change one of the images in a transition, causing you hours of rework.

The Sprite Transition behaviors are built using Director's new Imaging Lingo. You can use these Lingo commands to manipulate individual pixels of bitmap images. This new feature is so comprehensive that all of Chapter 26 is dedicated to it.

Director comes with several behaviors that you can find by choosing Animation ➪ Sprite Transitions Category in the Library palette. Unlike the built-in transitions that you apply in the effects channel, sprite transitions are applied to individual sprites. Each transition contains parameters that control when the transition appears, its duration, and other specific attributes that control the way it acts. Unlike transitions applied in the effects channel, the sprite transition behaviors occur over a span of frames in your movies. One advantage to using sprite transitions is that several transitions can be used simultaneously.

In the next exercise, you apply the Pixelate Sprite Transition behavior to two sprites in order to create the illusion of two images pixelating from one to another. You also apply the Soft Edge Wipe Sprite Transition behavior to a sprite to give the illusion of a vertical row of lights turning on from the bottom to the top, and then turning off from the top to the bottom.

For the following exercise, you need to use the spritetrans.dir movie on the CD-ROM, in the EXERCISE:CH08 (EXERCISE\CHO8) folder. The spritetrans.dir movie is a partially complete movie that already includes the Pixelate and Soft Edge Wipe behaviors, which you can find by choosing Animation ➪ Sprite Transitions Category of the Library Palette.

Using Sprite Transitions

1. Open the spritetrans.dir movie, and then open the Score window.
2. Select the Sprite called Noctis Labyrinthus, click on the Behavior pop-up menu in the Score window, and choose the Pixelate behavior.
3. When the Parameters dialog box appears, set the following parameters, as shown in Figure 8-7. The Transition should be set to appear at the End of Sprite for a duration of 10 frames. The Lowest resolution for both the horizontal and vertical directions should be set to 5, and the Minimum Pixel Dimension should be set to 25.

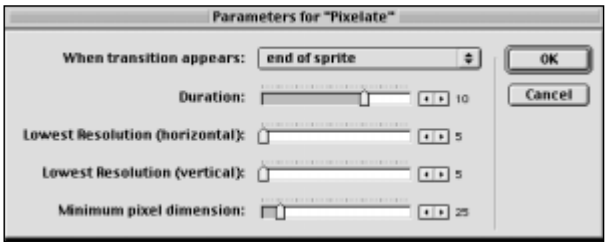


Figure 8-7: Set the parameters for the Pixelate behavior.

4. Select the Olympus Mons sprite in the Score window and apply the Pixelate behavior. Set the parameters to the same values as the ones set in Step 3 except for the When Transition Appears parameter; set it to Beginning of Sprite.
5. Select the first Light On sprite in channel 10 of the Score window, and choose the Soft Edge Wipe behavior from the Behavior pop-up menu.
6. In the Parameters dialog box that appears, choose Bottom to Top, as shown in Figure 8-8, for the direction. You can leave the rest of the parameters at their default settings.
7. Now select the next Lights On sprite in channel 10 of the Score window, and apply the Soft Edge Wipe behavior. This time, choose top to bottom as the direction and click OK.

Figure 8-8: Set the direction that the effect will travel to bottom to top.

8. Rewind the movie and play it back. Press the Next button and note how the images appear to pixelate and the vertical bar of lights light up from the bottom to the top and then from the top to the bottom.
9. Try different settings in the parameters, using either the Property Inspector or the Behavior Inspector, and play the movie back to see how they affect the transitions.

If you stopped the movie before it finished executing the transitions, you may have noticed several cast members in the Cast window that were not previously there. This is happening because Director is creating a series of new cast members for the transition. It then deletes them from the Cast window after the transition executes.

If you stop the movie before a sprite transition has finished executing, you should delete the cast members that were created. If you don't, your movie's file size could be dramatically increased.

You need to be very careful using sprite transition behaviors, because they can be very resource intensive, especially if you are using them on large bitmaps. Used sparingly, they can be a great way to quickly create some fantastic illusions in your movies.

Working with Color

Color is one of the most complex and least understood topics in computer graphics. Among the myriad color issues that affect Director, one of the most critical is cross-platform color shifting. The bad news is that every platform, monitor, video adapter, computer, and piece of software interprets color just a little differently from the rest. The result can be like trying to find identical snowflakes in a blizzard.

The primary determining factor for all color issues is your audience. By accurately assessing your audience, color issues become a matter of matching color considerations with the viewers' needs and resources. To begin the process of addressing your specific audience, you must first understand how color and color palettes work.

Movies for a Director book audience

Most of the Director movies created for this book were created using Director's RGB color space and use quite a few 24- and 32-bit images with alpha channels.

Before deciding on this approach, we first considered the audience—multimedia authors, graphic designers, and programmers—who typically use more powerful computers than the average home user. We also knew that the Director movies that we were building for the book were going to be fairly short, because each movie was built to concentrate on a specific feature in Director. These combined factors helped us determine that using high-quality 24- and 32-bit images for the Director movies was the best approach for this audience.

First, a little color theory

Computers read data in bits. A *bit* is the smallest unit of binary data. At its simplest level, a computer interprets color as either 0 (off), or 1 (on), or 1-bit color. Normally, 1-bit color is black and white. In reality, all color is described in 0s and 1s—2-bit color, for example, creates four possible color choices: black, white, and two shades of gray.

Color is created by translating and interpreting each bit, using a color table of possible colors. As the number of bits increases, there is geometric growth in the permutations of colors that can be achieved. Director supports a variety of color depths, as listed in Table 8-3.

Table 8-3
Color Depths and Supported Colors

Color Depth	*Number of Colors Supported*
1-bit	2 colors (black and white)
2-bit	4 colors (usually black, white, and two grays)
4-bit	16 colors
8-bit	256 colors
16-bit	65,535 colors
24-bit	16.7 million colors
32-bit	16.7 million colors with a 256-grayscale alpha channel

The file size of an image grows in proportion to increases in the color depth and the number of colors. If file size is an issue, reducing the color depth of a bitmap can represent huge savings in storage space, as well as improve the Stage refresh rate of your movie. Large files take longer to import, load, and render to screen. They may also be unnecessarily larger than what is required for optimum output. A 32-bit or 24-bit color image looks wonderful and enables you to take advantage of alpha channels, but if you intend to use it in a Director movie that is to be played back over the Web, you need to consider the price in file size and download time.

RGB color versus Palette Index color

Director 8 has two ways of using and displaying colors in a movie: RGB (red, green, blue) color and Palette Index, which is the color space that was used in previous versions of Director. The Palette Index method of displaying colors assigned each color to a specific position in a 256-color palette. RGB color assigns a hexadecimal number to each color that specifies the amounts red, green, and blue needed create the color. When a movie plays in thousands or millions of colors, Director always displays the RGB colors correctly. When a movie plays in 256 colors, Director uses the closest color in the current palette to approximate the original RGB color.

At first, RGB color takes a little getting used to (especially if you are an experienced Director user accustomed to the Palette Index color space). The best way to understand RGB color is to show you how it works.

For the next exercise, set the color depth of your monitor to 256 colors.

Comparing Index Palette Color and RGB

1. With your monitor set to display 256 colors, create a new movie in Director.
2. Open the Movie Properties dialog box by choosing Modify ➪ Movie ➪ Properties, or press Command+Shift+D (Ctrl+Shift+D). You can also select the Movie Properties by clicking the Movie tab in the Property Inspector.
3. In the Property Inspector, select System – Mac as the default palette, and then click the Palette Index radio button. The movie now uses the Macintosh 256-color System Palette to assign colors to an element.
4. Open the Floating Tool Palette by choosing Window ➪ Tool Palette, or press Command+7 (Ctrl+7), and draw a filled shape on the Stage.
5. Make sure that the shape is still selected, and choose the dark blue color (Index 240) located in the bottom-left corner of the color palette for the shape, as shown in Figure 8-9.

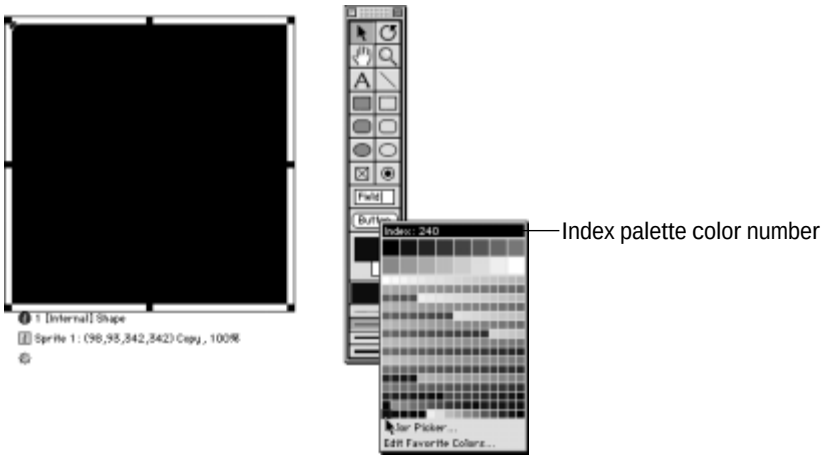


Figure 8-9: When using Index Palette color, Director uses an index color number to define the color.

6. Open the Score window (you might need to click the Hide/Show Effects button to display the Effects channels), and double-click the Palette Effects channel in frame 1 to display the Frame Properties: Palette dialog box. Select the System – Win palette from the Palette pop-up menu, and then click OK to return to Director's main window.

Note The Palette channel is located in channel 2 of the Effects channels.

7. The shape has now changed to a salmon pink color. Because the shape is assigned a color number (color number 240 in this case), it applies to the shape whatever color is currently present in position 240 of the designated palette.

8. Delete the Windows System Palette from the Palette effects channel by clicking it and pressing the Delete key. Select the shape again, and it turns back to its original color. You may need to move the playback head to clear the previous palette from memory.

Note Now you are going to set the movie to RGB color. This time, Director defines the selected color as an RGB color. When you apply a different palette, Director reassigns the RGB color to the Palette Index color that most closely matches the original RGB color. It's also important to understand that this visual interaction between RGB color and indexed palette color is only relevant when the computer monitor's color depth is set to 8 bits or lower. At 16 bits or higher, all colors on the Stage are displayed in RGB, regardless of any setting in the Palette Effects channel.

9. Open the Movie Properties dialog box and click the RGB radio button.

10. Select the shape on the Stage, and then click on the Forecolor swatch in the Tool Palette. This time, the color number is displayed as an RGB color number, as shown in Figure 8-10.

11. Repeat Step 6 to apply the Windows System palette to the Palette Effects channel in frame 1.

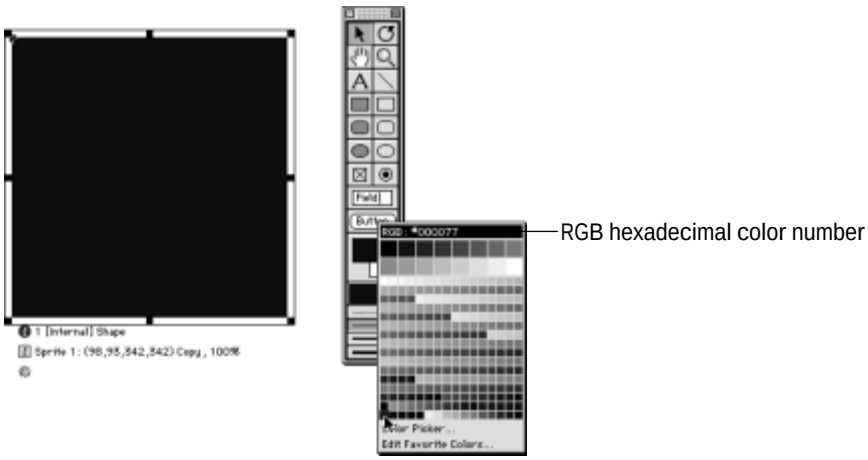


Figure 8-10: The color number is now assigned an RGB color number.

12. Note that the shape did not change to a new color. With the shape selected, click the Foreground color swatch on the Tool Palette. The color that has been applied to the shape has been remapped to the color in the Windows System palette that is the nearest match (exact in this case) to the original RGB color (see Figure 8-11).

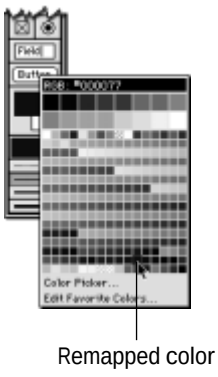


Figure 8-11: Director finds the color in the current palette that is the nearest match to the RGB color values.

If you are an experienced Director user, you know that RGB color is a vast improvement over the Palette Index color space that was the only option in earlier versions of the program.

Using RGB color doesn't mean that you can now ignore color palettes. Eight-bit bitmaps that are mapped to a specific palette still might have unexpected color shifts if they are mapped to a different palette, even if you are using RGB color. Because RGB colors are mapped to the current palette, Director has to find a color in the current palette that approximates the original RGB color.

Quite often, you still have to use images that are indexed to a color palette for most of your movies, if for no other reason than to trim the file size of your movies so that they play back smoothly. Director movies that consist entirely of 24- and 32-bit images will bring most lower end or older computers to their knees.

Assigning images to color palettes

Director's color palettes are far more than virtual boxes of crayons. Frequently, palettes are designed and intended for a specific purpose. The NTSC palette, for example, was designed to provide a standardized palette for the broadcast video industry. Other palettes, such as the system palettes for Macintosh and Windows, are the default palettes for those platforms.

Director enables you to assign a specific color palette (called *remapping*) to your images when you import the images. If your image was created using a custom (adaptive) color palette and you choose not to remap the image, the palette is imported with the image and placed in the Cast window. We don't recommend the use of custom or adaptive color palettes, however. When Director encounters a custom palette in a frame of your movie, it remaps all of the active Stage elements to that palette. A palette that was perfect for one element in your movie might look positively horrid when applied to other elements. If you want to use a custom palette, be sure to test it thoroughly with the other elements in your movie, as well as on the anticipated target platforms.

If you do want to use custom palettes in your movies, one of the best ways to create a custom palette is to use a graphics-processing program such as Equilibrium's Debabelizer. Debabelizer can create what it calls a Super Palette—essentially a single palette that uses the common colors found in a series of images—that can be used for all of the images that are in your movie.

Director can display only a single palette in any given frame of your movie. If the elements of your movie use different palettes, you run the risk of conflicts. Your movie may crash if a palette conflict occurs due to images that use multiple palettes in a frame.

Macintosh or Windows or both?

Macintosh and Windows don't display color in the same way. If you are creating a cross-platform movie, you'll notice a dramatic difference between the way your movie looks on the Macintosh versus the way it looks in Windows. The main reason for this is that both platforms use a different Gamma (light intensity) to display color. Although you can't change the way the two platforms differ in color interpretation, you can minimize the impact on your movies.

When you are creating a cross-platform movie, it's a good idea to select one palette and use it for the images on both the Macintosh and Windows versions of your movie. At the risk of starting a platform war, we generally think it's best to use the Macintosh system palette. The reasoning behind this choice is simple: The Macintosh system palette has a broader range of colors than the Windows palette.

In the next exercise, you import images into Director and remap the colors. We have provided several images that you can use for this exercise. You can find them on the CD-ROM in the EXERCISE:CH08:IMAGES (EXERCISE\CH08\IMAGES) folder.

To be prompted to set a color palette for the images that you are about to import into your movie during the following exercise, your monitor must be set to display 256 colors. The color depth setting of your monitor determines the Stage color depth in Director, which determines whether Director needs to attach an indexed color palette to the image.

Remapping Images When Importing

1. Open a new movie in Director by choosing File ➪ New ➪ Movie.
2. Choose File ➪ Import to display the Import Files dialog box (shown Figure 8-12), or click the Import button on Director's toolbar.
3. Select the files you want to import, and click the Add button to move them to the file list. You can also double-click a filename to automatically add it to the file list.
4. Click Import. The Image Options dialog box appears (see Figure 8-13).
5. Choose the palette options that you want to use. If you want to remap your image to a specific palette, choose the palette from the drop-down palette list, and then click the Remap to radio button.

Figure 8-12: Select the files that you want to import.

6. If you want all of the images to be imported using the same options, check the Same Settings for Remaining Images checkbox.

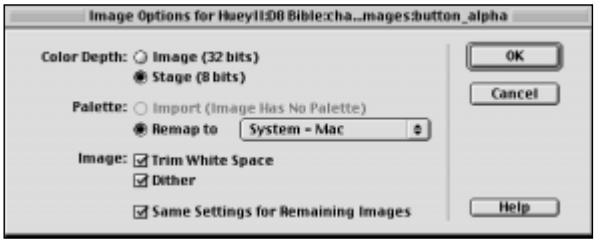


Figure 8-13: Select the Image Options that you want to use.

7. Click OK to import the images and return to Director's main window.

If you remap 32-bit images that contain alpha channels (transparency) to 8-bit color, the images no longer contain an alpha channel when they are imported into Director.

Remapping images on import enables you to quickly change the palette for bitmap images before they are placed in the Cast window. You can also change the palette of existing bitmap cast members, using the Transform Bitmap command. With this command, you can choose to remap the image or specify dithering. If you choose Dither, Director attempts to match the existing colors of the image as closely as possible to the existing palette by interspersing multiple colors from the new

palette that closely match the original single color. In addition to changing the palette an image uses, the Transform Bitmap command enables you to change the color depth and size of the image.

The Transform Bitmap command can't be undone. If you are unhappy with the results, you need to reimport the image into the cast.

Transforming Bitmaps

1. In Director, open a movie that contains images you want to remap, if it's not already open.
2. Choose Window ➪ Cast to display the Cast window.
3. In the Cast window, select the bitmap cast members you want to transform.
4. Choose Modify ➪ Transform Bitmap to display the Transform Bitmap dialog box (see Figure 8-14).

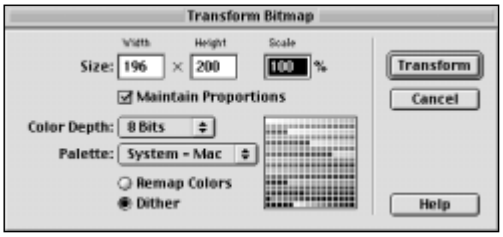


Figure 8-14: Changing the color depth, size, and palette for your image

5. Select a palette from the Palette list.
6. Click either the Remap Colors radio button or the Dither radio button.
7. To resize your image, either enter a new value in the Scale percentage box or type new values into the Width and Height boxes. If you check Maintain Proportions, you need to enter only one value; Director calculates the other (width or height) values to maintain the aspect ratio of the image.
8. Click OK to transform the bitmap. A warning box appears that tells you the operation is irreversible, and asks you to confirm your command. Click Transform to continue or Cancel to quit.

The Transform Bitmap command is useful for quickly modifying your bitmap images. If you're reducing the size of an image by a small percentage (25 percent or less), Transform Bitmap is an effective choice. If you need to make larger changes or enlarge an image, resize the image in an external editor, such as Adobe Photoshop.

Color palettes and the Web

When playing in a Web browser, Shockwave movies don't control the color palette of a user's system as projectors do. Shockwave remaps the colors in Director movies to the most similar colors in the active palette of the user's system. Generally, the active palette is that of the user's browser. Therefore, you can get the best color results from your Shockwave movies if you map all the images in your movie to the Web 216 palette that is built into Director.

Modifying palettes

In addition to the standard palettes that come with Director, you can duplicate existing palettes and then modify them to create your own custom palettes. This is useful when a movie's cast members use only a few out of a broad range of colors. For example, if the cast members are using only 24 solid colors out of the 256-color palette, you could create a custom palette, remap all of the cast members to the new palette, thereby reducing the rendering time and file size of the entire movie.

This technique doesn't work as well for images containing gradient fills.

You can't modify or edit any of Director's standard palettes.

Creating a Modified Palette

1. Choose Window ➪ Color Palettes, or press Command+Option+7 (Ctrl+Alt+7). This action displays the Color Palettes window, with the active platform palette in the palette window. In Figure 8-15, the Windows System palette is chosen (in a Macintosh window).
2. To modify the colors in the palette, select a color square and use the up- and down-arrow buttons at the bottom of the window to change the color's HSB (Hue, Saturation, Brightness).
3. The Create Palette dialog box appears, enabling you to rename the palette (see Figure 8-16). Enter a new name — it's a good idea to enter a name associated with the cast members in your movie. This makes it easier to remember the palette's use later.
4. Click OK to return to the Color Palettes window. The new palette appears, with the name displayed in the list box at the top of the window (see Figure 8-17).
5. You can repeat Step 2 and modify any other colors in the custom palette.

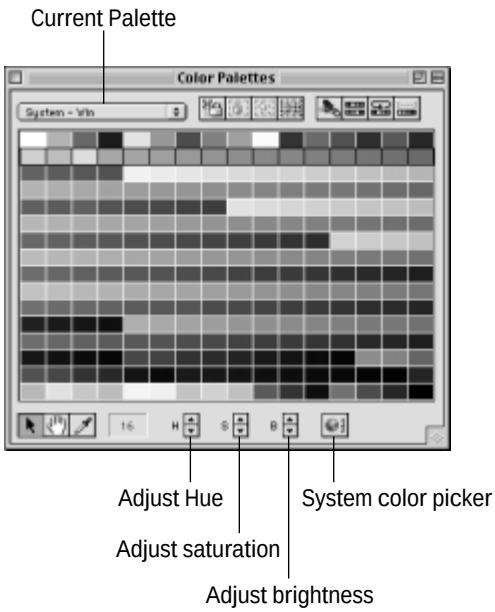


Figure 8-15: The Color Palettes window enables you to modify color palettes.

Figure 8-16: Enter a name for your new color palette in the Create Palette dialog box.

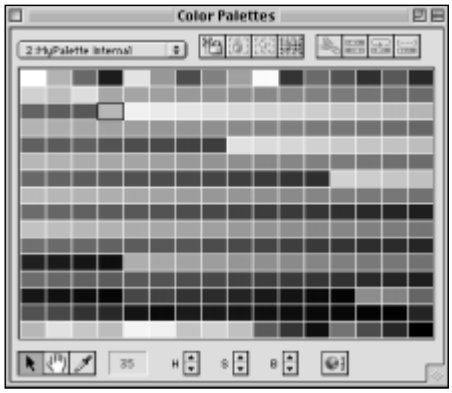


Figure 8-17: The modified color palette's name appears in the list box at the top of the Color Palettes window.

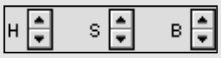
6. After modifying a palette, be sure to save your movie to preserve the changes you've made to the palette.

You've now created the basis for a modified palette. You can edit the palette as needed in a variety of ways, using the tools and command buttons in the Color Palettes window. Table 8-4 describes these tools and their functions in editing your color palettes.

You can map cast members to your modified palette as you would to one of Director's standard palettes. Be cautious when remapping cast members to a palette, however, because these changes are irreversible.

Table 8-4
Tools and Functions in the Color Palettes Window

Icon	*Description*	*Function*
	Reserve Selected Colors	Reserves selected colors and prevents their use. Useful for restricting effects, such as cycling colors to a selected group of colors.
	Select Reserved Colors	Selects colors you have reserved in the active color palette.
	Select Used Colors	Scans the cast members to select just those colors used by the cast.
	Invert Selection	Reverses the selection. For example, if the selected colors in the palette are those used by your cast, this option reverses that selection and selects the colors that were not used by the cast.
	Sort	Enables you to sort colors by Hue, Saturation, or Brightness. Select a range of colors and then click the Sort button to choose the desired parameter from the dialog box that appears.
	Reverse Sequence	Reverses the order of the selected colors in the Color Palettes window.
	Cycle	Cycles selected colors one square to the left. Creates an effect similar to color cycling. Note: This option is only available for 256-color palettes.

Icon	*Description*	*Function*
	Blend	Creates a blend of a selected range of colors. Useful for creating a range of blended colors for use as a gradient. Select a range of colors and then click the Blend button to create the blended range.
	Arrow Tool	Selects colors and options in the Color Palettes window. Click a color to select it. Drag to select a range of colors.
	Hand Tool	Enables you to drag colors and rearrange their order in the Color Palettes window.
	Eyedropper	Enables you to replace a color in the Color Palettes window by selecting the color and then dragging the Eyedropper to the desired color on the Stage.
	Hue, Saturation, and Brightness	Adjusts the Hue, Saturation, and Brightness of a color.
	Color Picker	Enables you to select colors from the Color dialog box.

Creating effects with palettes

You can create effects with palettes much as you can with other sprites in your movie. For instance, using settings in the Frame Properties: Palette dialog box, you can fade a palette to black or white. Fading to black or white is useful for adding closure scenes to your movies. Instead of abruptly ending the movie, the scene gradually fades away.

You can also create color-cycling effects. Color cycling works well for a variety of uses, such as making a cartoon character blush by degrees from pink to red, or for creating a headline banner that cycles through several colors.

Palette-fading and color-cycling effects are available only if you are using an 8-bit, 256-color palette. You can't create these effects with higher color depths.

Try both of these effects in the next two exercises. Use the mplane.dir movie in both sets of steps. The mplane.dir movie is on the CD-ROM in the EXERCISE:CH08 (EXERCISE\CH08) folder.

For the next two exercises, set your monitor to display 256 colors.

Creating a Fade to Black or White

1. Open the mplane.dir movie in Director.
2. To add a palette fade at the end of the movie (from frame 40 to frame 60), click once in the Palettes channel in frame 40. Hold down the Shift key and click in frame 60; this selects all frames from 40 through 60.
3. Choose Modify ➪ Frame ➪ Palette to display the Frame Properties: Palette dialog box (see Figure 8-18).

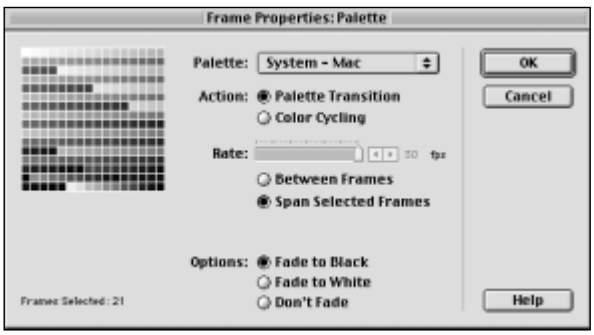


Figure 8-18: The Frame Properties: Palette dialog box enables you to set up various palette effects.

4. Select the Palette Transition radio button and the Span Selected Frames radio button.
5. In the Options area at the bottom of the dialog box, choose either Fade to Black or Fade to White.
6. Click OK to complete the operation and return to Director's main window.
7. Save the movie as mplane1.dir.
8. Be sure the Loop Playback button on the Control panel is turned off, so that the movie doesn't recycle.
9. Rewind the movie, click the Play button, and watch the palette fade.

Although not specifically a transition like those available through the Frame Properties: Transition dialog box, you can use palette fades to create color transitions both at the end of your movie and between scenes in your movie.

Now let's work with color cycling.

Cycling Colors in Your Movie

Remember that color cycling, like the palette fade, works only when using an 8-bit, 256-color palette. Furthermore, if your monitor is set to use a high-color (16-bit) or true-color palette (24-bit or 32-bit), these effects do *not* appear.

1. Make sure the mplane1.dir movie is open in Director.
2. Double-click on the System – Mac palette in frames 40 to 60 of the Palette channel to display the Frame Properties: Palette dialog box.
3. Select the Color Cycling radio button and the Span Selected Frames radio button.
4. Leave Options set to Loop.
5. On the color palette in the dialog box, drag across a range of colors to select the colors you want for the cycle. Click OK to complete the operation and close the dialog box (see Figure 8-19).

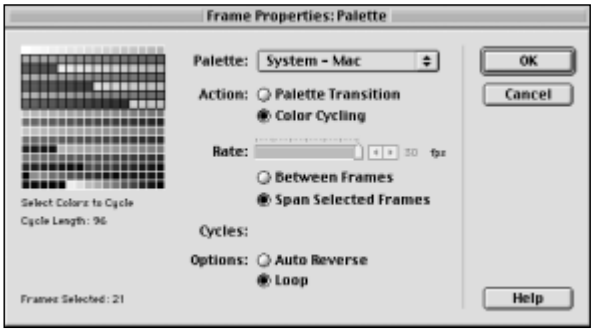


Figure 8-19: Select the range of colors that you want to cycle through.

6. Save the movie as mplane2.dir.
7. Be sure the Loop Playback button on the Control panel is turned off, so that the movie doesn't recycle.
8. Rewind the movie, click the Play button, and watch the palette cycle.

Color cycling can create effects from muted to spectacular, depending on the colors you select to cycle.

To quickly highlight and call attention to text in your movie, consider selecting two contrasting colors for the text, and cycle between them with Color Cycling enabled in the Frame Properties: Palette dialog box.

Building Projectors

After you've created a movie, you can play it in Director or share it with others who have Director installed on their computers. None of the available media players support Director movies, however. If you want to distribute your Director movie for others to use, you need to create a projector of your movie. A *projector* is a stand-alone application containing the Director movie packaged with all of the elements required for playing it on a given platform. Director doesn't need to be installed for the projector to play.

Projectors are platform-specific. A projector created on a Macintosh won't run in Windows. A projector created in Windows 98/NT won't run on a Macintosh. If you're creating a movie for cross-platform distribution, you need to create the projector on the platform for which it's designed to play. This means it's possible to create two projectors: one for each platform.

Projectors are distinct files that bundle your movie, sounds, Xtras, filters, and the run-time engine into one file. Unlike the original Director movies from which they are created, projectors are executable files, which means that the movie starts when you double-click the filename.

Windows users: Projector files have an .EXE extension. The Macintosh OS doesn't routinely put extensions on files, so you should be careful not to overwrite your Director movie by giving your projector the same name as your Director movie.

Projector movies are, by their nature, larger than their original Director movies. The reason for the difference in size has to do with the number and types of files included in a projector, plus the executable code that plays the movie. It's not uncommon for a projector to be two to three times the size of its associated Director movie.

In Director 8, you can only create projectors with movies that are created with version 8 of Director. If you are including Director movies from a previous version of the program, you need to update them by using the Update Movies Xtra explained later in this section.

Creating a projector

Before creating a projector, it's a good idea to play your movie one last time to check all the elements of your movie. Although your original Director movie isn't altered when you create a projector, you cannot edit the projector itself.

When you are creating a projector, make sure that any Xtras you used to create the movie are included with the projector. If you are missing an Xtra, your movies may not play properly. You can add Xtras the same way you add movies when creating a projector (covered later in this section), or you can add Xtras with the Movie Xtras dialog box. Follow these steps to add Xtras with the Xtras Movie dialog box:

1. Open the Movie Xtras dialog box by choosing Modify ➪ Movie ➪ Xtras. Most of the commonly needed Xtras are already included, as shown in Figure 8-20.
2. If you need to add an Xtra, click the Add button and choose the Xtras you want to include.

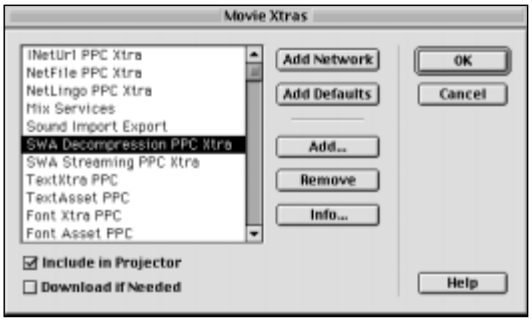


Figure 8-20: The Movie Xtras dialog box enables you to select the Xtras to be included in your projector.

3. Remove any Xtras that you don't want by selecting them and then clicking the Remove button. This reduces the size of the projector.
4. Select an Xtra and then click the Info button to get information on the Xtras function.

When you click the Info button for most of the Xtras, Director launches your Web browser and gets the information from the Macromedia Web site.

5. If you click Download if Needed, the viewer of your movie is prompted to download the Xtra from the Web if it is not on the viewer's system.

Another way to include Xtras with your movies is to create an XTRAS folder that contains the Xtras that you are using for your movie(s), creating it in the same folder as the projector. This approach is actually preferred by most professionals. This approach enables you to see which Xtras are included with the movie without having to open the movie in Director. Make sure you *do not* include the Xtras in the projector if you are using this technique, because the movie crashes if there are two sets of Xtras included.

When you create a projector, Director asks you to add the movies you want associated with the projector. You can choose to add one or more movies to the list. In addition, you can add cast libraries, Xtras, and other files needed in association with the projector. You can even create a projector that runs several movies in a sequence.

Be careful when adding several movies and files to the projector list. Movies are played back in the same order in which they're listed. This point is especially critical for projectors that contain movies that play in a separate window (called MIAWs), in which the host movie calls other movies to play. If the order is incorrect, your MIAW could finish playing before its host movie starts, causing the projector to fail. To prevent this from happening, make sure that any host movie that is calling an MIAW is higher in the list than the MIAW.

You can specify a variety of options when you create a projector. These options, accessed through the Options button in the Create Projector dialog box, determine the appearance of the projector and the way the projector is stored for distribution. Table 8-5 lists and describes the various options for creating a projector.

Table 8-5
Options for Creating a Projector

Option	*Description*
Playback: Play Every Movie	When you're creating a projector that contains multiple movies, choosing this option ensures that every movie plays in turn; otherwise, only the first movie plays. Note: For a projector of an MIAW, do *not* select this option. If you do, the child movie is left on the screen when the projector has finished playing.
Playback: Animate in Background	Plays your projector regardless of what other applications are active. If you don't select this option, when you start another application the projector pauses until you click it to restart it.
Options: Full Screen	Blanks out the screen of all other applications and plays the projector full screen. If the Stage does not fill the entire screen, the area outside the Stage is filled with the starting Stage color.

Option	*Description*
Options: Show Title Bar	You can select this option only if your projector is playing in a window; the projector displays a title bar with the projector's name. This also enables the window to be moved.
Stage Size: Use Movie Settings	Causes each movie in the projector to be displayed at its creation size (when the projector contains multiple movies).
Stage Size: Match First Movie	Causes successive movies to be resized to match the Stage size of the first movie in the play order. Be careful when you use this option, because it can cause distortion in your movies. This option is most effective when the Stage size for all movies is the same.
Center	Centers the movie on the screen.
Reset Monitor to Match Movie's Color Depth (Macintosh only)	Resets the monitor's color depth to match the color depth setting used for the Director movie.
Media: Compress (Shockwave Format)	Compresses projectors, using the Shockwave compression scheme. This keeps the file size as small as possible, but it increases the load time because the file has to decompress before playing. Shockwave compression can be used for any projector to reduce its size.
Player: Standard	Creates the largest projector but loads the movies the fastest, because the player file does not have to be decompressed.
Player: Compressed	Compresses the player code included with the projector. This substantially reduces the size of the projector. The projector will need more time to launch, because it has to decompress the player file.
Player: Shockwave	Eliminates the need for a player file, because it uses the Shockwave player. If Shockwave is not installed on a user's system, it automatically prompts the user to download the player from the Web.
Memory: Use System Temporary Memory (Macintosh only)	Enables a movie to use available system memory when the projector's own memory partition is full.

For the next exercise, you can use the engine.dir movie found on the CD-ROM in the EXERCISE:CH08 (EXERCISE\CH08) folder.

Creating a Projector

1. Open engine.dir in Director. Choose File ➪ Save and Compact. This operation removes redundant and fragmented data in your movie so that it performs better when it's played.
2. Choose File ➪ Create Projector to display the Create Projector dialog box (see Figure 8-21).

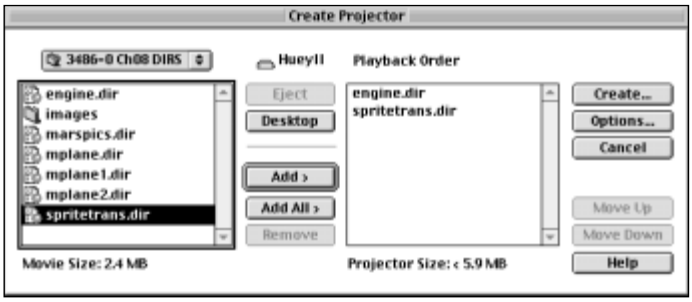


Figure 8-21: Use the Create Projector dialog box to specify the movies and options that you want to include in a projector.

3. Navigate to and select engine.dir, and then click the Add button to add it to the playback order list at the right of the dialog box.

You can also add Xtras by using this method. Locate the folder that contains the Xtras, and add them just as you would a movie.

4. If you are making a projector for more than one movie, you must verify the order in which the movies appear in the Playback Order list box. Click the Move Up or Move Down buttons as needed to reposition selected movies in the list. Remember that movies must be listed in the order in which you want them to play.
5. Click the Options button to display the Projector Options dialog box (see Figure 8-22).

Figure 8-22: The Projector Options dialog box enables you to select the options you want to use with your projector.

6. Select the options (see Table 8-5) you want to use with your projector, and then click OK to return to the Create Projector dialog box.
7. Click Create to display the Save Projector As dialog box.
8. Enter a filename (such as **engine**) and a location for your projector, and then click OK to continue.

Depending on the size and complexity of your movie, it may take Director a couple minutes to create your projector. After the projector is completed, minimize or close Director and then double-click your projector file to test the projector.

Creating a more efficient projector

It's not really necessary to include in the projector all the movies that will be used in your multimedia application. A projector can call other Director movies that are external to the projector. This means you could build a small Director movie that contains only a Lingo script that calls the first Director movie that you are using in your multimedia application. If you take this approach, it's a good idea to have the projector file at the same directory level as the rest of the Director movies that will be called from the projector. You might want to protect the Director movies that are external to the projector so that users will not be able to open the movies in Director.

Distributing a projector

Projectors tend to be large — even a small projector file is usually larger than what fits on a single floppy disk. Although you can use a compression utility such as StuffIt or PKZip to compress and store your projector on multiple disks, we don't recommend it. A projector movie contains many component parts, but it is considered a single file, and it's not a good policy to span a single file across multiple disks. If a single archive disk fails, then your projector becomes worthless.

You can use a variety of storage media to distribute your projectors. Only two of them are practical, however. You can either distribute the projector via the Internet as a download, or you can create a CD-ROM containing the projector. If you choose to distribute your projector over the Internet, be aware that the user has to download the file and play it offline. The only way the user can view your movies online is if you create a Shockwave movie (see the "Shocking Your Movies" section below). A CD-ROM capable of holding almost 650MB of data may seem like overkill if you have a 3MB projector, but the potential audience — given the number of people who own CD-ROM drives — might warrant using that medium for distribution. CD-ROM recorders and media are becoming inexpensive and are reasonably easy to operate.

Using the Update Movies Xtra

Because you can create projectors with Director 8 movies only, you need to update movies created with previous versions of Director. As well as enabling you to update movies, the Update Movies Xtra performs these functions:

- ✦ Compresses your movies for faster downloading over the Web.
- ✦ Removes fragmented data in your movies. The Save and Compact command performs this same operation.
- ✦ Protects movies to prevent users from opening them.
- ✦ Batch processes the preceding operations for multiple movies and cast files.

To update movies with the Update Movies Xtra, follow these steps:

1. Open the Update Movies Xtra by choosing Xtras ➪ Update Movies. This brings up the Update Movies dialog box, as shown in Figure 8-23.
2. Click one of the three radio buttons next to the Action option — Update, Protect, or Convert to Shockwave Movie(s) — to select the particular operation that you want to perform.
    - Choose the Update option to update movies that were created with earlier versions of Director.

- Choose the Protect option to create Director movies that cannot be opened again in Director.
- Choose the Convert to Shockwave Movie(s) option to convert your Director movies to Shockwave movies. This option works the same way as the Save as Shockwave command, explained later in this chapter.

3. Select an option that tells Director what to do with the original files. You can choose Back Up into Folder or Delete.

If you select Delete, Director deletes the source movies you have chosen. This is a quick and easy way to lose many hours of work if you don't have the original movies backed up to another location.

Figure 8-23: The Update Movies dialog box enables you to specify the Update operation that you want to perform on your Director movies.

4. If you choose the Back Up Into Folder option (we strongly suggest that you always use this option), click the Browse button and select the folder to which you want Director to back up the original movies.

You should always back up the movies into a different folder than the one where the original movies are currently located. When Director updates the original movies, it overwrites the original files with the same name so that the links and references to other movies remain intact. This is especially important if you are creating Protected or Shockwave movies, because you can't edit them after the movies are updated.

5. Click the OK button when you have chosen the options you want. When the Choose Files to Update dialog box appears, as shown in Figure 8-24, select the movies and cast libraries on which you want to perform the operations.

- Click the Add button to add a single file to the list.
- Click the Add All button to add all the files in the current folder to the list.

- To remove a file from the list, select the file and then click the Remove button.
- Click the "Add All" Includes Folders check box before choosing the Add All option if you want to include files that are contained inside folders that are located in the Directory that you have chosen.

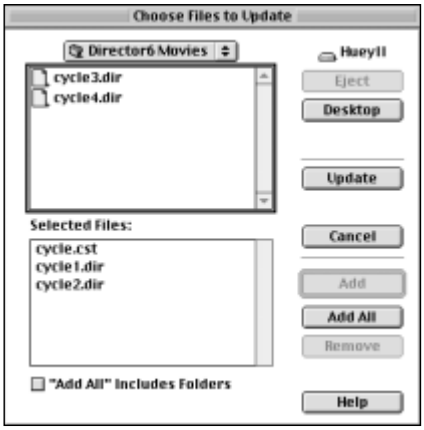


Figure 8-24: Choose the movies and cast libraries that you want to update.

6. When you have added all the files on which you want to perform the operation, click the Update button. Director begins processing the files.

It may take several minutes to update the files if you are processing a large number of files. Director saves the new versions of the movies with the same names and locations as the original movies. This ensures that all the links and references that were in your original movies function correctly. If you chose the Backup Into Folder option, Director puts the original movies into the backup folder that you selected.

Shocking Your Movies

Shockwave — one of the fastest growing technological advances to hit the Internet — helps Web authors add animation and interactivity to Web pages. Shockwave is now a system-level component (similar to QuickTime) that enables you to play movies over the Web and from the desktop. Shockwave can also play your projectors if you chose that option when creating them.

Shockwave 8 is now much easier to install, giving the user more feedback during the installation process. It also automatically updates components as needed. Xtras can now be downloaded from a secure server if they are not installed on the user's system.

Director has also included several capabilities that enable you to create multiuser Shockwave applications, such as games and chat rooms. These new features combine to make Shockwave one of the most powerful technologies on the Web.

Designing for the Web

Before you create a Shockwave movie, it's a good idea to check with your ISP (Internet service provider) to be sure that they support the Shockwave file format. The server at your ISP must be able to send information to a user's Web browser, telling the browser how to deal with files. If your provider doesn't support the Director or Shockwave MIME-type, users won't be able to view your movie online. (For more information about Shockwave and the Internet, see Chapter 24.)

The Internet and World Wide Web don't support multiple windows. For that reason, you can't use MIAWs in a Web page.

A Shockwave movie can be presented using either Netscape Navigator 3.0 and later or Internet Explorer 3.0 and later (4.01 or later for the Macintosh). When you embed a Shockwave movie in a Web page, you need to create code specific to one or both of these browsers. Director 8 uses the new Publish command to generate the HTML code needed to display your Shockwave movies in a Web page. The Publish command replaces the features found in the Aftershock utility that was shipped with previous versions of the program. If you use Macromedia's Flash 4, you are probably familiar with the Publish command, because it is nearly identical to the one in Director 8.

One big problem with Director movies has always been controlling the speed at which your movie will play across a wide range of computer platforms. This is especially a problem when playing Shockwave movies over the Web, because you compound the problem by adding the user's connection speed to the Internet into the equation. You can control some of these issues by setting the Playback properties for the movie that lock the frame rate to assure that the movie will play the same across a wide variety of conditions.

Director has several built-in behaviors contained in the Library Palette that you can use to control the way a Shockwave movie is downloaded without having to know how to use Lingo programming. For example, you can have the movie loop on an animation in the first frame until the rest of the movie is available. You can also have buttons that are inactive until the frames of the movie to which the buttons navigate are downloaded. There is also a behavior that creates a progress bar that informs the user of the status of the download. You can learn more about these behaviors in Appendix B.

Compressing individual cast members

When creating movies that will be played back over the Web as Shockwave applications, you need to pay special attention to the file size of your movies. Although high-speed connections, such as cable modems and digital subscriber lines (DSLs), are starting to become more widespread, a majority of home Internet users are still using 28.8K through 56K modem connections to view Web content. Most users will ignore even the most compelling Shockwave application if they have to wait more than a few minutes to download it.

Director now has a menu item called Optimize in Fireworks that opens a cast member in Fireworks 2.0 or greater, enabling you to use Fireworks to choose and preview the best compression setting for an individual graphic. This feature requires that you have Fireworks 2.0 or greater installed on your system.

Graphics usually take up most of the file size in your movies. In previous versions of Director, the only compression option was the default compression used when you created the Shockwave movie. Director 8 has introduced several new methods for compressing the bitmap elements that are contained in the movie. You can set different JPEG compression settings for each individual graphic element, as well as assign global compression for all of the graphics by using Director's built-in compression scheme. If you have Macromedia's Fireworks 2.0 or greater installed on your system, you can use the Optimize in Fireworks option, which uses Fireworks' superior optimizing and preview compression utilities.

There are several images found in the EXERCISE:CH08:IMAGES (EXERCISE\CH08\IMAGES) folder that you can import into a movie to compress.

Optimizing a Bitmap Cast Member

1. In the Cast window, select a bitmap cast member, and then click the Properties button to display the Property Inspector. Click the Bitmap tab if it is not the active window.
2. The Bitmap tab shown in Figure 8-25 has a series of settings, located in the Compression list box, that control the compression for the chosen cast member. Choose from the following options:
   - **Movie Setting:** This setting uses the compression setting chosen from the Publish Settings dialog box, which you find by choosing File ➪ Publish Settings. This feature is covered in the "Creating a Shockwave movie" section.
   - **Standard:** Uses Director's standard compression setting.
   - **JPEG:** Uses JPEG compression, which you can set via the slider located below the Compression setting list box. The compression settings range from 0 (lowest quality, highest amount of compression) to 100 (highest quality, least amount of compression).

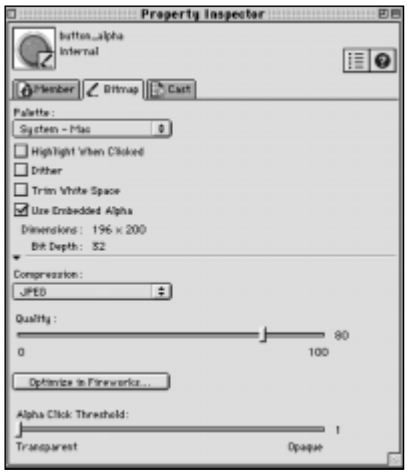


Figure 8-25: Control the compression setting for a cast member in the Bitmap tab of the Property Inspector.

If you have Fireworks installed on your computer, you can click the Optimize in Fireworks button to open the graphic in Fireworks' export menu, enabling you to choose and view several different compression schemes simultaneously.

The next exercise requires that you have Fireworks 2.0 or greater installed on your system. If you don't have Fireworks, you can find a Fireworks 3.0 demo on the companion CD-ROM in the GOODIES:MACROMEDIA:FIREWORKS (GOODIES\MACROMEDIA\FIREWORKS) folder.

Optimizing a Bitmap by Using Fireworks

1. In the Cast window, select a bitmap cast member and then click the Properties button to display the Property Inspector. Make sure that the Bitmap tab is active by clicking on it if needed.
2. Click the Optimize in Fireworks button. The Mix Editing In Progress dialog box appears.
3. Another prompt appears, asking if you want to edit an existing Fireworks graphic (see Figure 8-26). If the cast member you are using was originally created in Fireworks and is linked to the movie, click Yes. If you want to edit the cast member that is currently in your movie, click No.
4. The graphic is displayed in the Fireworks Export window, as shown in Figure 8-27. Choose a preset compression setting from the pop-up menu located above the image preview. You can then refine that setting by using the Options tab on the left. If you want to view several settings in order to compare them, click one of the Preview Window buttons located below the image preview.

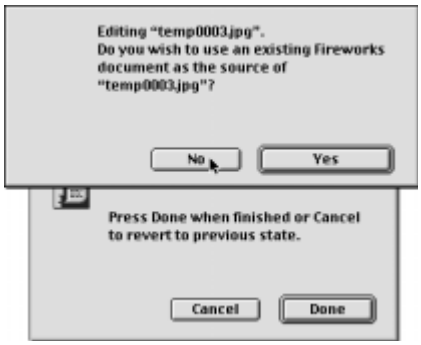


Figure 8-26: A dialog box appears, prompting you to choose a graphic created in Fireworks or to use the existing graphic in your movie.

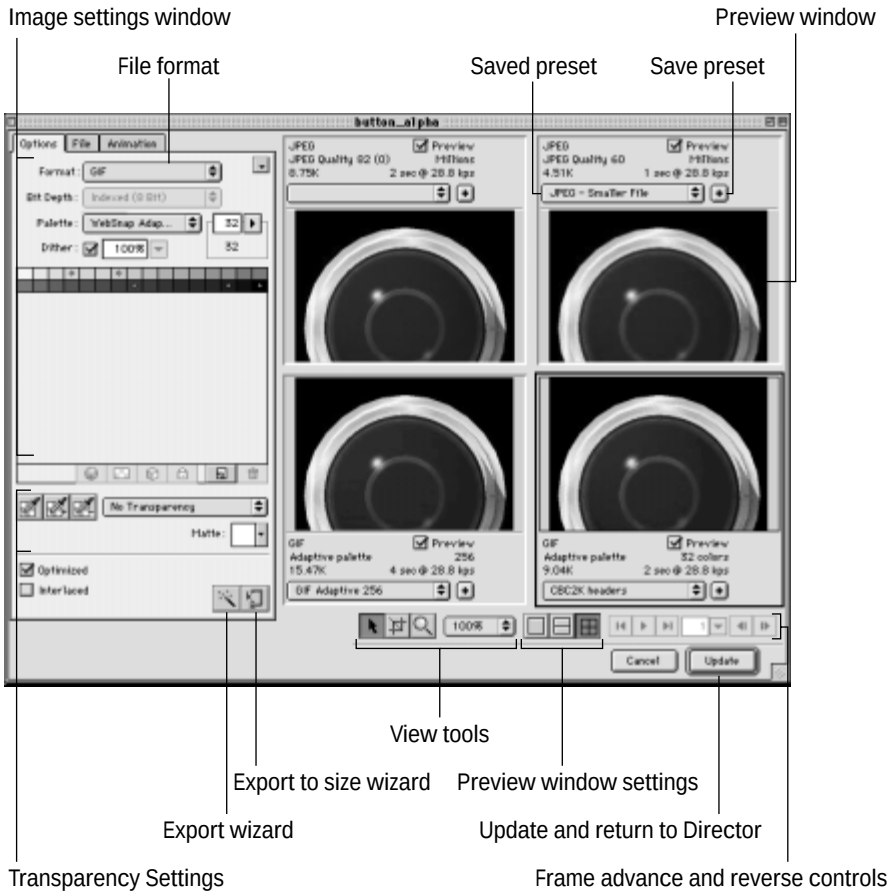


Figure 8-27: Fireworks enables you to view several different compression settings applied to the same graphic in order to choose the best setting.

5. When you are satisfied with the compression setting, click the Update button. Fireworks closes and returns you to Director. Click the Done button in the Mix Editing In Progress dialog box to finish the operation.

When you choose the Optimize in Fireworks button, you have access to the Fireworks Export window only. The editing and creation tools are not available. If you set Fireworks as the default editor for bitmaps, you can double-click a cast member and edit by using the entire toolset available in the program.

The Publish settings

To display your Shockwave movie in a Web browser, you need to build an HTML page that contains at the very minimum the EMBED tags needed to recognize and load the DCR file that is created when you publish a Director movie as a Shockwave file. In previous versions of Director, you had to accomplish this by creating the HTML code by hand or with an application specifically used to create HTML documents. Director 6.5 introduced a utility called Aftershock, which enabled you to create HTML code that handled your Shockwave movies in a variety of circumstances.

Director 8 now has the functionality that used to come with Aftershock built right into the program. Choose File ➪ Publish Settings and use those settings to quickly and easily create very complex HTML documents that set a variety of parameters to control the way a Shockwave movie plays in a Web page. You can set options that automatically download the plug-in or ActiveX control if they are not already installed on a user's system, display a JPEG image of your movie, or play your movies as Java applets. The Publish Settings menu also enables you to set a global compression setting that is applied to all of the bitmap graphics in your movies that have their compression property set to use the movie's compression settings.

Access the Publish Settings menu by choosing File ➪ Publish Settings. Depending on the HTML template you have selected, up to six tabs are visible in the menu, as shown in Figure 8-28. You can modify individual settings applied to an HTML template by adjusting the properties found in the tabs that are enabled for each template.

Figure 8-28: Use the Publish Settings menu to control how your Shockwave movies will be displayed in a Web browser.

You use the six tabs listed in the Publish Settings menu — Formats, General, Shockwave, Compression, Shockwave Save, and Image — to control various aspects that determine the way the Shockwave movie plays in a browser window.

The Formats tab

Use the Formats tab to:

- ✦ Select an HTML template that the Shockwave movie will use, or create a Shockwave movie without an HTML document. Table 8-6 explains each of the HTML templates.
- ✦ View a short description of the currently selected HTML template.
- ✦ Set the path to where the Shockwave, HTML, and Image files are to be saved. If you want to assign a new path, either type in the path name or click the Browse button and select the folder in which you want to save the files.
- ✦ Determine whether the file will automatically launch in a Web browser when it is output.

Table 8-6
HTML Templates for Embedding Shockwave Movies

Template Name	*Description*
No HTML Template	Creates a Shockwave movie with no associated HTML template.
Shockwave Default	Creates an HTML document that contains the basic OBJECT and EMBED tags needed to display the Shockwave movie in a browser.
Detect Shockwave	Creates an HTML document that uses JavaScript and VBScript to detect the Shockwave plug-in or ActiveX control. If the correct version is not present on the user's system, the viewer is advised to update the viewer's Shockwave installation.
Fill Browser Window	Generates HTML code that enables a Shockwave movie to expand in size to entirely fill a browser window.
Java	Creates HTML code that enables the movie to be loaded into a Web browser as a Java applet. Note: Many Director features are not supported in Java.
Loader Game	Displays a Breakout-style game with progress bar while the Shockwave movie is preloading.
Progress Bar With Image	Enables you to assign a background JPEG image that is displayed behind a progress bar while the movie is loading.

Template Name	*Description*
Shockwave With Image	Creates an HTML document that automatically substitutes a JPEG image if Shockwave is not installed on a user's system.
Simple Progress Bar	Displays the Macromedia logo over a progress bar while the movie is loading.
Center Shockwave	Creates an HTML document that puts the Shockwave file in a table in order to center the movie on the Web page.

The General tab

You use the General tab, shown in Figure 8-29, to set the dimensions of the Shockwave movie and to set the background color that will be used in the HTML page. Choose from the following Dimensions options:

- **Match Movie:** This setting matches the dimensions that are used for the Director movie that is being output as a Shockwave file.
- **Pixels:** When you choose this setting, the Shockwave movie's dimensions are set to the exact pixel dimensions typed into the Width and Height fields.
- **Percentage of Browser Window:** This setting displays the Shockwave movie, using the percentages entered into the Width and Height fields. This setting has no effect if No Stretching is selected in the Stretch Style Option of the Shockwave tab.

If you are using the Percentage of Browser Window option, the graphic elements used in your movie should largely be comprised of vector shapes that can scale up and down. Bitmap graphics could appear distorted if you use this option.

Figure 8-29: Use the General settings to set the dimensions of the movie and the background color used for the HTML page that displays the Shockwave movie.

Choose the color used for the page background from the color swatch, or type a hexadecimal color number into the text field.

The Shockwave tab

You use the Shockwave tab, shown in Figure 8-30, to set the properties of your Shockwave movie, which determine how the movie will play back. You can control the way the movie will load. You set the Stretch style (how it fills the browser window) of the movie. You can choose the background color of the window in which the movie is displayed. In addition, you can select an option that enables the movie to use external JavaScripts.

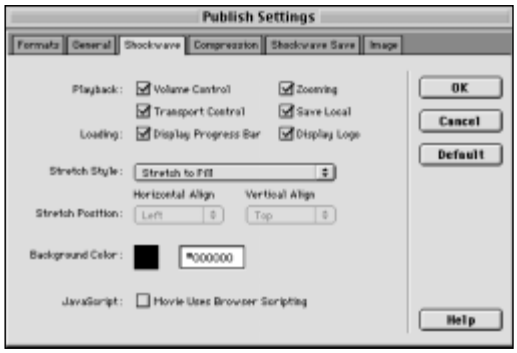


Figure 8-30: The Shockwave tab enables you to set properties that determine how the Shockwave movie loads and plays in a Web browser.

Set the following properties in the Playback controls section:

- **Volume Control:** This option enables users to adjust the volume of the audio.
- **Transport Control:** Add a transport controller that enables users to Rewind, Stop, Start, and step through the movie.
- **Zooming:** You must select this option if you want the movie to be stretchable.
- **Save Local:** Enable this option if you want users to able to save the movie to their computer's hard drive so that they can play it back using Macromedia's local Shockwave player, which is called Shockmachine.

The Loading properties set the elements shown in the movie while it is downloading:

- **Display Progress Bar:** Setting this option displays a progress bar that indicates how much of the movie has downloaded.
- **Display Logo:** This option displays the Macromedia logo along with the progress bar while the movie is downloading.

The Stretch Style settings control the way the movie will be displayed in the Web Browser:

- **No Stretching:** The movie plays at its original size.

- **Preserve Proportions:** This option displays the movie at its original aspect ratio, no matter what size it scales to fill the user's browser window. The movie originates both horizontally and vertically from the settings used in the Stretch Positions pop-up menu. **Note:** Zooming must be enabled.
- **Stretch to Fill:** The movie stretches to fill the height and width variables set in the HTML document used to embed the movie. If the height and width are not proportional to the original movie, sprites on the Stage could appear distorted. **Note:** Zooming must be enabled.
- **Expand Stage Size:** This option sets the movie's Stage size to the height and width variables set in the HTML document. The sprites remain at their original size. The movie originates both horizontally and vertically from the settings used in the Stretch Positions pop-up menu. **Note:** Zooming must be enabled.

You use the Stretch Position settings to determine alignment of the movie when one of the Stretch features is enabled. Choose from Left, Center, or Right for the Horizontal alignment, and from Top, Center, or Bottom for the vertical alignment.

You use the Background color setting to set a background color that is displayed in the window that contains the actual Shockwave movie (not the HTML page that contains the movie) while the movie is downloading. Select a color by clicking on the color swatch and choosing a color from the menu or by typing in a hexadecimal color number.

If your movie is using JavaScript, you need to enable the JavaScript property. This creates a flag for the Netscape browser to start Java when the movie loads.

The Compression tab

The Compression tab, shown in Figure 8-31, is where you set the default compression for the bitmap and audio elements in a movie. Bitmaps that use custom compression set with Property Inspector are not affected by these settings.

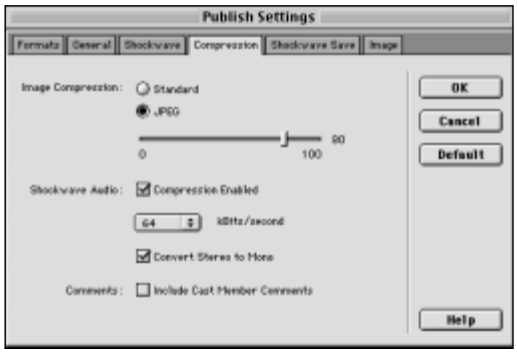


Figure 8-31: The Compression tab sets the default compression used for the movie.

Choose from the following settings for Image Compression:

- **Standard:** This setting uses the compression techniques that were used by Director versions 4 through 7.
- **JPEG:** This setting uses JPEG compression for all of the images used in the movie. Adjust the slider to set the amount of compression. The 0 setting yields the highest amount of compression but the lowest image quality, and 100 results in the least amount of compression but the highest image quality.

You can apply Shockwave's audio compression to all of the audio elements in your movie by enabling Compression and choosing the level of compression from the kBits/second pop-up menu. The higher numbers result in less compression and yield better audio quality. You can convert all stereo audio to mono (this cuts most audio file sizes in half).

If the cast members contain comment text entered in the Comments field of the Property Inspector, you can have them included in the Shockwave movie by enabling the Comments property. You need to use Lingo to access the comments included in the movie.

The Shockwave Save tab

The information in the Shockwave Save tab, shown in Figure 8-32, is used when you are creating a movie that will be downloaded and used locally by Shockmachine. Some of the properties require an understanding of Lingo as well as Java and XML. Following is an explanation of each field in the Shockwave Save tab:

- **Context Menu:** Enable this property if you want to display the standard Shockwave contextual menu when the user Option+clicks (Right+clicks) on the movie while it is playing.
- **Suggested Category:** Type in a Shockmachine category, such as **Games**, into this field.
- **Shockwave Title:** Enter a title, which then appears in the Shockmachine interface.
- **Send URL:** This setting enables you to specify and override the URL that Shockmachine detects. If nothing is entered, Shockmachine detects the URL of the HTML page that contains the Shockwave movie.
- **Icon File:** Use this field to specify the path and filename of a BMP icon image used by Shockmachine.
- **Package File:** Enter the URL of a text file that is used to provide a list of the URLs that contain all the support files that need to be downloaded with the movie to make it fully enabled on the user's local machine.
- **Total Title Size:** Enter the number, in bytes, of all the files included with your movie.

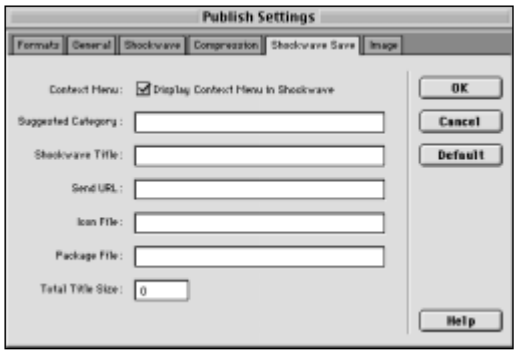


Figure 8-32: The Shockwave Save tab is where you enter information needed to enable your movies to be played locally on a user's computer using Shockmachine.

The Image tab

The Image tab, shown in Figure 8-33, is only available if you have chosen the Image HTML template in the Formats tab. The Image tab is where you select an image from a frame of your movie to be displayed for users who don't have Shockwave or ActiveX control on their systems. You type in the frame number of your movie that contains the image that you want to use and set the JPEG compression using the slider. You can also determine whether the image will be downloaded all at once or progressively.

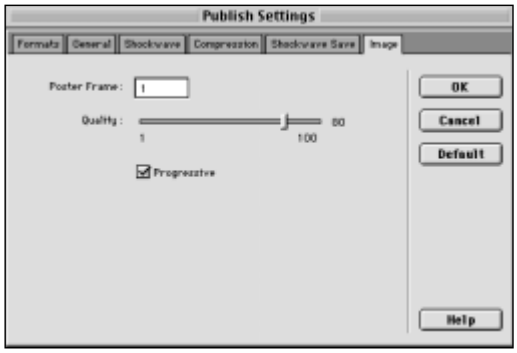


Figure 8-33: Use the Image tab to select an image that will be displayed for users who don't have Shockwave or the ActiveX control installed on their computers.

Setting the playback options

Two more things to consider when creating a Shockwave movie are how the movie will stream, and what the ideal frame rate will be for your movie.

Shockwave movies can *stream*, meaning that the movie does not have to be completely downloaded before it starts playing. When creating a Director movie that will be output as Shockwave, you can design it so that some of content can download first and then become active while the rest of the content is

still downloading. Director has several built-in behaviors that control the way elements of a Shockwave movie will be downloaded. See Appendix B for a detailed description of these behaviors. You can also control the way the movie streams by using the Playback Properties window (choose Modify ➪ Movie ➪ Playback).

The Playback Properties window also enables you to lock the frame rate of the movie to the current tempo set in the Tempo channel of the score. You can also have the movie pause when the window that contains the movie is inactive. This feature is useful if you have hyperlinks in your movie that will open another browser window. The movie will be paused while the user has the second window open, and then resume where they left off when they make the window that contains the Shockwave movie active again.

Setting the Movie Playback Properties

1. Open a movie in Director, and choose Modify ➪ Movie ➪ Playback. The Movie Playback Properties window appears, as shown in Figure 8-34.
2. Under the General heading, select the Lock Frame Durations check box to lock the movie's frame rate to the Tempo settings. Select the Pause When Window Inactive check box to have the movie pause if it is in an inactive window.
3. To have the movie begin playing while it is downloading, select the Play While Downloading Movie option. In the field located below the Play While Downloading Movie option, type in the number of frames in your movie that you want to download before the movie is to begin playing.
4. If you want placeholders to appear in place of any elements that have not been downloaded yet, click the Show Placeholders option.

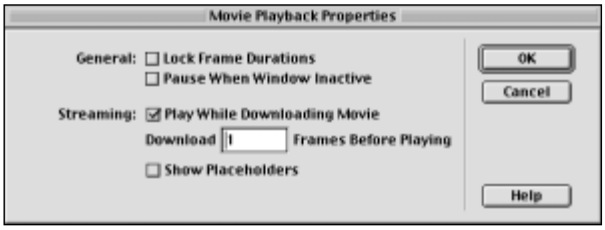


Figure 8-34: The Movie Playback Properties control the frame rate and streaming aspects of the Shockwave movie.

Publish your movie as a Shockwave movie

Now that you have a good understanding of the various ways that you set up your movies to play back in a Web browser, you still need to publish the movie as a Shockwave movie. When you save a movie as a Shockwave movie, it creates

a DCR file that contains the actual code and media elements contained in the movie. An HTML file is also generated, using the HTML template specified in the Publish Settings window that contains the OBJECT and EMBED tags and JavaScript that calls the DCR file.

You can preview your movies in a Web browser at any time during the movie-creation process by choosing File➪Preview in Browser. This launches the movie using the default Web Browser chosen in File➪Preferences➪Network.

It's a good idea to preview your movie in a Browser window to test all of its functionality before you create your Shockwave movie.

If your movie contains linked media, it may not be displayed properly. This is due to a security limitation that prevents Web browsers from reading files stored on a local computer's hard drive. If you have linked media, you need to put the movie and all of its linked content in a folder called dswmedia. You can include subfolders in the dswmedia folder as long as the relative path names have not changed. This entire folder—with the finished movie(s) and linked content—will need to be uploaded to a Web server when you are ready to put the project online.

Publishing a Movie

1. Open a movie in Director and set the desired Publish settings, using the Publish Settings menu as described in the Publish Settings section of this chapter. You may want to adjust the Movie Playback settings described earlier.
2. Save and compact the movie by choosing File➪Save and Compact.
3. Choose File➪Publish. This process may take a minute or two, especially if the movie contains linked casts.
4. If you chose the View in Browser option in the Publish Settings menu, the default Web browser will launch and display the Shockwave movie.

Unless you chose a different path in the Publish Settings menu, the Shockwave DCR and HTML files are saved in the same folder where you saved the Director movie from which you made them.

After you have created the final Shockwave movie and HTML file, it's a good idea to test in both Internet Explorer and Netscape. Your movie may work properly in Explorer, yet function differently in Netscape. Further, you should check the movie in Netscape and Internet Explorer on both the Macintosh and Windows operating systems.

Director's Shockmachine

With Director 7, Macromedia made Shockwave a system-level component similar to QuickTime, which enabled Shockwave movies to be viewed from the user's hard drive as well as in a Web page. Shockmachine, shown in Figure 8-35, is a Macromedia-developed application that loosely resembles a game console for playing Shockwave movies. Shockmachine enables users to download and play Shockwave content from their local hard drive. Shockwave was developed primarily to complement their Shockwave.com Web site (`http://www.shockwave.com`), which contains scores of Shockwave games and animated movies. Originally, Director charged a small fee for Shockmachine; recently, however, the company has made it available free of charge.

Figure 8-35: Shockmachine enables Shockwave movies to be downloaded and played locally from a person's hard drive.

Creating Java Applets of Your Movies

Version 6.5 of Director introduced the capability to create Java files of your movies. Java applets are platform independent and don't require a special plug-in or ActiveX control. Because Java is an environment separate from Director, there are many features in Director that are not supported by Java. If you are going to create Director movies that are to become Java Applets, you need to be careful about using Lingo code and other features, such as ink effects and transitions, that are not supported in the Java format. Fortunately, Director warns you of any components in the movie that are not supported by Java when you begin to create an applet.

Creating Java applets of your Director movies can be a somewhat convoluted process. Unfortunately, there is very little documentation about creating Java applets in Director's online help and manuals, although you can download a PDF document from the Director Developers center on the Macromedia Web site at `http://www.macromedia.com`. Even though it's possible to create Java applets without having any Lingo or Java scripting knowledge, you might want to read Chapter 25 to learn some of Java's basics. There is a profusion of good Java books on the market, as well as many good Web sites dedicated to the subject.

When creating a Director movie that is to become a Java applet, it's a good idea to use Director's built-in behaviors—located on the Library Palette in the Java Behaviors category—for the Lingo scripts that are to be used in the movie. These behaviors are Java-safe and save a lot of debugging time when you output the move as a Java applet. You can find more information about the Java behaviors in Appendix B.

You can expect a Java applet to take an additional 10K to 50K of disk space, as compared to a DCR (Shockwave) file. The maximum size for a Director player for Java should not be larger than 100K. Also, keep in mind that Java applets run much more slowly than Shockwave (DCR) movies.

The best uses for Java applets

Unless you are both an experienced Lingo and Java programmer, you might want to avoid creating Java applets of complex movies that contain a significant amount of interactivity and animation. However, there are several good uses for Java applets that you can quickly and easily create using Director that require very little or no Lingo and Java programming experience. Use Java applets to:

- ✦ Create animated Web banner ads.
- ✦ Build a scrolling ticker tape applet that can contain information that updates while the movie plays.
- ✦ Create simple animations that require no user interaction.

Saving as Java

When you use the Save as Java command, Director creates two files that contain a media file and a class file—these files contain instructions for the player and the movie's internal data. The media file contains all of the movie's internal cast members and Score information, such as tempo settings, scripts, and ink effects. The media file has the same name as the Director movie and uses a .DJR extension. The class file contains the movie's Lingo scripts and the startup code needed to run the movie. If you choose the Create as Source Java option, the class file has a .JAVA extension. If you choose the Compiled Java option, the class file has a .CLASS extension. The illustration in Figure 8-36 shows the process that Director goes through to create a Java applet.

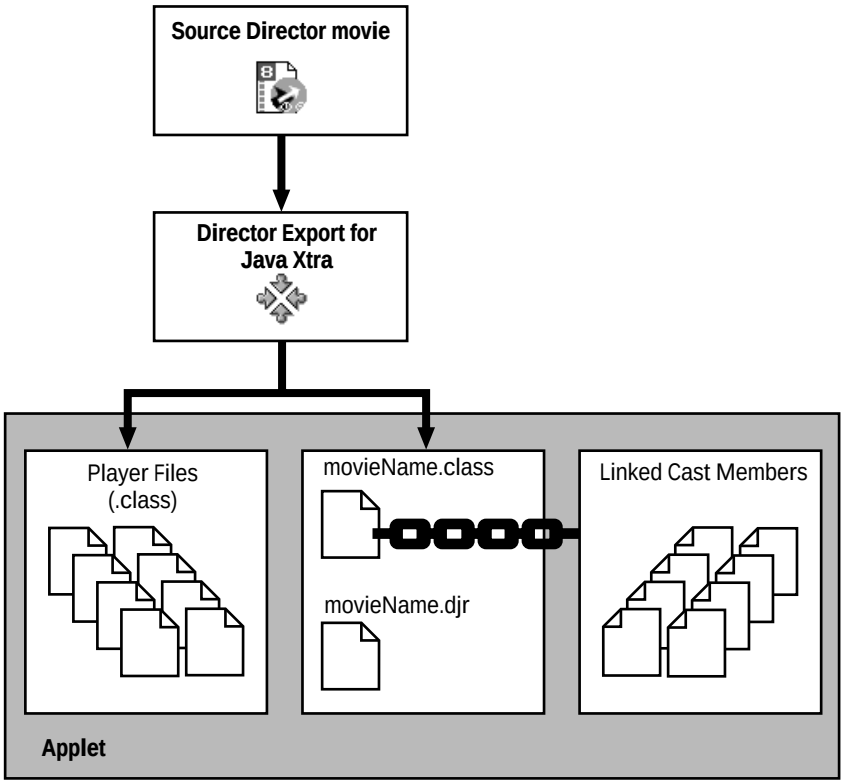


Figure 8-36: The process that Director uses to create Java files.

Director also creates several other files when it creates a Java applet of your movie. The files that have a .CLASS extension are the player files that are needed to run the movie. Director also generates an HTML file that contains the EMBED information and is used to check the movie in a Web browser. Make sure that all of these files are contained in a single directory.

Creating a Java applet is a very simple process. When you save your movie as a Java applet, Director generates all the files needed to run the Java applet, including an HTML document that contains the EMBED tag for the applet. The difficult part of creating Java applets is stripping out or substituting features in your movie that are not supported by Java.

Follow these steps to output your movie as a Java applet:

1. In Director, open a movie that you want to export. Choose the Java HTML template from the Publish Settings menu. Choose File ➪ Save as Java; the Save as Java dialog box appears, as shown in Figure 8-37. Make sure that any external media that are included in the movie are located in the same folder as the source Director movie.

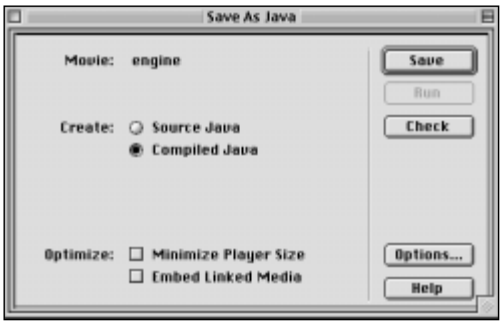


Figure 8-37: The Save as Java dialog box

2. There are two options that you can choose to create a Java Applet: Source Java and Compiled Java. The default setting is Compiled Java. This option converts the Java source files into class files, an intermediate, platform-independent language that can be read by the Java engine contained in a Web browser, and converts the code into a language that the computer understands. The Source Java option creates text files that are essentially the same as a programmer would write. If you are going to add your own Java code to the movie, use the Source Java Option.

The Minimize Player Size option removes the code for the features that are not used in your movie. It takes longer to compile the Java applet if you choose this option. The Embed Linked Media option includes linked media in the applet and enables all the elements of the Java applet to be contained in a single download.

3. Click the Options button; the Options dialog box appears (see Figure 8-38), enabling you to set the JPEG quality of the images that are used for the Java applet; determine whether the movie loops or pauses at the end; and set specific optimizations. Click OK after you have chosen the options that you want.

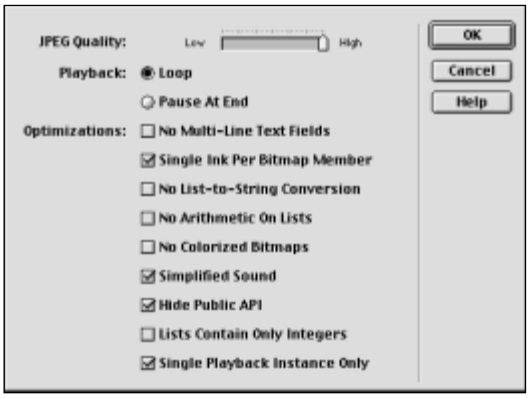


Figure 8-38: Set options that determine the image quality, playback options, and optimization settings for the Java applet.

The optimization options can alter the way the Java applet plays back. Most of the settings determine how lists contained in the movie are used in the Java applet. To learn more about these settings and how they can affect a Java Applet, see Chapter 24.

4. Click the Check button to have Director examine the movie and report any errors that occur in the Java applet (see Figure 8-39). Director displays a list of features contained in the movie that are not supported in Java. Click an item in the list, and then click the View button. Director then displays the sprite, script, or effect that's not supported. Click the Next button to display the next error in the movie. Click the Done button after you have viewed all of the errors.

When creating a Director movie that is to become a Java applet, select the Save as Java option and click the Check button as often as possible to find any features contained in your movie that are not supported in Java.

Figure 8-39: When you click the Check button, Director examines the movie and then displays any features that are not supported in Java.

5. Click the Save button, and Director compiles the movie and creates the files needed for the Java applet.

6. Click the Run button to view the movie in a Web browser.

You must have enough RAM to run Director and your Web browser simultaneously to take advantage of this operation.

You should package the entire set of files as ZIP, CAB, and JAR files to ensure that they play back on different Web browsers. These file formats are compression schemes that are supported by the different browsers. The CAB file is for Internet Explorer, the JAR file is for Netscape 4+, and the ZIP file is for Netscape 3. You can get free utilities from the Web that compress the files into these formats.

If you are creating Director movies that primarily will be used as Java applets, you should learn more about the Java programming language. Although many features of a Director movie are supported in Java, plenty of them aren't. Knowing how to use Java enables you to substitute pure Java code for the features that Director doesn't support.

Summary

In Director, you can use a number of techniques to add the finishing touches to a project before outputting movies that can be viewed in multiple media:

- ✦ Change the tempo of your movie to help create smooth animation sequences and add dramatic pacing to your movie.
- ✦ The Control Panel provides a quick method of controlling the playback and frame rate of your movie.
- ✦ You can pause a movie to wait for the user to click the mouse or press a key.
- ✦ Add transitions to the movie to help it move smoothly from one scene to the next.
- ✦ You can remap graphic elements in your movie to existing or custom palettes.
- ✦ By adding fades and using color cycling, you can create transitional effects with color palettes.
- ✦ Projectors enable others who don't own Director to see your movies.
- ✦ You can create Shockwave movies to distribute your projects on the Web.
- ✦ Create Java applets of your movies that don't require the Shockwave plug-in or ActiveX control to be viewed in a Web browser.
- ✦ Use the Publish settings to create robust HTML documents to play your movies over the Web.

Now it's time to move on and use the knowledge you have gained so far to build a fully functional multimedia application.

✦ ✦ ✦