MACROMEDIA®

Learning Director®

For Macintosh® Version 4

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Contents

Introduction

The goal behind the examples in *Learning Director* is to provide you with the basic skills you'll use most of the time when you work with Macromedia Director. But Director is such a rich environment that it's impossible for a single book to cover everything there is to know about it. The fact is that nobody knows everything there is to know about it. New ways to use Director are constantly being discovered as people find that they need to do things they've never done before.

If you're new to Director, work through the chapters in this book, and you'll have a firm grasp on how to make Director work for you. If you already have experience using Director, you may find in these tutorials an introduction to features you haven't had the opportunity to try out before. Once you've worked you're way through this guide, you'll not only have a handle on basic skills, you'll also be in a position to experiment on your own and discover the techniques that work best for you.

What's in this manual

This guide has eight chapters.

Chapter 1, "Basic Animation," leads you—in about an hour—through the entire process of creating an animated Director movie.

Chapter 2, "Creating Text in the Paint Window," focuses on the process of creating and modifying a cast member. It introduces the paint window's text tool (which you use to create bitmapped text) and the Switch, Reveal, and Transparent inks.

Chapter 3, "Creating Text with the Tools Window," shows how to create QuickDraw text and how to convert it into bitmapped text. It also shows how to position cast members on the stage precisely.

Chapter 4, "Animating a Sequence of Cast Members," focuses on animating an image—such as a bird flapping its wings—that changes as it moves across the stage. It also shows how to colorize a black-and-white cast member.

Chapter 5, "Working with Sounds," shows how to add sounds to a Director movie.

Chapter 6, "More Animation Techniques," covers an invaluable collection of techniques: creating the intermediate stages of an animation with the In-Between Special command, using Director to generate cast members automatically, and using registration points to align cast members precisely on the stage.

Chapter 7, "Creating Effects," focuses on the special effects you can create using Director's transition and palette channels.

Chapter 8, "Adding Interactivity to a Movie," leads you through the process of creating buttons and hypertext links in a Director movie. It also provides an introduction to writing Lingo scripts.

You can find terms that look ***like this*** in the glossary at the end of *Using Director*.

Note

This guide assumes that you know how to use a Macintosh computer. If you run into a problem and you need help, see the user's guide that came with your computer.

Where to go for more information

If the experiments in this guide leave you with a couple of new questions for every one they answer, that's a good sign. It means you've grasped the basics of Director and you're ready to move on to advanced concepts and more sophisticated techniques. Here are some topics you might be interested in and how to find out more about them:

- Procedures. Additional ways of using Director's tools and features are covered in chapters 1 through 4 of *Using Director*.
- Director's windows. If you're interested in the details of how any of Director's windows works, see Chapter 5, "Window Reference," in *Using Director*.
- Director's menus and dialog boxes. For information about any command on any of Director's menus or about any of the options that appear in any of the dialog boxes, see Chapter 6, "Menu Reference," in *Using Director*.
- Techniques. It doesn't take long for someone new to Director to discover that creating a Director movie involves more than using just Director and just the computer you're working on. You'll find yourself using files created in Photoshop and SoundEdit Pro and taking into consideration that the movie you're working on may need to run on a less powerful Macintosh or even a Windows computer. For tips on performance, synchronization, debugging strategies, and cross-platform development, see *Tips & Tricks*.
- Lingo. If you're interested in learning more about the Lingo scripting language after working through the examples in Chapter 8, "Adding Interactivity to a Movie," see *Using Lingo*.

- Expert advice. The body of knowledge about Director grows constantly as more and more people find new and creative uses for it. One of the best ways to keep abreast of the most efficient and most inventive ways to use Director is to join a user's group or to connect with an on-line forum such as Macromedia's CompuServe forum. Here are some ways to keep in touch with other Director users:

  User groups. A user group is a great way to network with Macromedia developers and users, multimedia enthusiasts, and corporate contacts. To find out if there's a user group in your area—or for information about starting one if there isn't—call Macromedia.

  Macromedia International User Conference. Every year the Macromedia International User Conference brings together people from around the world to discuss product development, engineering, marketing, and business strategies. The conference offers an opportunity to network with industry leaders and learn about the latest multimedia technology. For information about the conference, call Macromedia.

  On-line services. Two of the world's largest on-line services, CompuServe and America Online, offer forums for users of Macromedia. The forums provide access not only to other users, but to the people at Macromedia who developed Director. If you have an account on CompuServe, log on, and then type GO MACROMEDIA at the prompt. If you have an account on America Online, log on, and then enter KEYWORD: MACROMEDIA.

- Training. Macromedia and its network of Authorized Training Providers offer expert training on Macromedia products. Courses are led by professional instructors whose comprehensive product knowledge results from first-hand experiences as expert users and developers. To register for Macromedia courses and for help locating a Macromedia Authorized Training Provider near you, call Macromedia.

Hardware and software requirements

For information about the type of Macintosh computer and the version of the system software you need to use Director, see the "Introduction" in *Using Director*.

Chapter 1

Basic Animation

This chapter leads you—in about an hour—through the entire process of creating an animated Director movie.

A ***movie*** is the term used for a multimedia piece you create with Director. Like animated motion pictures, Director movies contain animation, sound, music, special effects—even digital video (such as QuickTime movies). They can also have a dimension no motion picture is capable of: interactivity. Interactivity means that a movie responds to the choices people make—it gives people control over the direction a movie takes.

The example used in this chapter is quite simple. It involves drawing the moon, importing an illustration of a Japanese shrine, and then animating the moon rising over the shrine.

The moon rising over a Japanese shrine

The example gives you experience working with the paint window, selecting a background color for the stage, and applying the Matte ink effect. You also find out how to import cast members and drag them to the score. Most important, you get to work with animation techniques: real-time recording, step recording, in-betweening, and layering. Finally, you create a projector—a play-only version of the animation. (A projector is the best format to use if you distribute the movies you create to others.)

Note

The art that appears in the examples in this guide is taken from the sample movies packaged with Director. To play the sample movies, go to the Macromedia Director 4.0 folder, open the Sample Movies folder, and then open the Lingo Expo folder. Then play Begin.Dir (in the Kiosk folder), MECH (in the Simulation folder), or Noh_Tale (in the Storybook folder).

Starting Director

If you haven't already installed Director, follow the instructions in "Installing Director" in *Using Director*.

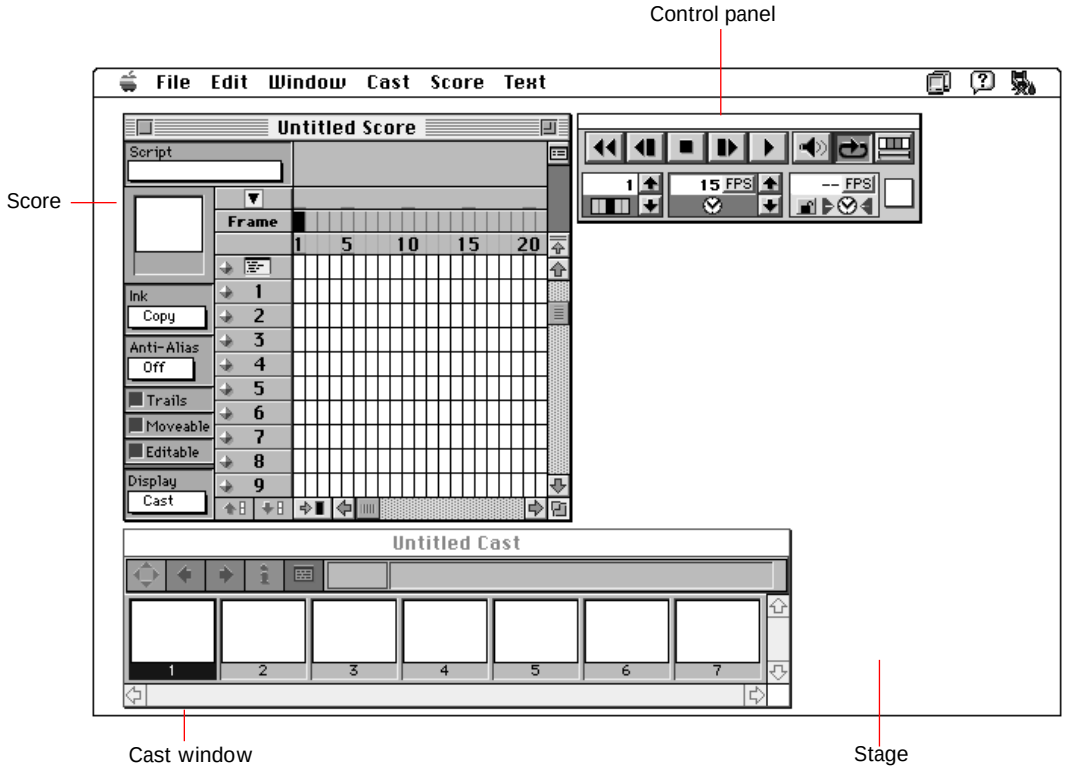
To start Director:

- Go to the folder named Macromedia Director 4.0, and double-click the icon labeled "Director 4.0."
  The startup screen appears for a moment while Director is loading.

Note

If you've already started Director, choose New from the File menu (or press Command-N) to open a new movie.

The startup screen goes away, and the stage remains on the screen. The windows that were open the last time you used Director reappear automatically. If this is the first time you've started the application, Director displays the control panel, the cast window, and the score.



If you need to open the control panel, the cast window, or the score, here's how to do it:

To open the control panel:

- Choose Control Panel from the Window menu (or press Command-2).

To open the cast window:

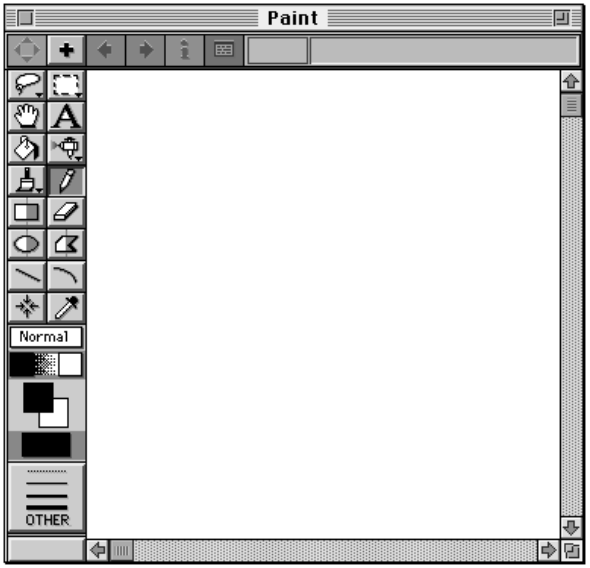
- Choose Cast from the Window menu (or press Command-3).

To open the score:

- Choose Score from the Window menu (or press Command-4).

Director has 11 windows, but you need only 5 of them to create simple animation: the paint window, the cast window, the score, the control panel, and the stage.

The ***paint window*** provides the same tools you'd find in a paint application such as MacPaint Pro. You can use it to create or edit the artwork that appears in a movie. You'll get a chance to work with many aspects of the paint window in the examples in this guide.



The ***cast window*** stores every piece of artwork in a movie. It's a multimedia database of graphics, text, sound effects and music, color palettes, buttons, digital video (such as QuickTime movies), and the Lingo scripts that provide interactivity and control of a Director movie. Anything stored in the cast window is called a ***cast member***.

You can create cast members either by using the tools that Director provides or by importing the cast members into Director from other applications. For an overview of the different types of cast members and the ways you can create them, see "Creating cast members" in Chapter 1 of *Using Director*.

As you import or create cast members, Director adds them to the cast window automatically. Once the cast members are part of a movie's cast, you can use them in any frame of the movie.

The ***score*** keeps track of the position of each cast member on the stage in each frame of a movie and controls tempos and the timing of sounds, transitions, and palette changes.

The ***control panel*** provides a set of controls similar to those on a VCR. You can use them to play, stop, or rewind a movie or to step through it frame by frame.

The ***stage*** is the window where the movie you're creating appears. It's always open, and it normally appears behind any of the other windows that are open. (You can close all the windows that are open—and hide the menu bar as well—by choosing Stage from the Window menu.)

For complete information about all of Director's windows, see Chapter 5, "Window Reference," in *Using Director*.

Assembling the cast

The term ***cast member*** covers every element that can be part of a Director movie: graphics, text, sound effects and music, color palettes, QuickTime movies, buttons—even the Lingo scripts that make buttons work. As mentioned in the previous section, there are two ways to fill the cast window with cast members. One way is to create cast members inside Director using the paint window, the tools window, a text or script windows, or the Record Sound command. (When you create a cast member in Director, Director adds it to the cast window automatically.) The other way is to import cast members you've created outside Director, with applications such as Photoshop, Canvas, SoundEdit Pro, and Premiere.

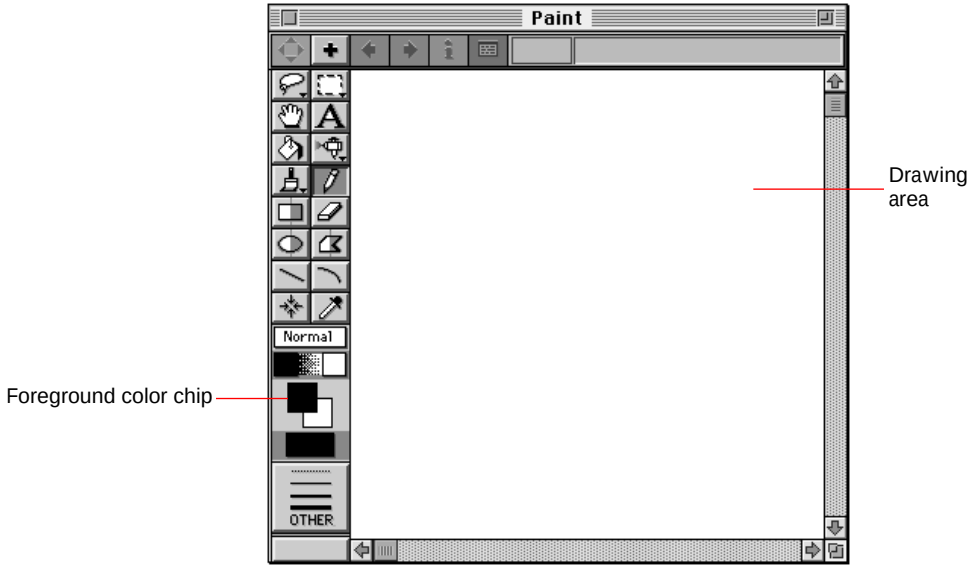
This section shows how to create a cast member in Director's paint window and how to import a cast member that you've created outside Director.

Creating a cast member in the paint window

Follow the steps below to draw the moon that you'll later animate rising over the Japanese shrine. The first step is to open the paint window.

To open the paint window:

- Choose Paint from the Windows menu (or press Command-5).
  The paint window looks like this:

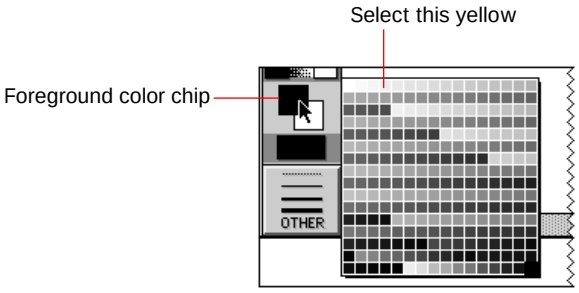


For a complete description of the paint window, see Chapter 5, "Window Reference," in *Using Director*.

As you open and close windows in Director, you'll notice that the menus listed on the menu bar change. For example, when you open the paint window, Director adds the Paint and Effects menus to the menu bar.

Select the foreground color for the moon:

1. Point to the foreground color chip (below the tools palette, on the left) and hold down the mouse button to display the color palette.
   The palette looks like this:

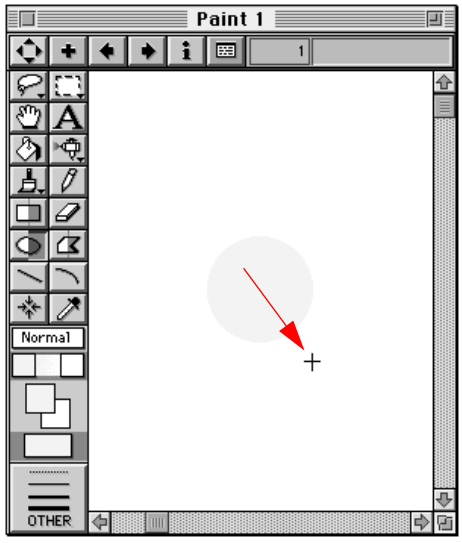


2. Drag the pointer to the yellow chip that's in the top row, fourth from the left.
   The foreground color chip changes to the color you've selected.

Draw the moon:

1. Select the filled ellipse tool.
   Use the right side of the ellipse tool to draw a filled ellipse or circle. Use the left side to draw just the outline of an ellipse or circle.
2. Move the cursor to the drawing area.
   It turns into a crosshair.

3. Hold down the Shift key and drag until you get a circle about an inch across.
   Holding down the Shift key constrains the shape you draw to a circle.



4. Close the paint window.
   Director automatically places the moon in the cast window.

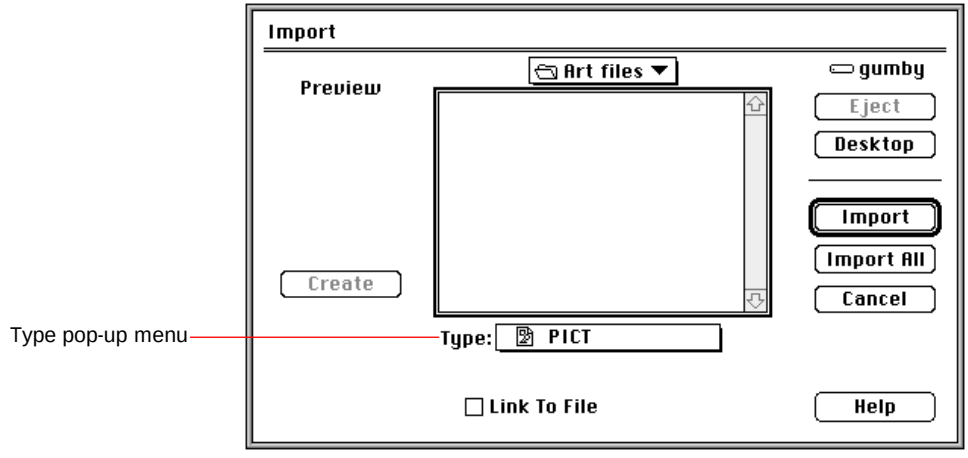
Importing a cast member

When you import a cast member, Director places it in the cast window. You can import PICT, MacPaint, sound, Scrapbook, PICS, Director movie, and QuickTime movie files. There are two ways to import PICT, AIFF sound, and Director movie files: you can import them directly into the cast window, or you can create a link to a file. (Whenever you import a QuickTime movie, it's linked automatically.) Creating a link has two advantages: the movie you're linking the cast member to doesn't increase in size because it doesn't contain the cast member, and any changes you make to the cast member file outside Director are automatically reflected in the movie. (For information about linking a cast member, see "Import" in Chapter 6, "Menu Reference," in *Using Director*.)

The next step in creating the animation you're working on is to import the shrine that serves as the background for the animation.

To import the shrine:

1. Choose Import from the File menu (or press Command-J). The Import dialog box appears.



2. Choose PICT from the Type pop-up menu if it isn't already selected.

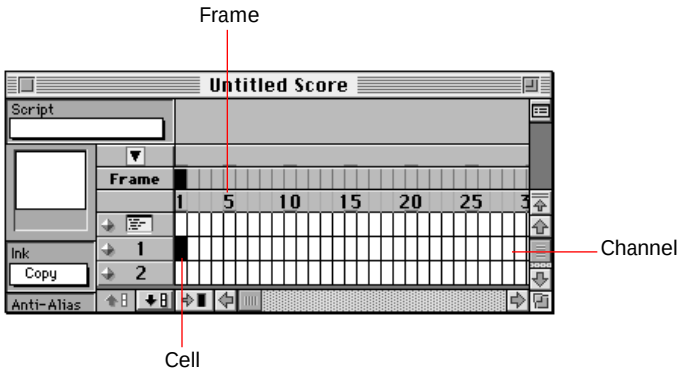
3. Go to the folder named Macromedia Director 4.0, open the Tutorials folder, then the Learning Director folder, select the file named "Shrine," and then click Import.
   A thumbnail version of the shrine appears next to the moon in the cast window.

Adding a cast member to the score

Importing or creating a cast member makes the cast member part of a movie's cast, but to make the cast member part of the movie's action, you need to add the cast member to the movie's score.

The score tells Director what each element of a movie is doing moment by moment. For example, the score tells Director which cast members are on the stage and where they're located, which sounds to play, which color palette is in control of the monitor, and which Lingo scripts to follow.

The score is laid out as a grid made up of cells. It's designed so that each column of cells is a frame of animation and each row forms a channel.

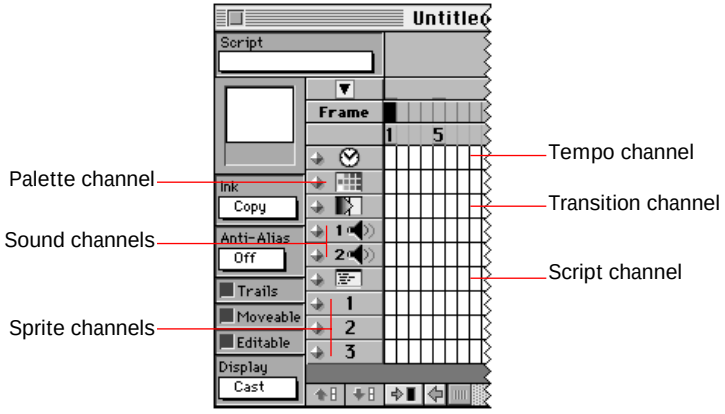


The parts of the score

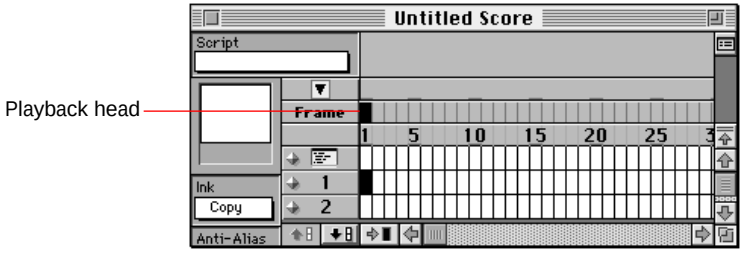
A ***cell*** is the smallest unit in the score. Each cell contains information about one cast member at a particular moment in a movie. (Cast members include graphics, text, sound effects and music, color palettes, QuickTime movies, buttons, and Lingo scripts). Cells can also contain information about things other than cast members, such as transitions and tempo settings.

A ***frame***—a column of cells—represents a single moment in a Director movie. It's the sum of all the information in all the cells in a single column. It's much like a frame of a motion picture: it's a snapshot of everything you see on the stage at any given moment. A frame also contains information about things you don't see, such as sound effects and the Lingo scripts that control interactivity.

A ***channel*** is a row of cells. Each channel is dedicated to a specific type of information. There are 5 effects channels (1 each dedicated to tempo settings, color palettes, and transitions, and 2 dedicated to sounds), a script channel (for Lingo scripts), and 48 sprite channels (for animation, graphics, text, QuickTime movies, and buttons).



The ***playback head*** serves the same purpose as the playback head on a VCR: it determines which moment of a movie is currently displayed on the screen. When you play a movie, the playback head moves through the score from one frame to the next. When it reaches a frame, Director checks the information in each cell in the frame and carries out whatever instructions it finds there. For example, Director positions each graphic or text cast member that appears in a sprite channel at its appropriate spot on the stage, plays the sound effects or music identified in the sound channels, produces the transition called for in the Transition channel, and so on. When a movie is stopped, the playback head continues to function: when you move the playback head to a specific frame, Director displays a snapshot of what things look like at that moment in the movie.



The information that appears in the score describes in shorthand form what happens in each frame of a movie. Learning to read the notation in the score is like learning to read music. It's only after seeing examples of animation and its notation that you can begin to make the connection between abstract bits of data and what the animation actually looks like.

Dragging a cast member to the stage or the score

You can add a cast member to the score—and so make it part of a movie's action—in one of two ways:

- You can drag the cast member from the cast window directly to the score.
- You can drag the cast member from the cast window to the spot on the stage where you want it to appear.

When you want to add a cast member to a movie, it doesn't matter which technique you use. When you drag a cast member to the score, Director not only adds it to the score, it also displays the cast member in the center of the stage. When you drag a cast member to the stage, Director not only displays it there, it also adds it to the current frame in the score (the playback head shows which frame is current). The stage and the score are simply two different views of the movie you're creating; anything you do to one affects the other.

It's better to drag a cast member to the score when your primary concern is the moment at which the cast member appears in a movie—the moment at which a cast member appears is determined by the frame where you place the cast member. On the other hand, it's better to drag a cast member to the stage when your primary concern is the spot on the screen where the cast member appears. You can adjust both the frame where a cast member appears and its position on the stage after you've added it to the movie—being able to drag the cast member to either the score or the stage just makes it a little easier to get started.

You'll get plenty of practice with both techniques throughout the course of the examples in this guide.

Cast members and sprites

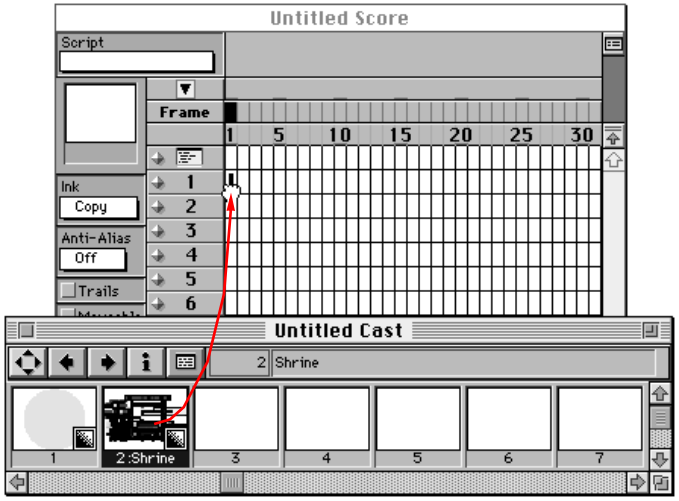
When you place a cast member on the stage, you don't actually move the cast member bodily from the cast window to the stage as you put a chessman on a chessboard. Instead, when you drag a cast member from the cast window to the stage or the score, Director creates a new element: a ***sprite***. A sprite is an image of a cast member, and it's the image of the cast member—not the cast member itself—that Director displays on the stage.

A cast member and a sprite aren't identical. A cast member is a template for a sprite. When you drag a cast member to the stage, it's like making a copy of a form letter: the master letter remains unchanged, but the copy gets filled in with specific information. The specific information the sprite gets "filled in with" includes its location on the stage, any change you make to its size, and so on. You can have more than one sprite based on the same cast member. Each one is a separate image of the cast member, and each can be a different size, located at a different place on the stage, and so on.

Adding the shrine to the movie

To add the shrine to the movie:

- Point to it in the cast window, and drag it to cell 1 in channel 1 of the score.



The shrine appears centered on the stage.

Save the movie at this stage. It's always a good idea to save the movie you're working on every 15 minutes or so. If something happened—such as a power outage—that caused you to lose work that wasn't saved, you'd have to recreate only a few minutes of work, not several hours' worth.

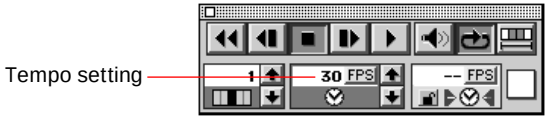
In this case, there's another reason to save the movie in its current state. The next section shows how to use real-time recording to create animation. You may want to experiment with real-time recording until you're sure you've got the hang of it. Having a copy of the movie you started from in its original state makes experimenting much easier.

To save the movie:

1. Choose Save from the File menu.
   The directory dialog box appears.
2. Name the movie "Moon," and click Save.
   Director saves the movie.

Real-time recording

Recording in real time means that as you drag a sprite across the stage, Director keeps track of its path and records its location moment by moment in consecutive cells in the score. The tempo that's set in the control panel determines exactly what "moment by moment" means. For example, if the tempo is 30 FPS (frames per second), Director records the sprite's location every 1/30 of a second.

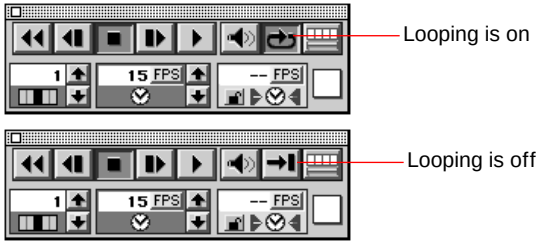


Tip *For better control when you're recording in real time, use the tempo control in the control panel to record at a speed that's slower than normal. (For information, see "The control panel" in Chapter 5, "Window Reference" in Using Director.) When you play the movie back, you can adjust the speed with a different tempo setting to make the animation look normal. (See "Adding a tempo setting" in Chapter 3, "Working Behind the Scenes" in Using Director.)*

One way to create an animated sequence showing the moon rising over the Japanese shrine is to record the animation in real time. The process is simple: first you hold down the Control key and the spacebar simultaneously to turn on real-time recording, and then you drag the moon along the path you want it to follow.

Before you start:

- If the Loop button on the control panel is down, click it to turn looping off.



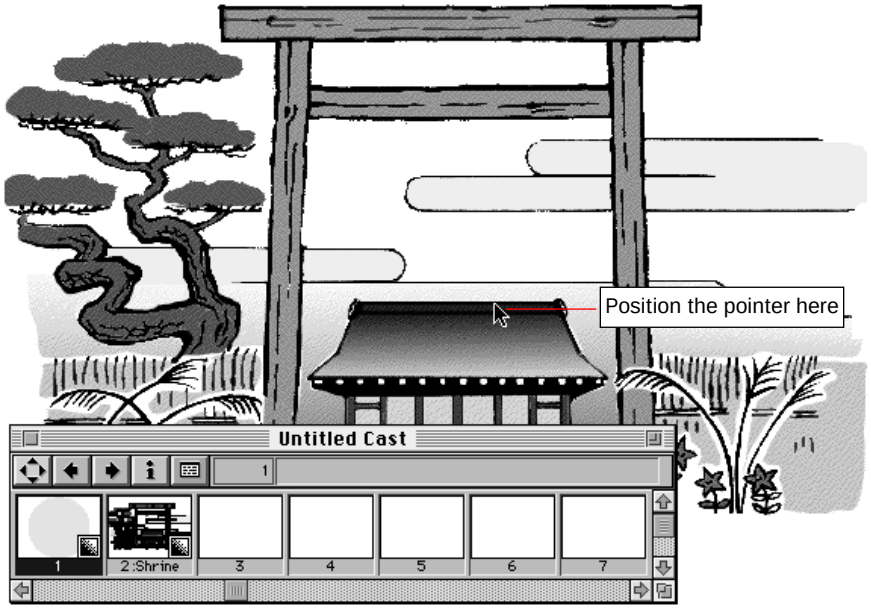
When the Loop button is down, Director starts playing the animation you've recorded over and over again as soon as you finish recording it.

Tip *You can also turn looping on and off by choosing Loop from the Edit menu or by pressing Command-L.*

To record the rising of the moon in real time:

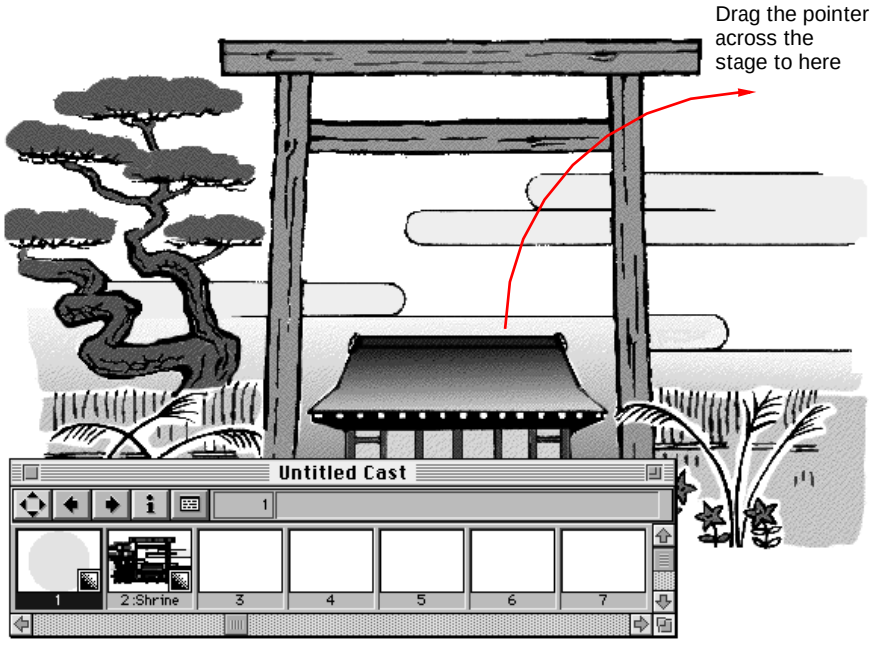
1. Close the score and move the control panel to the upper left corner of the stage.
   You'll often find as you work through the examples in this guide that the windows that are open get in the way of what you want to do on the stage. Feel free to close them or move them to get them out of the way. Remember that you can close all the windows that are open in front of the stage by pressing Command-1. To open any window, choose it from the Window menu.
2. Choose Rewind from the Edit menu (or press Command-R) to make sure the playback head is in the first frame of the movie.
3. Select the moon in the cast window.
   Don't drag the moon from the cast window to the stage—just select it.

4. Hold down the Control key and the spacebar, and position the pointer near the top of the shrine like this:



As soon as you press the mouse button in the next step, Director starts to record the movement of the pointer. Be ready to move the pointer as soon as you press the mouse.

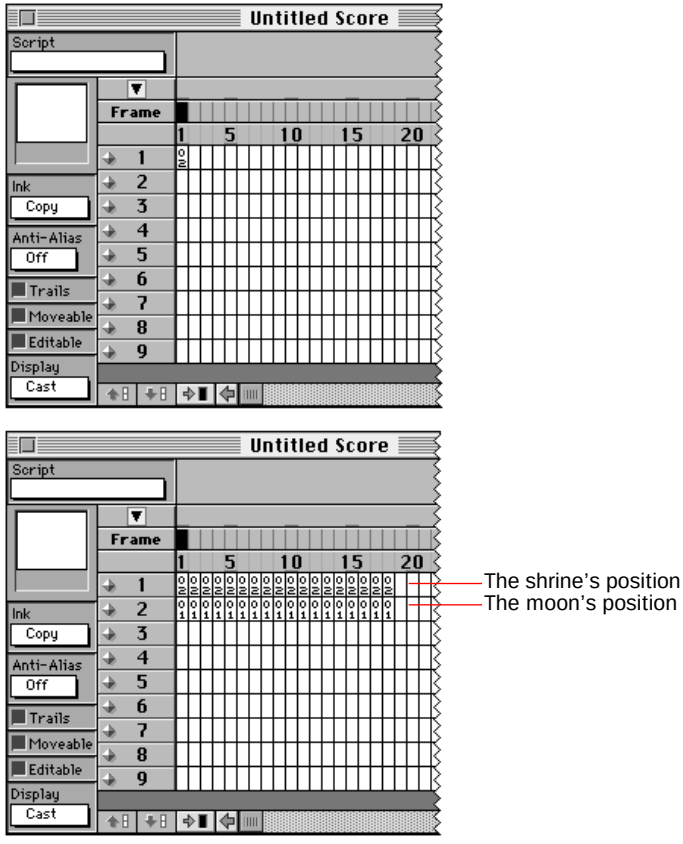
5. Hold down the mouse button and drag the pointer across the stage like this:



6. Release the mouse button.

Take a look at the score:

- Choose Score from the Window menu (or press Command-4).
  The score appears.



The score before and after real-time recording

Director has recorded the moon's position at each moment during the time you were holding the mouse button down. It has also recorded the position of the shrine in each frame even though the shrine hasn't moved. That's because a frame contains information about everything that's on the stage at any particular moment. If Director didn't record the shrine's position as well as the moon's, when you ran the movie, the shrine would disappear from the stage after the first frame.

It may take a little practice with real-time recording to get the animation to look the way you want. You can do several "takes" and use the one you like best. But before you record a second take, run the first one to see how it looks. The next section describes how.

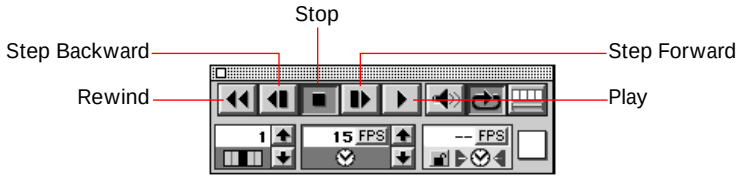
Save the animation you've created as a new movie:

1. Choose Save As from the File menu (or press Command-Shift-S).
   The directory dialog box appears.
2. Name the movie "Moon 1," and click Save.
   Director saves the movie.

You'll find that you create and save quite a few movies in the course of working through the examples in this guide. Saving copies of the movies you're working on allows you to take a second look at them after you've finished them. Comparing the animation you've created with the information that's recorded in the score is a good way to learn how the score works and how Director interprets the information that's recorded there. The movies, nonetheless, take up considerable disk space, and it's a good idea to delete them once you've finished with them.

Playing animation

You can use the buttons on the control panel to rewind and play back an animated sequence, just as you would with a videotape.



If the control panel is no longer on the screen:

- Choose Control Panel from the Window menu (or press Command-2).

To see how the animation of the moon looks:

1. Close the score.

2. Click the Rewind button on the control panel (or press Command-R).
   Director moves the playback head to frame 1 of the movie.

3. Click the Play button (or press Command-P).
   The moon follows the path you traced on the stage.

There are at least two adjustments that need to be made to the animation (you may want to make others as well):

- The white box surrounding the moon needs to be removed.
- The moon needs to rise behind the shrine, not in front of it.

Both adjustments are covered later in this chapter.

If you want to examine the animation in more detail to see if there are any other changes you want to make, you can turn looping on so that Director plays the animation over and over again.

To play the animation over and over:

1. Click the Loop button to turn looping on (or press Command-L).
   The once-through icon on the button is replaced with the looping icon.

2. Click the Rewind button (or press Command-R).
   Director moves the playback head to frame 1 of the movie.

3. Click the Play button (or press Command-P).
   The animation plays over and over until you stop it.

4. Click the Stop button (or press Command-period).

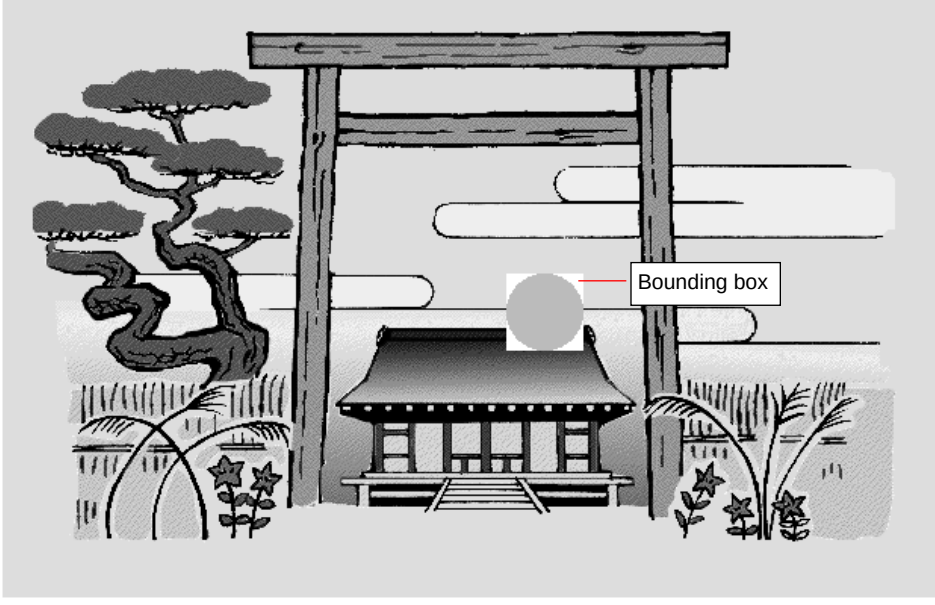
When you're finished watching the animation play over and over, turn looping off:

▶ Click the Loop button (or press Command-L).

If you don't like the way the animation you've created looks, do a few more takes until you get something you like. To do another take, open "Moon," the version of the movie you saved before you created the animation, and then repeat the steps in "Real-time recording." Give each take a different name when you save it.

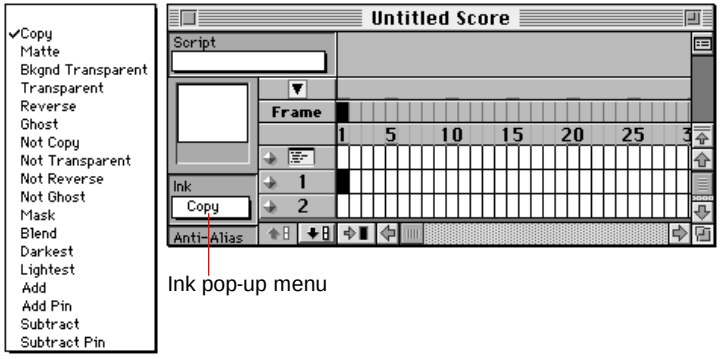
Using the Matte ink

Normally when you place a sprite on the stage, its ***bounding box***—the rectangular area around the image—is treated as part of the sprite. That's not always desirable. For example, when you place the moon on the stage, you want it to look like a circle, not like a colored circle inside a white box.



To get rid of the bounding box, you use the Matte ink. The score has a variety of inks that let you modify the way a sprite looks on the stage. The inks don't affect the appearance of the cast member a sprite is based on, just the sprite you apply the ink to.

The inks that are available appear on the Ink pop-up menu in the score window:



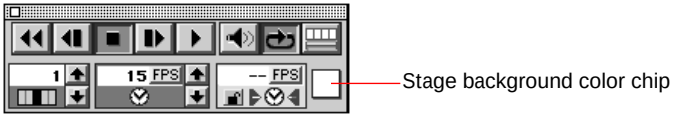
For a quick overview of the effect each ink creates, take a look at the sample movie *Ink Effects*. To play it, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder. Double-click the icon labeled "Ink_FX." When you're finished watching the movie, press Command-period to stop it. For a description of each of the ink effects, see "The score" in Chapter 5, "Window Reference," in *Using Director*.

To apply the Matte ink:

1. Open the score.
2. Double-click the 2 beside channel 2 to select the entire channel.
3. Choose Matte from the Ink pop-up menu in the score. The bounding box surrounding the moon disappears.

Setting the background color of the stage

The color of the stage is white by default, but you can use the background color chip on the control panel to change it to any color in the palette.



To set the background color of the stage:

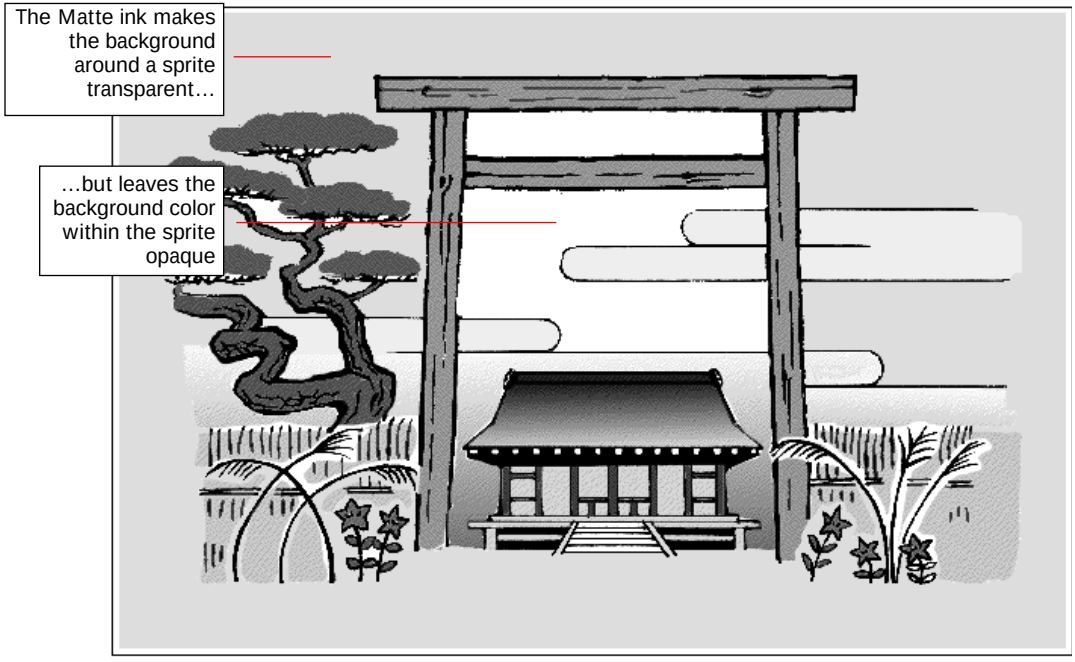
1. Click the control panel to make it the active window (or press Command-2).
2. Point to the background color chip on the control panel, and hold down the mouse button.
   The color palette appears.
3. Select a color that complements the illustration.
   The background changes to the color you've selected, but the color is visible only where the background isn't masked by the illustration.

To make the background color of the stage visible behind the illustration, you need to make the illustration's background transparent. The next section, "Using the Background Transparent ink," shows how.

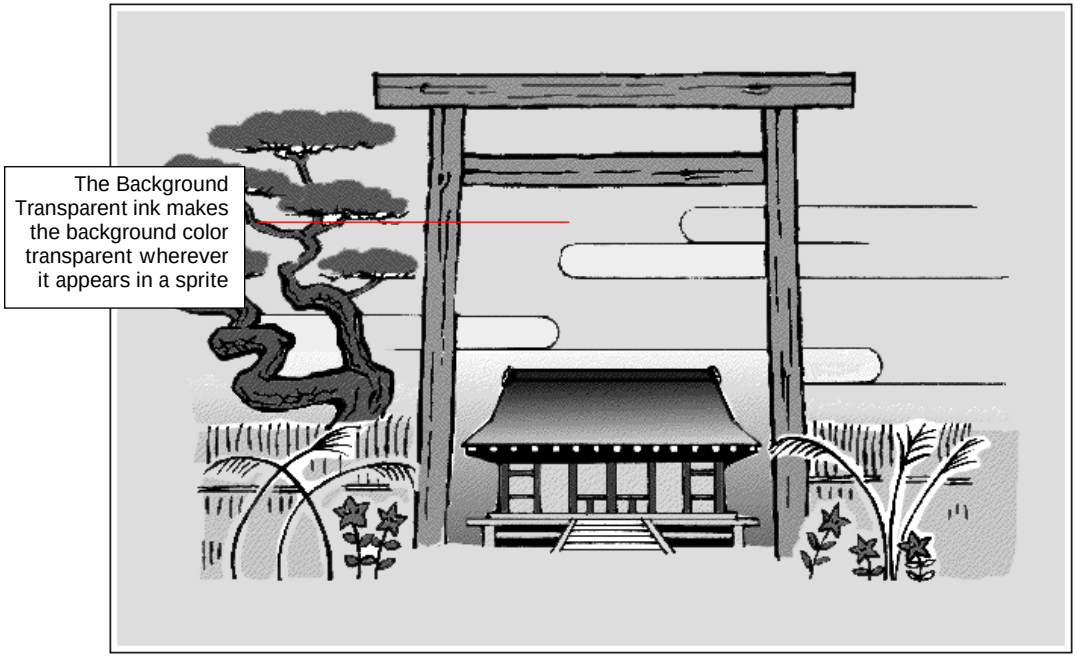
Using the Background Transparent ink

When you apply the Background Transparent ink to a sprite, its background color becomes transparent. Whatever happens to be behind it on the stage shows through where the background color used to be.

The effects of the Background Transparent ink are similar to, but not quite the same as those of the Matte ink. The Matte ink makes the background color around a sprite transparent. The Background Transparent ink, however, makes the background color transparent not just around the sprite, but anywhere it appears within the sprite as well.



Matte ink



Background Transparent ink

When you apply the Background Transparent ink to the illustration of the shrine, the background color you've chosen for the stage will show through. You'll also be able to show the moon rising behind the shrine.

To apply the Background Transparent ink:

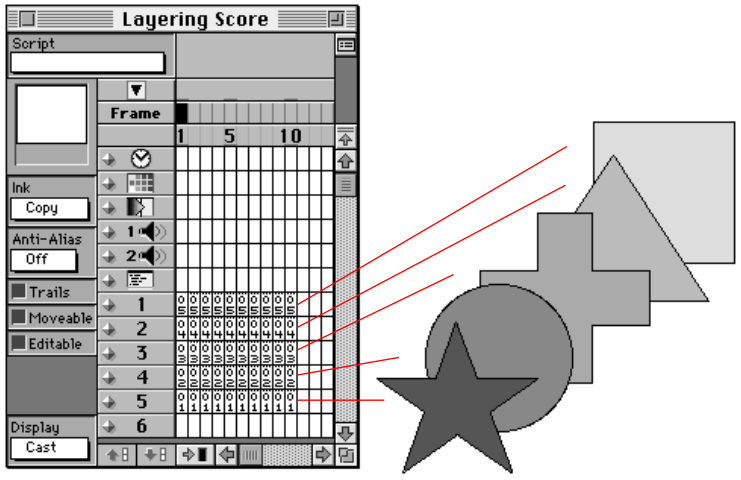
1. Click the score to make it active (or press Command-4).
2. Double-click the 1 beside channel 1 to select all the cells in the channel.
   Channel 1 contains the information about the shrine.
3. Choose Bkgnd Transparent from the Ink pop-up menu in the score.
   The white background of the shrine becomes transparent, and the color you've chosen for the background shows through.

If you don't like the color you've chosen now that it fills the screen, change it.

Changing layering

Now that you've applied the Background Transparent ink to the shrine, you can move the moon behind the shrine.

The way sprites are layered—whether a sprite appears in front of or behind another sprite—is determined by the channels the two sprites occupy. A sprite that's in a channel closer to the top of the score appears behind a sprite that's in a channel closer to the bottom. The sprite in channel 1 appears behind the sprite in channel 2, channel 2 is behind channel 3, and so on.



When you add a sprite to a channel that's closer to the bottom of the score than another channel already occupied by a sprite, it's like placing a new layer on top of the existing one.

To move the moon behind the shrine:

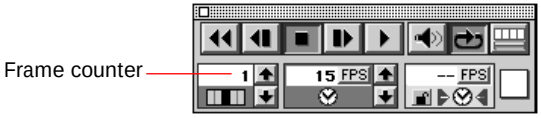
1. Double-click the 2 beside channel 2 to select all the cells in the channel.

2. Click the Shuffle Backward button at the bottom of the score window.
   Director swaps the information in channels 1 and 2. On the stage, the moon moves behind the shrine.

Run the animation again to see how it looks now that you've switched the channels that the moon and the shrine occupy:

1. Choose Control Panel from the Window menu (or press Command-2) to make the control panel active.

2. Click the Rewind button.
   Director moves the playback head to frame 1. The control panel also shows the current location of the playback head: the number of the frame where the playback head is located appears in the frame counter.



3. Click the Play button.
   The moon rises into the sky behind the shrine.

Save the changes you've made to the animation in this section:

- Choose Save from the File menu (or press Command-S).

Step recording

Director has many different techniques you can use to animate cast members in addition to real-time recording. ***Step recording*** is the process of animating by taking snapshots of the position of a cast member in successive frames of a movie. You record the position of a cast member in a frame, step forward to the next frame, move the cast member to its new position, record that position, step forward to the next frame, and so on until you've completed the animation.

This section shows how to produce the same animated sequence you created in the previous section—the moon rising over the shrine—using step recording rather than real-time recording.

Using In-Between Linear

The In-Between Linear command has two main uses: to create the intermediate frames in an animated sequence and to fill a number of frames with a static image.

When you recorded the moon rising over the shrine in real time, Director automatically recorded the position of the shrine at the same time it recorded the path of the moon. That doesn't happen when you use other animation techniques. Instead, you need to use a tool such as the In-Between Linear command to make sure the background you want to appear on the stage behind an animation is inserted in the same frames where you create the animation.

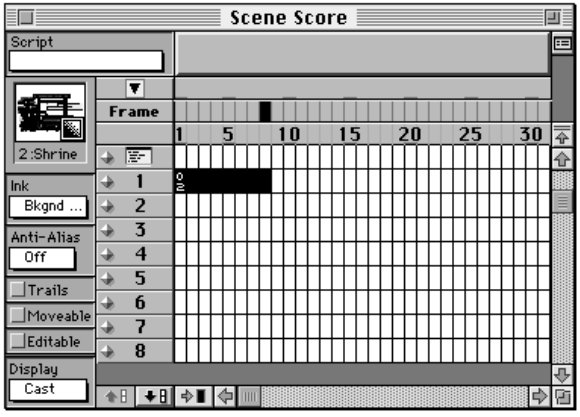
The steps that follow show how to use In-Between Linear to fill enough frames with the image of the shrine so that it remains on the screen during the animation of the moon rising.

First open the movie with the shrine and the moon you're going to use to create the animation:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Scene," and then click Open.
   If "Scene" doesn't appear in the dialog box, go to the folder named Macromedia Director 4.0, open the Tutorials folder, and then open the Learning Director folder.

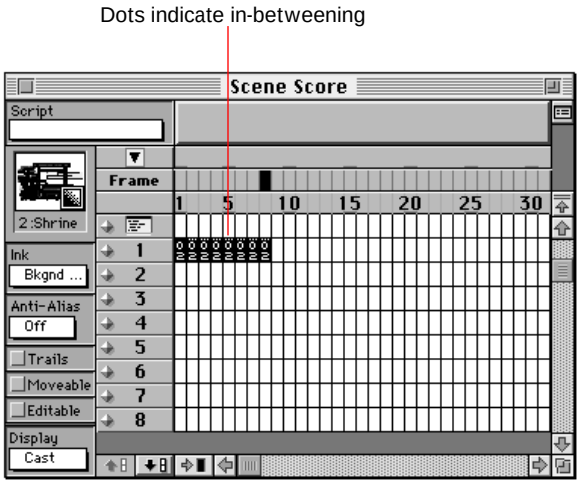
To fill the frames with the image of the shrine:

1. Go to the score, select the first cell in channel 1, and then Shift-click the cell in frame 8.
   Director highlights cells 1 through 8.



2. Choose In-Between Linear from the Score menu (or press Command-B).

   Director fills the range of cells with the image of the shrine. In the score, notice the dots over the information in frames 1 to 8. The dots indicate that the sprites in the cells were produced by in-betweening.

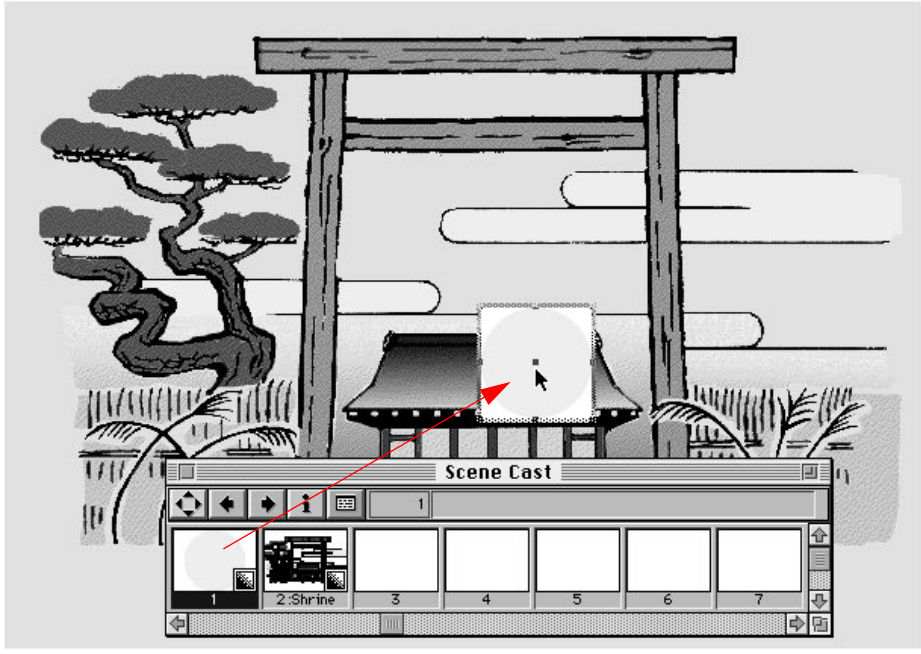


Preparing the moon

Before you record the moon rising, you need to move the moon to the stage and apply the Matte ink to it to make its bounding box transparent.

Drag the moon to the stage:

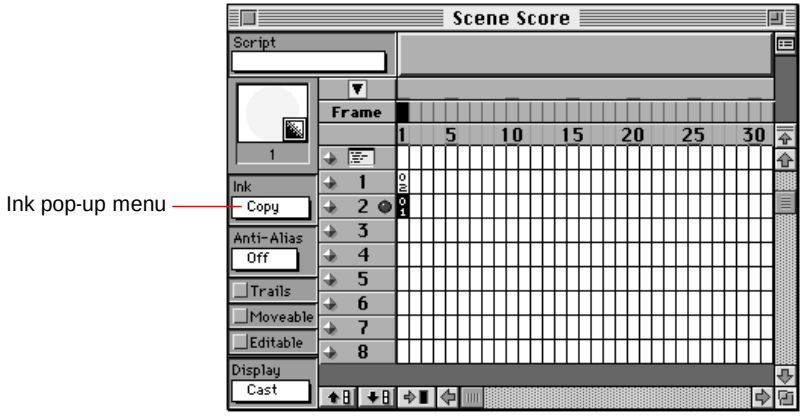
1. Select cell 1 in channel 2.
2. Drag the moon from the cast window to the stage. Position it like this:



You of course want the moon to rise behind rather than in front of the shrine, but once again it's easier to set up the animation in front, where you can see it, and then move the moon behind the shrine afterwards.

Apply the Matte ink:

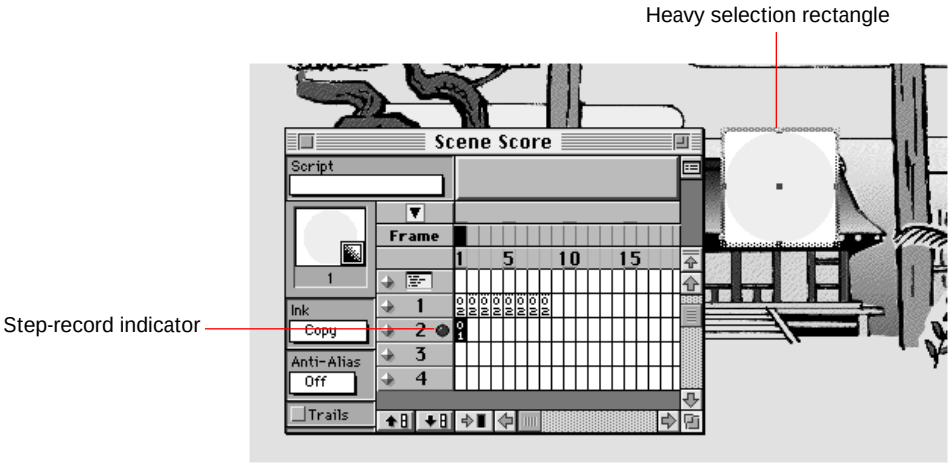
1. Click the score to make it active (or press Command-4). Cell 1 in channel 2 is still selected. It contains the information about the moon's position on the stage.



2. Choose Matte from the Ink pop-up menu in the score. The bounding box surrounding the moon disappears.

Step recording the moon rising

Director automatically shifts into step-record mode whenever you drag a cast member from the cast window to the stage or the score. You can tell by the heavy selection rectangle that appears around the cast member's sprite and by the step-record indicator next to the channel where Director is storing information about the sprite.



- To start step-record mode when it's not active, you select the sprite you want to record and then hold down the Option key and click the sprite again; you can also go to the score, hold down the Option key and click the number to the left of the channel that contains the sprite you want to record.
- To create animation when step-record mode is active, you click the Step Forward button on the control panel to move the playback head to the next frame, position the sprite where you want it to appear in that frame, and then step to the next frame.
- To stop step-record mode, you click the Play, Rewind, or Step Backward button on the control panel, or drag the playback head in the score.

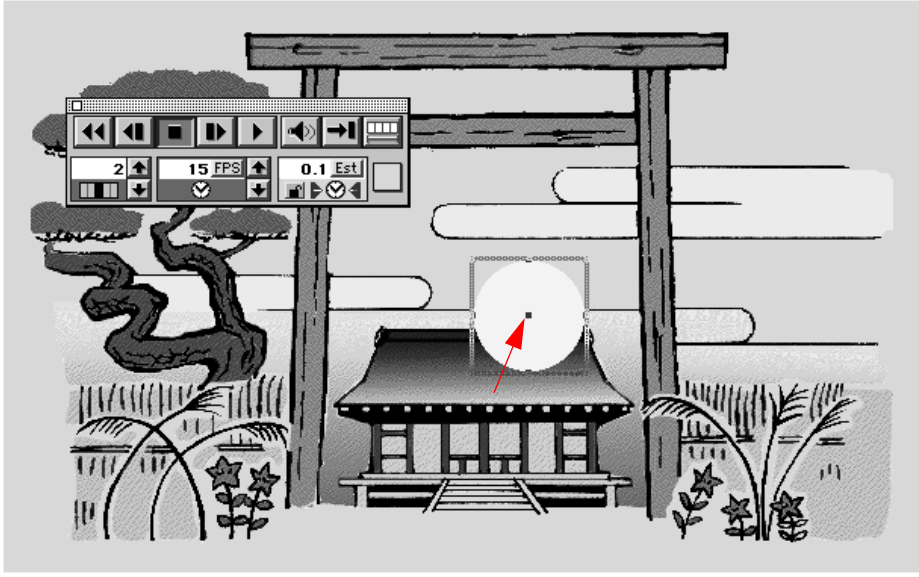
When you're step recording more than one sprite at a time, it's important to keep track of which sprites you're working with. The easiest way to do that is to select every sprite you want to record. When you select a sprite under normal conditions, Director displays a thin selection rectangle around the sprite. When Director is recording a sprite in step-recording mode, it changes the thin selection rectangle around the sprite to a thick selection rectangle. It's important to remember, however, that what determines whether a sprite is being recorded is not a thick selection rectangle around it, but a step-record indicator next to the channel the sprite occupies. A thick selection rectangle appears around a sprite that Director is recording only if the sprite happens to be selected.

To step record the moon rising:

1. Make the control panel active.
   A heavy rectangle should still appear around the moon to show that Director is recording it, and a step-record indicator should still appear next to channel 2. If that's not the case:
   - ◇ Select cell 1 in channel 2 to select the moon.
   - ◇ Hold down Option and click the moon.

2. Click the Step Forward button on the control panel (or press Command-right arrow).
   The playback head in the score moves to the next frame and copies the information about the sprite there.

3. Drag the moon slightly up and to the right, like this:

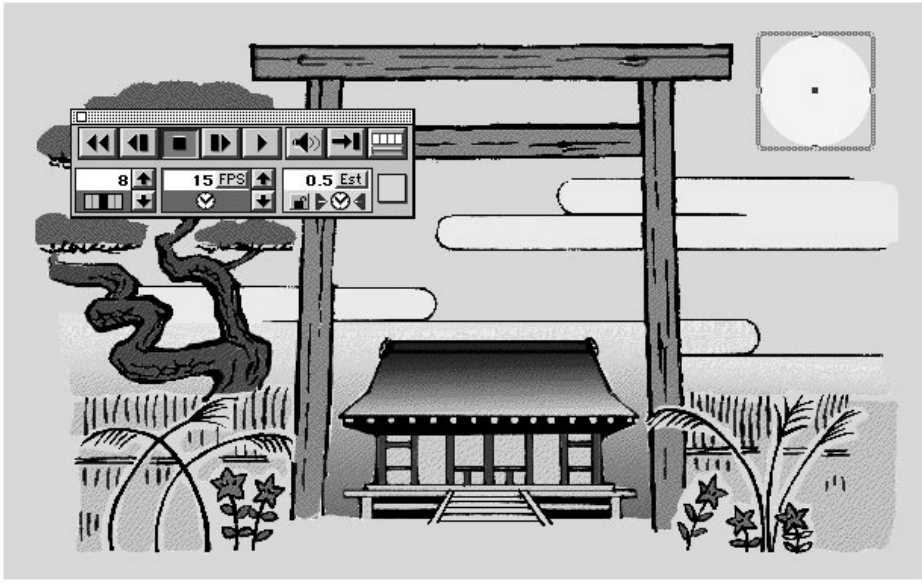


4. Click the Step Forward button on the control panel again. The playback head in the score window moves to the next frame.

Note *Make sure you don't click any of the other buttons on the control panel or Director will stop recording.*

5. Drag the moon slightly.

6. Repeat steps 4 and 5 five more times, until the moon is positioned over the shrine like this:



- Rewind the movie, and then run it to see what the animation looks like.

Changing layering

Move the moon behind the shrine:

1. Select everything in channel 2.

2. Click the Shuffle Backward button at the bottom of the score window.
   Director swaps the information in channels 1 and 2 in the score. On the stage, the moon moves behind the shrine.

- Rewind the movie, and then play it to see how the animation looks now.
  Remember that you can close all the windows that are open by pressing Command-1.

Save the changes you've made to the animation:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Moon 2," and click Save.

Animating with In-Between Linear

Earlier you used In-Between Linear to fill a series of frames with the illustration of the shrine. You can also use In-Between Linear to automatically produce the intermediate frames in an animation once you've set the starting and ending positions of the sprite you want to animate. (Frames that mark key positions in an animated sequence are called ***key frames***.)

To animate the moon rising with In-Between Linear:

1. Go to the score, select cells 2 through 8 in channel 1, and then choose Clear Cells from the Edit menu (or press Delete).
   Director erases the information in the cells.
2. Select cell 8 in channel 1.
   Cell 8 marks the end point of the animation. When you use In-Between Linear, you set just the beginning and end of an animated sequence, and then let Director calculate the intermediate positions in the sequence.
3. Make the cast window active, and drag the moon to its final position on the stage.
4. Make the score active, and choose Matte from the Ink pop-up menu to remove the white rectangle around the moon.
5. Shift-click cell 1 in channel 1 to select the entire range of cells.
6. Choose In-Between Linear from the Score menu (or press Command-B).
   Director fills in the cells between the beginning and ending frames with an equally spaced set of in-between positions for the moon.

▶ Rewind the movie, and then play it to see the results.

Save the changes you've made to the animation:

▶ Choose Save As from the File menu (or press Command-Shift-S), name the movie "Moon 3," and click Save.

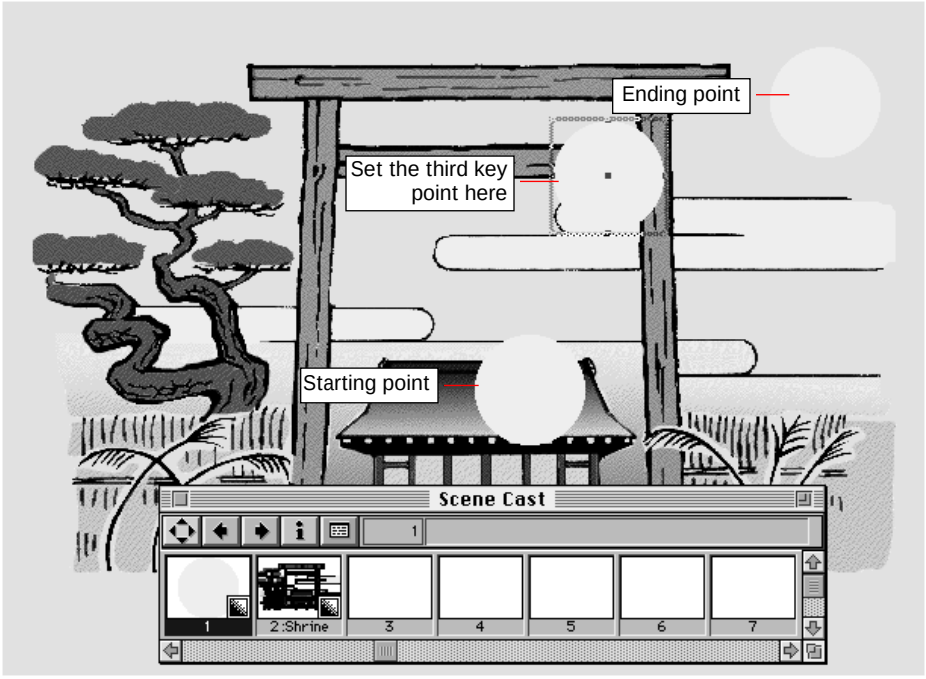
Using In-Between Special

In-Between Linear is a simple and straightforward way to create animation. But it always creates animation that proceeds along a straight path—which may not always be the kind of path you want to create. If you want to animate something that moves along a curve or in a circle, you can use In-Between Special.

Animate the moon rising along a curved path:

1. Select all the cells in channel 1 except for the first and last ones, and then choose Clear Cells from the Edit menu (or press Delete).
   Deleting everything but the first and last cells leaves the key frames—the frames that define where the animation starts and stops. To create a curved animation, you need to add a third key frame between the moon's beginning and ending points to define the arc of the curve.
2. Select cell 5 in channel 1.

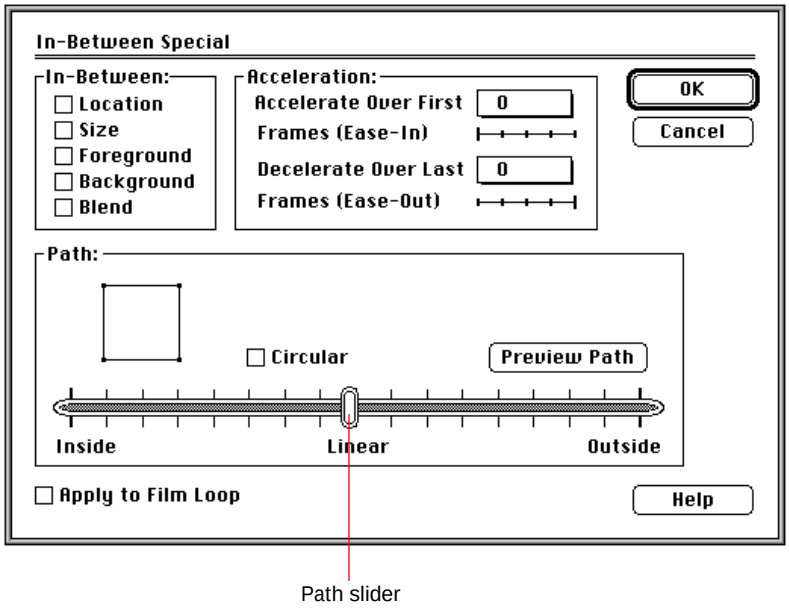
3. Make the cast window active, and drag the moon to a spot on the stage between the starting and ending points of the animation:



4. Make the score active, and choose Matte from the Ink pop-up menu to remove the white rectangle around the moon.

Set up the path you want the moon to follow:

1. Select the first cell in Channel 1, and then Shift-click the last cell in the same channel to select the entire range.
2. Choose In-Between Special from the Score menu (or press Command-Shift-B).
   The In-Between Special dialog box appears.



3. Select Location as the In-Between option (make sure none of the other options are selected).
4. Drag the Path slider as far as it will go to the Outside end.
   Dragging the slider changes the curvature of the path. The effect of the setting you choose is shown by the way the square above the slider changes.
5. Click Preview Path to see the path the moon will follow.
   Director removes the dialog box and draws the path on the stage.

If the path doesn't look right:

1. In the score, select cell 5 in channel 1.
   Cell 5 contains the third key frame.
2. On the stage, adjust the position of the moon.
3. Go back to the score, and select the entire range of cells in channel 1.

In-Between the key frames:

1. Choose In-Between Special from the Score menu again (or press Command-Shift-B).
   The In-Between Special dialog box reappears. The settings you selected are still set.
2. Click OK.
   Director creates the positions of the moon along the path between the key frames.
3. Rewind the movie and play it to see the results.

Save the changes you've made to the animation:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Moon 4," and click Save.

If you'd like to see the results of in-betweening using the Inside curve setting in the In-Between Special dialog box, clear the in-betweened cells from the score, and repeat the process.

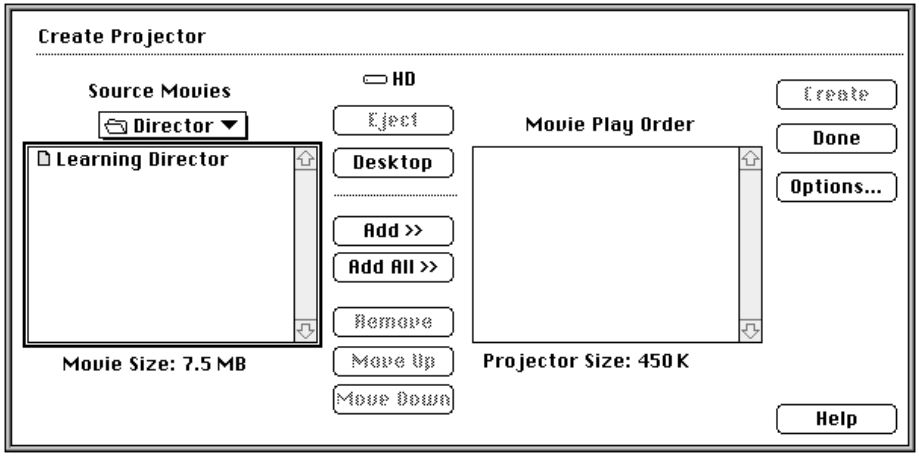
Creating a projector

One of the best things about Director is that you can turn any movie you create into a projector. A projector is a movie that's packaged with a play-only version of Director built into it. That means anyone can play the movie—even people who don't own a copy of Director.

To create a projector:

1. Choose Create Projector from the File menu.
   If you've made changes to the movie since the last time you saved it, a message appears asking you if you want to save the changes. Click Save if you want to save the changes, or Don't Save if you don't.

   The Create Projector dialog box appears.



   The names of the movies in the current folder appear in the Source Movies list, on the left side of the dialog box.

2. Select "Moon 4," and then click Add.
   Director transfers "Moon 4" to the list on the right side of the dialog box.

If "Moon 4" doesn't appear in the dialog box, go to the folder named Macromedia Director 4.0, open the Tutorials folder, and then open the Learning Director folder.

For a complete explanation of all the options that are available when you create a projector, see "Create Projector" in Chapter 6, "Menu Reference," in *Using Director*.

3. Click Create.
   The Save dialog box appears.
4. Name the projector "Moonrise," and then click Save.
   Director produces a projector version of the movie. (The projector and the movie are separate files; Director preserves the movie in its original form when it creates the projector.)
5. Click Done to remove the Create Projector dialog box from the screen.

To play the projector:

1. Choose Quit from the File menu (or press Command-Q) to quit Director.
2. Go to the folder named Macromedia Director 4.0, open the Tutorials folder, and then open the Learning Director folder.
3. Double-click the icon named "Moonrise" to play the projector.
   The stage appears, the moon rises over the shrine, and then the stage disappears from the screen.

The disappearance of the stage may seem abrupt, but that's because the animation is so short. It nonetheless demonstrates the function of a projector, which is simply to play a movie. A projector doesn't provide access to any of Director's windows, menus, or tools—and that means that no one can make any changes to the movie you've created. It's also not possible to open a projector in Director and edit it that way.

The stage doesn't, however, have to vanish as soon as the animation in a movie ends. You can give users some degree of control over a movie, such as whether they want to quit the movie or run it again. For information, see Chapter 8, "Adding Interactivity to a Movie."

Chapter 2

Creating Text in the Paint Window

Director has two text tools: one in the paint window and one in the tools window. You can use either to create text—but the text you create with the two tools isn't identical.

Text you create in the paint window is bitmapped (***bitmapped text*** is stored as a graphic image of the text). Text you create with the tools window or in a text window is QuickDraw text (***QuickDraw text*** is stored as the information that defines the text—the letters you've typed, the font, size, and style you've chosen, and so on).

Paint window text

Because the text you create in the paint window is bitmapped, Director can animate it faster than text you create in a text window or with the text tool in the tools window. You can also use the paint window's ink effects on bitmapped text, and you don't have to worry about whether users have the fonts you're using installed on their systems. The disadvantage of bitmapped text is that once you've created it, you can't edit it: if you want to change what you've typed, you have to erase it and type it again.

Tools window and text window text

Any text that you create with the text tool in the tools window, you can also display in a text window. And any text that you create in a text window, you can edit with the tool window's text tool once you've place the text on the stage. The link between the two is the cast window: text created with either the tools window or in a text window becomes a text cast member in the cast window.

QuickDraw text takes less space than bitmapped text because Director saves only the information that defines the text, not every pixel that makes up the image of the text. QuickDraw text also looks much better when it's printed (so it's the better choice when you plan to print frames of a movie, say, for handouts). Perhaps most important, you can edit QuickDraw text after you've created it.

If you prefer working with QuickDraw text but you want to take advantage of Director's ability to animate bitmapped text faster, you can create and edit the text with the tools window or in a text window, and then use the Convert to Bitmap command on the Cast menu to change it into bitmapped text. (See Chapter 6, "Menu Reference," in *Using Director* for more information.)

This chapter covers the basics of creating text in the paint window. The examples take about half an hour to work through.

Before you start:

1. Start Director if it isn't still running.
2. Make sure that looping is turned off.
   When looping is on, there's a check mark next to Looping on the Edit menu, and the Loop button on the control panel is down. To turn looping off, choose Looping from the menu to remove the check mark next to it, or click the Loop button on the control panel.

Creating a title for a movie

The first experiment in this chapter shows how to create a title screen in the paint window using two different sizes of text. It also shows how to use the Switch ink to change the color behind the text without affecting the color of the text itself. You'll also find out how to move the text from the paint window to the stage.

Selecting foreground and background colors

The first step in creating text in the paint window is to select the foreground and background colors you want to use. The foreground color determines the color of the text itself. The background color sets the color of the bounding box around the text.

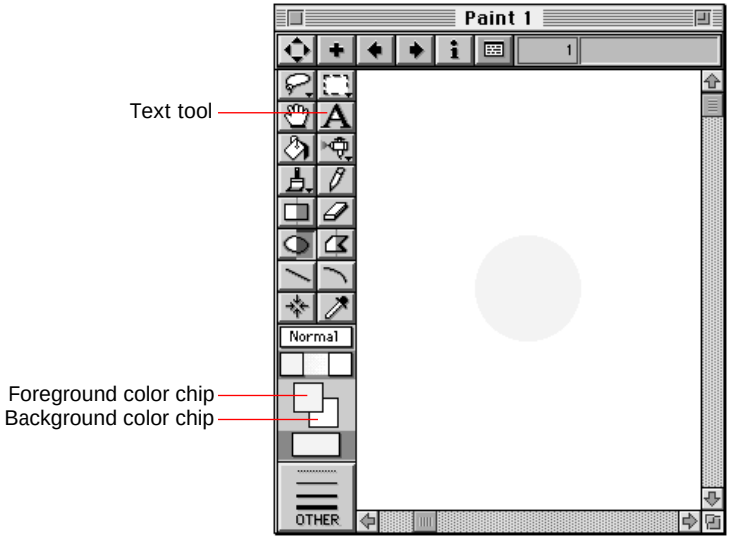
Open the movie that you're going to add the text to:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Title," and click Open.
   If "Title" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   When the file opens, an image of the shrine you worked with in the previous chapter appears on the stage.

Open the paint window:

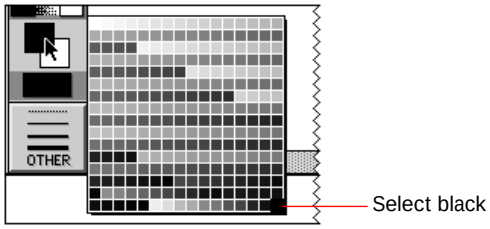
1. Choose Paint from the Window menu (or press Command-5).
   When the paint window appears, the moon is in the drawing area.



2. Click the Add button (or press Command-Shift-A) to create a new cast member.
   The moon disappears from the window, and Director displays a blank drawing area.

Select the foreground color:

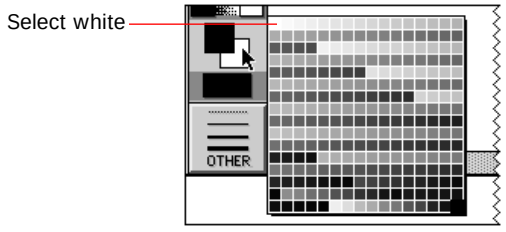
1. Point to the foreground color chip and hold down the mouse button to display the color palette.



2. Drag the pointer to black, located in the last chip in the last row.
   The foreground color chip changes to the color you've selected.

Select the background color:

1. Point to the background color chip and hold down the mouse button.



2. Drag the pointer to white in the first chip in the top row.
   The background color chip changes to the color you've selected.

Note *The background color chip affects only the background color of a text block and the second color in a pattern.*

Using the text tool

To type text:

1. Select the text tool.
   When you move the pointer to the drawing area, it changes into an I-beam.
2. Go to the Text menu, and select New York from the Font submenu.
3. Select 18 point from the Text menu's Size submenu.
4. Select Bold from the Text menu's Style submenu.

Note

You can also change the font, size, and style—as well as the foreground and background colors—after you type the text, as long as you do so before you set another insertion point or select another tool.

5. Click the I-beam to set the insertion point in the drawing area, and type:
   Noh Tale to Tell

   The text appears in the foreground color you've chosen. (The background color—when you choose a color other than white—doesn't appear until you set another insertion point or select another tool.)

Mixing two sizes of text

Suppose you want to make the N in "Noh Tale to Tell" twice as large as the rest of the text. One of the disadvantages of creating text with the text tool in the paint window is that all the text in a single block has to be a single font, size, and style. To create an N that's twice as large as the rest of the text, you need to create a separate text block containing the large N, and then align it with "oh Tale to Tell."

To create the large N:

1. Click the I-beam in a different spot to set the insertion point there.
2. Choose 36 point from the Text menu's Size submenu.
3. Type N.

Erase the smaller N at the beginning of "Noh Tale to Tell":

- Select the eraser, position it over the smaller N, and click. The N disappears.

Using the lasso

You can use either the lasso or the selection rectangle tool to select images in the paint window. The lasso works best for images that aren't rectangular.

Both the lasso and the selection rectangle tool have Shrink and No Shrink modes:

- The lasso's Shrink mode fits the selection marquee to the shape of the image, excluding the background entirely; the selection rectangle tool's Shrink mode reduces the selection marquee to the smallest rectangle that can contain the image.

- The lasso's No Shrink mode selects exactly the area you outline, including both background and foreground colors; the selection rectangle tool's No Shrink mode selects the entire area inside the rectangle you draw.

Use the lasso to select the letter N:

1. Point to the lasso icon, hold down the mouse button, and choose Shrink from the pop-up menu that appears.
2. Use the lasso to draw a circle around the letter N.
   You don't have to draw a complete circle with the lasso. If the two ends of the line don't cross when you release the mouse button, Director connects them with a straight line.

   The N starts to flash.

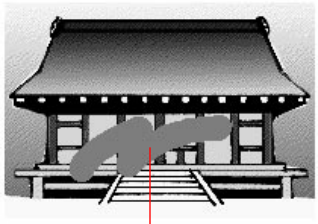
▶ **Tip** *Try selecting the letter N with lasso's No Shrink mode selected, and then with the selection rectangle tool's Shrink and No Shrink modes selected to see how they work.*

3. Point to the N, hold down the mouse button, and drag it to align it with "oh Tale to Tell."
   You can adjust the N's position one pixel at a time using the arrow keys on the keyboard.
4. Click anywhere outside the N to deselect it.

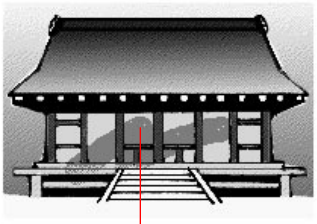
Using the Switch ink

The Switch ink lets you use the paintbrush to replace one color with a different color.

Normally when you use the paintbrush, the color you're using covers anything you drag the brush over. The Switch ink changes the way the paintbrush works. Instead of indiscriminately covering everything with the current foreground color, the Switch ink covers only the areas where a specific color you've selected appears—switching the selected color to a different color.

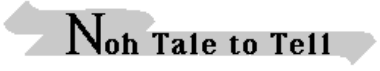


The paintbrush normally works like this



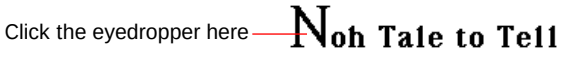
The paintbrush works like this when the Switch ink is in effect

One of the things you can do with the Switch ink is to paint the background behind an image you've already created. The steps that follow show how to paint a background such as this behind the text you've created:



The first step is to select the color you want to change:

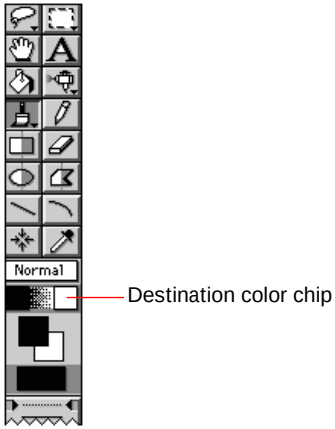
- Select the eyedropper and use it to click the background color behind the text.



The foreground color chip changes to the color you've clicked with the eyedropper—the white of the background.

One of the important things to remember about the Switch ink is that it reverses the way the foreground color chip works: instead of using the foreground color chip to choose the color you want to paint with, you use it to identify the color you want to replace.

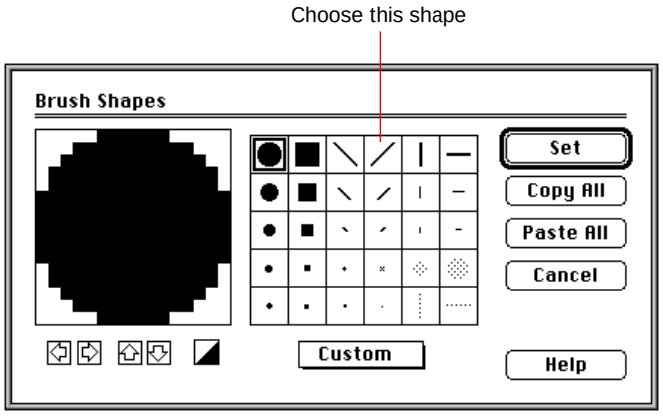
The next step is to choose the color you want to use in place of the background color behind the text:



- Point to the destination color chip, press the mouse button, and when the palette appears, choose one of the reds. When you're using the Switch ink, the destination color chip—not the foreground color chip—identifies the color that you paint with.

Next, select the brush shape you want to use and then paint the background behind the text:

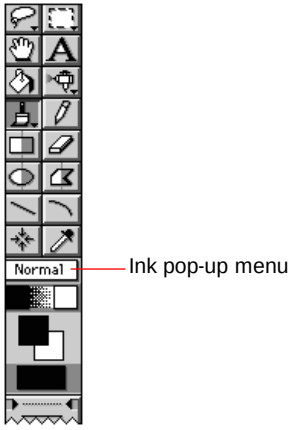
1. Double-click the paintbrush.
   The Brush Shapes dialog box appears.



2. Chose the shape fourth from the left in the top row.
3. Click Set.

Note

If the color in the foreground color chip has changed, it's because Color Sticks to Brush Tools is selected in the Paint Window Options dialog box. The foreground color that has appeared is the one you use with the paintbrush most recently. Choose Paint Window Options from the Paint menu, deselect Color Sticks to Brush Tools, and then repeat steps 1, 2, and 3.



4. Select Switch from the Ink pop-up menu.
5. Drag the paintbrush slowly to paint over the text like this:

As you paint, the background changes to red, but the text is unaffected.

Note

Ink effects normally stick to the last tool you've used them with—which means that the next time you choose the paintbrush, Director will automatically select the Switch ink from the Ink pop-up menu. If you don't want ink effects to stick to the tools you use them with, choose Paint Window Options from the Paint menu, and uncheck Ink Effect Sticks to Tool in the dialog box that appears.

Moving text to the stage or score

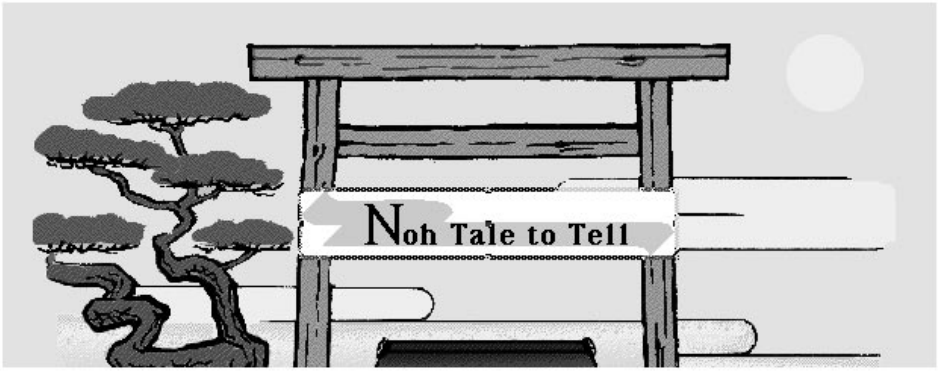
Director automatically places the text in the cast window, as it does with anything you create in the paint window. You don't, however, have to go to the cast window to move the text to the stage or score. You can use the paint window's Place button to move the text directly from the paint window to the stage or score.

To move the text to the stage:

1. Make the score active, and then select cell 10 in channel 3.
   Selecting a cell in the score sets the moment in the movie when you want the title to appear. Selecting cell 10 means that the title will appear in frame 10, after the moon has risen over the shrine.
2. Make the paint window active again.

3. Point to the Place button, and hold down the mouse button.
   The pointer changes to a hand.
4. Drag the hand to the stage.
   As soon as the hand moves out of the paint window and onto the stage, a dotted outline representing the text appears. When you release the mouse button, the text appears on the stage.
5. Close the paint window, and move the score toward the bottom of the screen.

6. Position the title like this:



The bounding box around the title is opaque, so you need to use the Matte ink to make it transparent.

7. Make the score active, and then choose Matte from the Ink pop-up menu.
The white box surrounding the title disappears.

Rewind the movie, and then play it to see how the title fits in with the animation.

Save the movie:

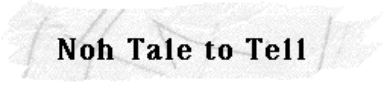
- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Title 1," and then click Save.

Creating a title using the Reveal and Transparent inks

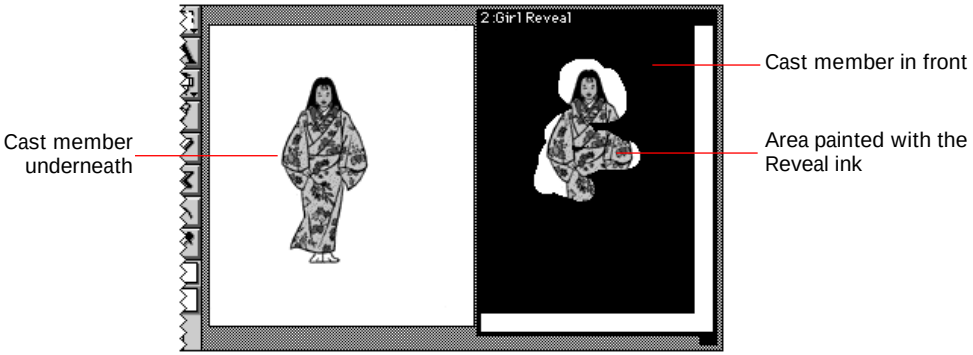
The second experiment in this chapter shows how to create another title treatment. The second experiment uses the Reveal ink to create an irregular rice paper background for the title. It also shows how to use the Transparent ink to make the background behind the title text transparent.

Using the Reveal ink

Suppose you're creating the title screen for Noh Tale to Tell and instead of using a solid color behind the title, you decide on a scanned image of rice paper as the background. But you don't want to display just a rectangle of rice paper, you want to paint the rice paper on to the background in an irregular shape that looks something like this:



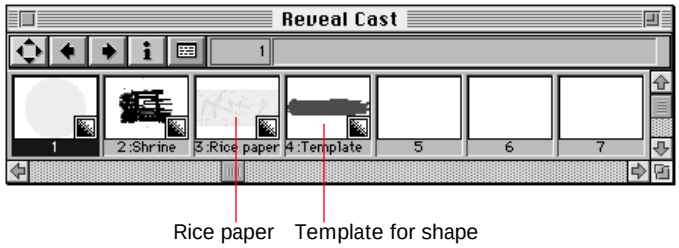
You can create an effect such as that using the Reveal ink. The Reveal ink works like this: Imagine a cast member and the background behind it painted on a pane of glass that covers another cast member. As you use the Reveal ink to paint over the cast member in front, you remove the cast member and its background, revealing the other cast member underneath.



Here's how to use the Reveal ink:

1. Choose Open from the File menu (or press Command-O). The Open dialog box appears.
2. Select the file named "Reveal," and then click Open. If Reveal doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then the Learning Director folder.

   A movie that looks much like the one you used in the previous example appears.
3. Make the cast window active.



Cast member 3 is the scanned image of the rice paper, and cast member 4 is a template for the shape you want to create. (You don't need a template for the Reveal ink to work; the template is provided just to make the example easier to follow.)

One essential when you use the Reveal ink is this: in the cast window, the cast member you're revealing must be located immediately to the left of the cast member where you're using the Reveal ink.

To paint with the Reveal ink:

1. Double-click cast member 4 to display the template in the paint window.

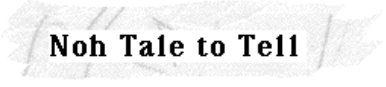
2. Select the paint bucket.
3. Choose Reveal from the Ink pop-up menu.
4. Fill the template with the Reveal ink.
   The rice paper background fills the template.

   Remember that unless you've unchecked Ink Effect Sticks to Tool in the Paint Options dialog box, Director will automatically select the Reveal ink the next time you choose the paint bucket.

Using the Transparent ink

The next step in creating the title is to type the text of the title on the irregular rice paper background you just created with the Reveal ink.

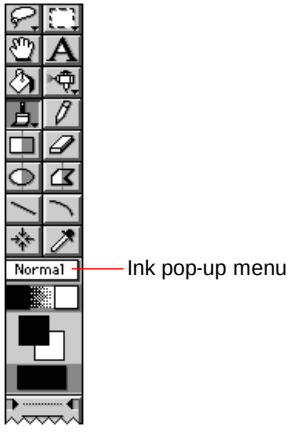
If you simply type the text of the title on the rice paper, you end up with an opaque bounding box around the text. The result looks like this:



To make sure that the rice paper shows through the bounding box around the text, you need to use the Transparent ink.

Add the text of the title to the rice paper background:

1. Select the text tool.
2. Use the foreground color chip to select black from the color palette.
   The foreground color chip sets the color of the text you're about to type.
3. Change the selection on the Text menu's Size submenu from 36 point to 18 point.
4. Choose Transparent from the Ink pop-up menu.



5. Click the I-beam on the rice paper to set the insertion point, and type:
   Noh Tale to Tell
6. Click anywhere else in the drawing area.
   The bounding box around the text disappears, and you can see the rice paper through the letters.

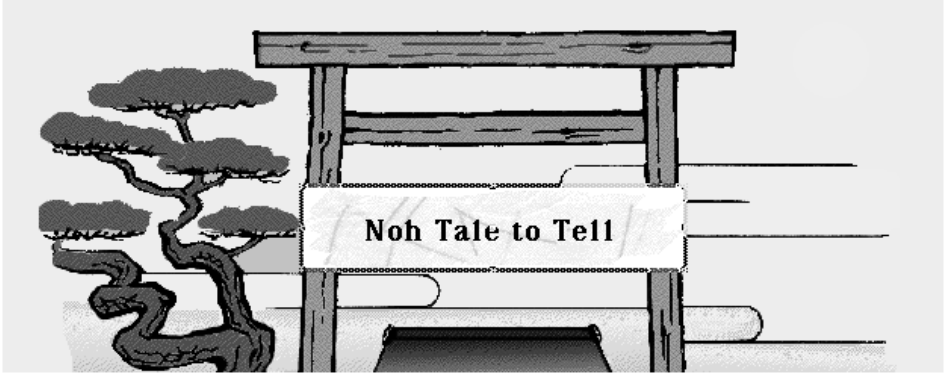
   Remember that unless you've unchecked Ink Effect Sticks to Tool in the Paint Options dialog box, Director will automatically select the Transparent ink the next time you choose the text tool.

Placing the text on the stage

To place the text on the stage:

1. Make the score active, and then select cell 10 in channel 3.
   Selecting cell 10 means that the title will appear in frame 10, after the moon has risen over the shrine.
2. Make the paint window active again.

3. Point to the Place button, and hold down the mouse button.
   The pointer changes to a hand.
4. Drag the hand to the stage.
   As soon as the hand moves out of the paint window and onto the stage, a dotted outline representing the text appears. When you release the mouse button, the text appears on the stage.
5. Close the paint window.
6. Position the title like this:



   The bounding box around the title is opaque, so you need to use the Matte ink to make it transparent.
7. Make the score active, and then choose Matte from the Ink pop-up menu.
   The white box surrounding the title becomes transparent.

Rewind the movie, and then play it to see how the title fits in with the animation.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie “Title 2,” and then click Save.

Chapter 3

Creating Text with the Tools Window

As mentioned in the previous chapter, the text tool in the tools window creates QuickDraw text rather than bitmapped text, like the paint window's text tool.

The examples in this chapter show how to create text using the text tool in the tools window, and also how to add margins, a border, and a drop shadow to the text you've created. You'll also find out how to convert QuickDraw text to bitmapped text.

The chapter covers techniques you can use to draw and place objects precisely: the examples show how to use the rulers in the paint window to create a box of a precise size to limit the area where the text appears and how to use the Sprite Info command on the Score menu to place the box at a precise location on the stage.

The chapter also demonstrates several more of Director's graphics features: using the tools window's drawing tools, using two more of the score window's ink effects (Blend and Background Transparent), changing the text cast member's color depth to 1 bit to save disk space, and then colorizing the 1-bit cast member.

The examples in this chapter take about half an hour to work through.

Before you start:

1. Start Director if it isn't still running.
2. Make sure that looping is turned off.

Creating text on the stage

When you create text with the text tool in the tools window, you create it directly on the stage.

Defining the size of the text block

When you type text directly onto the stage, you may need to define the exact boundaries of the area where you want the text to appear—to prevent it from spilling over into areas you've set aside for other things. You can define an area by creating a box of exact dimensions in the paint window, placing the box on the stage, and then typing the text inside the box.

Open the movie that contains the background for the text:

1. Choose Open from the File menu.
   The directory dialog box appears.
2. Select the file named "Text," and then click Open.
   If "Text" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

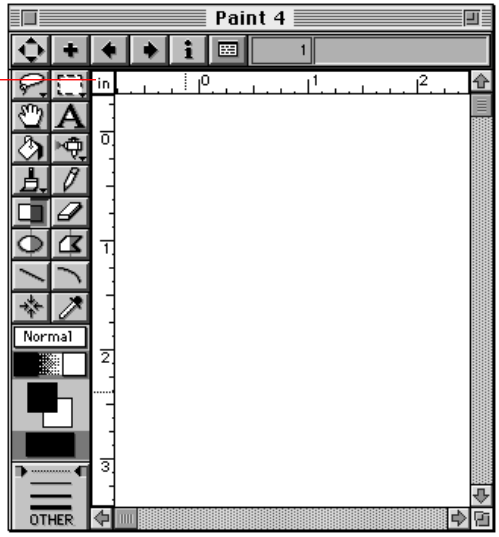
Open the Paint window:

1. Choose Paint from the Window menu (or press Command-5).
   When the paint window appears, the shrine scene is in the drawing area.

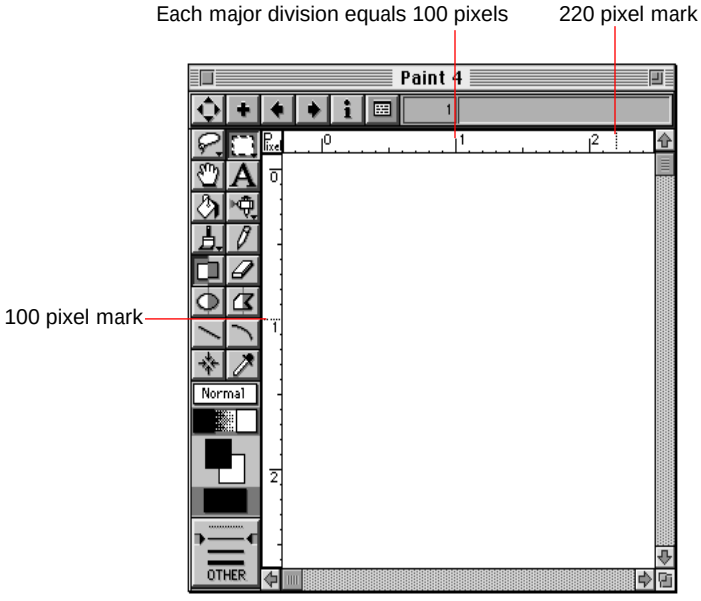
2. Click the Add button to create a new cast member.
   The shrine scene disappears from the window, and Director displays a blank drawing area.

To create a box of exact dimensions:

1. Choose Show Rulers from the Paint menu (or press Command-Shift-K).
   Rulers appear along the top and left edges of the Paint window.



2. Click the units indicator in the upper left corner of the drawing area until Pixel appears.
   Changing the indicator changes the unit of measurement to pixels. When you select pixels as the unit of measurement, each major division marks 100 pixels (a single pixel is only 1/72nd of an inch). The numbers on the ruler represent hundreds of pixels, not individual units (for example, 1 stands for 100 pixels).

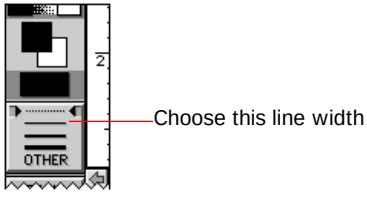


3. Resize the paint window if you need to so that you can see the 220 pixel mark on the top ruler and the 100 pixel mark on the left ruler.

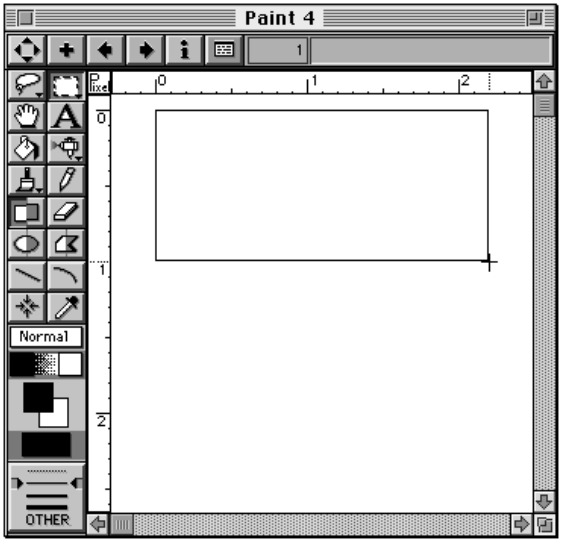
4. Click the left side of the rectangle tool to draw an unfilled rectangle.

5. Choose black as the foreground color and white as the background color.

6. Choose the thinnest line width.



7. Start at the spot in the drawing area that corresponds to the zero mark on both the rulers, and draw a rectangle 220 pixels wide by 100 pixels long.
   The result looks like this:



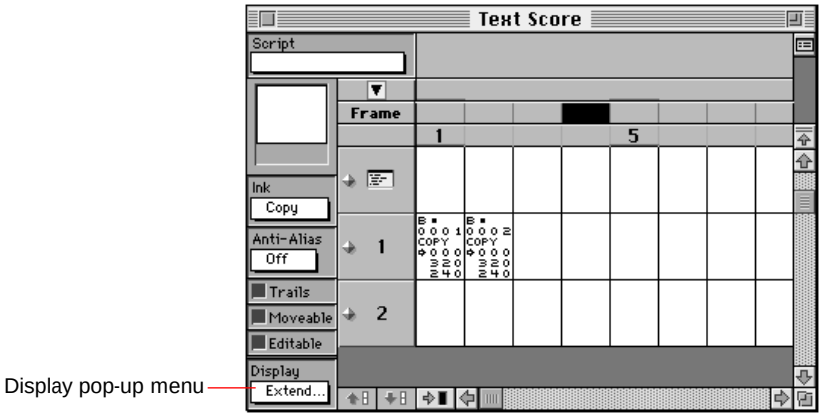
Hide the rulers:

- Choose Hide Rulers from the Paint menu (or press Command-Shift-K) again.

Positioning the rectangle precisely on the stage

You can enter a set of coordinates in the Sprite Info dialog box to position a cast member at an exact spot on the stage.

Remember that when you place a cast member on the stage, Director displays a sprite based on the cast member—not the cast member itself—on the stage. It stores information about the sprite (its location on the stage, any ink effect you've applied to it, and so on) in a cell in the score. You can see a summary of the information about a sprite if you select Extended from the Display pop-up menu in the score window.



For an explanation of what the notation in the score means, see "The score window" in Chapter 5, "Window Reference," in *Using Director*.

Before you move the rectangle to the stage, select the cell in the score where you want Director to record the information about the rectangle:

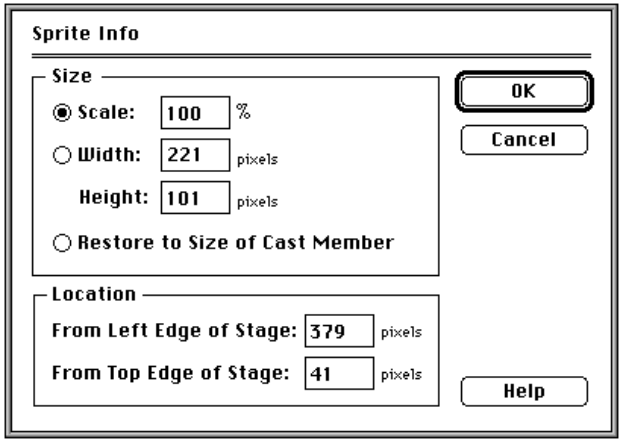
1. Make the score active.
2. Select the first cell in channel 2.

Move the rectangle to the stage:

1. Make the paint window active.
2. Point to the Place button, hold down the mouse button, and then drag the pointer to the stage.
3. Close the paint window.

Position the rectangle:

1. Make sure the rectangle is still selected.
2. Choose Sprite Info from the Score menu (or press Command-K).
   The Sprite Info dialog box appears.

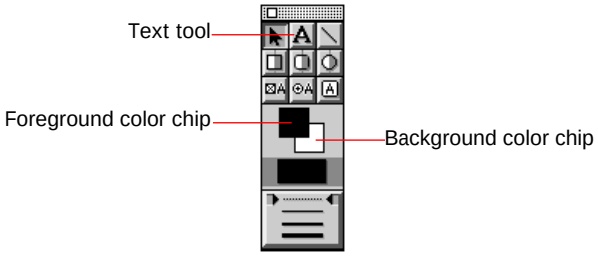


3. In the Location section at the bottom of the dialog box, type 108 as the number of pixels from the left edge of the stage and 72 as the number of pixels from the top edge.
   Since there are 72 pixels to an inch, 108 pixels places the upper left corner of the rectangle 1-1/2 inches from the left edge of the stage, and 72 pixels places it 1 inch from the top edge.
4. Click OK.
   Director positions the rectangle where you've indicated on the stage.

Using the text tool

To create text with the text tool in the Tools window:

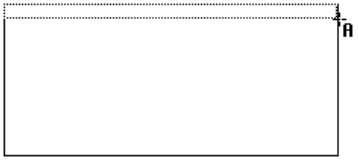
1. Choose Tools from the Windows menu (or press Command-7) to display the Tools window.



2. Choose black as the foreground color and white as the background color.

3. Click the text tool.

4. Position the text pointer in the upper left corner of the rectangle you've drawn, hold down the mouse button, and drag to the right to draw a text box.
You can make the box as wide as you want, but Director lets you make it high enough for only a single line. The box will expand automatically as you enter text in it.



5. Type:
Out of the mists a village girl appeared, unbidden, quite unexpected. He asked her name.

Don't worry about the exact size or position of the text right now. You'll adjust it later.

Save the changes you've made to the original file as a new movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the file "Text 1," and click Save.

You're going to continue working with the same movie in the next section.

Setting the font, size, and style of QuickDraw text

You set the font, size, and style of QuickDraw text after you've typed the text.

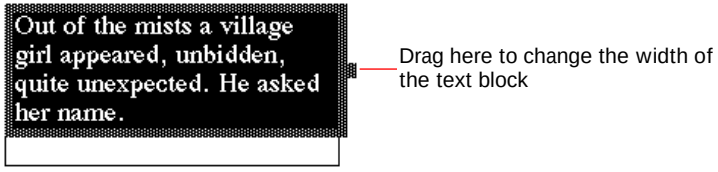
To set the type characteristics of the text you've just typed:

1. Select the text block if it isn't still selected.
   If you can't get a selection rectangle to appear around the text block, it's because the art behind the text is selected. Click the white border around the background art to deselect the background art, then click the text block to select it.

   You can also select the text block by selecting cell 1 in channel 3 of the score. That's the cell that contains the information about the text block's location on the stage.
2. Highlight the text in the text block.
   Highlight the text as you would in any word processing application: position the pointer at the beginning of the text, hold down the mouse button, and drag to the end of the text. You can also triple-click anywhere inside a block of text to highlight all the text in the block.
3. Go to the Text menu, and choose Times from the Font submenu.
4. Choose 18 point from the Size submenu and Plain from the Style submenu.
   The text changes to match the settings you've chosen.

If you need to adjust the width of the text:

- Drag the handle on the right side of the box to the left until the dotted outline is inside the rectangle.



To position the text precisely:

1. Make sure the text is still selected.
2. Choose Sprite Info from the Score menu.
   The Sprite Info dialog box appears.
3. In the Location section at the bottom of the dialog box, type 114 as the number of pixels from the left edge of the stage and 78 as the number from the top.
   The values that you enter position the text six pixels farther from the top and left edges of the stage than the rectangle you drew earlier.
4. Click OK.
   Director repositions the block of text.

Using the Scrapbook

One of the pieces of information recorded about a sprite in a cell is a sprite's location on the stage. If you want to save a copy of a sprite—the cast member as well as the additional information about it recorded in a cell—you can do so in the Scrapbook.

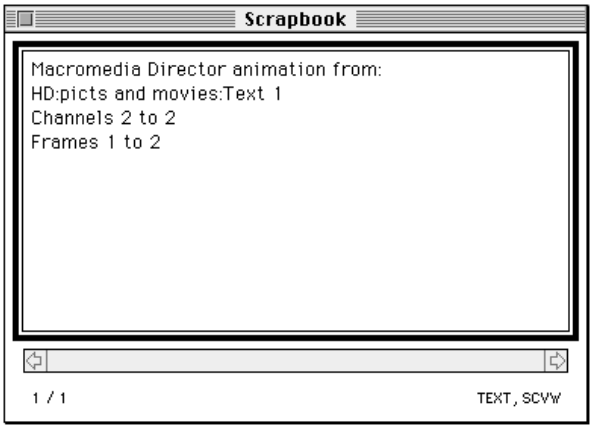
Saving a sprite in the Scrapbook

Once you've set up a block of text, saving the rectangle you used to define the text area is a good idea. If you save it as a sprite, you can place it on the stage in other frames in exactly the same location where it appears in the current frame just by pasting it into the score. Since its location is saved with it in the Scrapbook, you don't have to do anything to reposition it to get it in the same location.

To save the rectangle in the Scrapbook:

1. Select cell 1 in channel 2 of the score.
   Cell 1 in channel 2 contains the information about the location of the rectangle sprite.
2. Choose Copy Cells from the Edit menu (or press Command-C).
3. Choose Scrapbook from the Apple menu.
   The Scrapbook appears.

4. Choose Paste from the Edit menu (or press Command-V).
   The information that appears in the Scrapbook looks something like this:



5. Close the Scrapbook.
   The Scrapbook disappears from the screen.

Since you were using the rectangle just to define the text area, now that you've typed the text you can remove the rectangle:

1. Select the cell in frame 1 of channel 2 of the score, if it isn't still selected.
2. Choose Clear Cells from the Edit menu (or press Delete).
   The information is removed from the cell, and the rectangle disappears from the stage.

Copying a sprite from the Scrapbook

Copy the sprite you just saved in the Scrapbook:

1. Choose Scrapbook from the Apple menu.
2. Locate the sprite information.
3. Choose Copy from the Edit menu (or press Command-C).
4. Close the Scrapbook.

Paste the sprite in the next frame of the movie:

1. Select cell 2 in channel 2 of the score.
   The second background screen in the movie appears.

2. Choose Paste Cells from the Edit menu (or press Command-V).
   The rectangle appears in the same place it appeared on the previous screen.

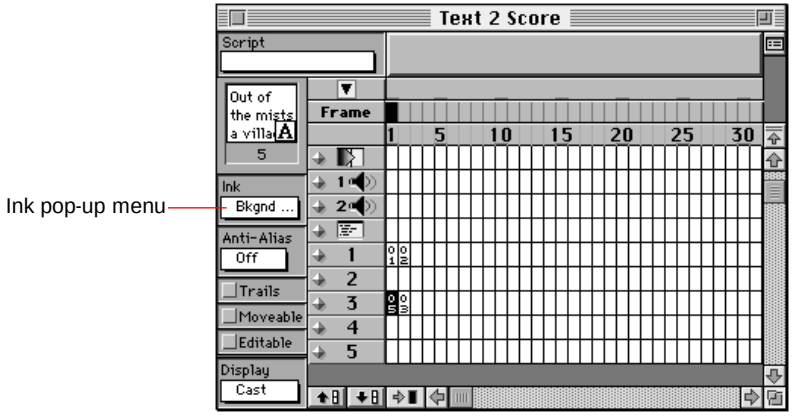
Displaying text against the background

- Click the Rewind button on the control panel (or press Command-R) to go back to frame 1.
  The shrine scene reappears on the stage.

Now that you've removed the rectangle from the shrine scene, you can see that the background behind the text you've typed is opaque.

Use the Background Transparent ink in the score window to make the background transparent:

1. Select cell 1 in channel 3 of the score.
   The cell contains the information about the text sprite.



2. Choose Bkgnd Transparent from the Ink pop-up menu.
   The background behind the text will become transparent as soon as you deselect the text block.

But watch what happens:

- Click anywhere outside the text block.
  Because the text is black, it almost disappears against the background.

Change the color of the text so it's easier to see:

1. Select cell 1 in channel 3 of the score to select the text block.
2. Highlight the text in the block.
3. Use the foreground color chip in the tools window to display the color palette, and then choose a light color (such as one of the pale yellows in the top row) for the text. The text changes to the color you've selected.
4. Click anywhere outside the text block to see what the text looks like against the shrine scene.

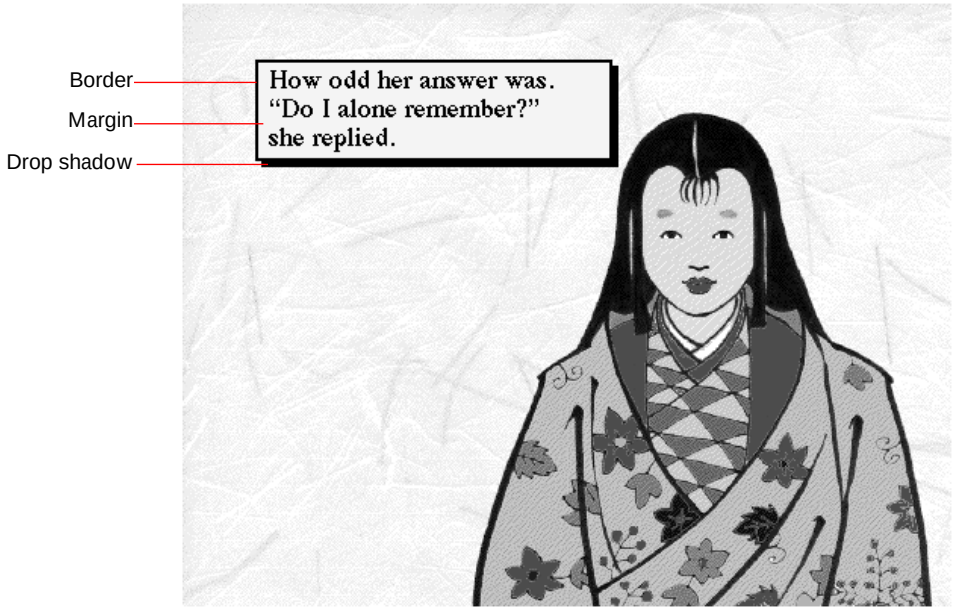
Save the movie:

- Choose Save from the File menu (or press Command-S).

You're going to continue working with the same movie in the next section.

Giving a text block a border and drop shadow

One way to display text is to give it a transparent background, as you did in the previous section. Another way to display it is with an opaque background surrounded by a border with a drop shadow.



This section shows how to create a border and drop shadow using Director's standard options and how to create a more realistic custom drop shadow.

Dragging a text cast member to the score

This experiment uses the background in the second frame of the movie and a text cast member that's already in the cast window.

Drag the text cast member to the score:

1. Position the score so that you can see channel 3 when the cast window is active.
2. Drag cast member 3 from the cast window to cell 2 in channel 3.
   Director displays the picture of the girl and places the text in cast member 3 in the center of the stage.

Reposition the text block:

1. Make sure the text is still selected.
2. Choose Sprite Info from the Score menu.
   The Sprite Info dialog box appears.
3. In the Location section at the bottom of the dialog box, type 114 as the number of pixels from the left edge of the stage and 78 as the number from the right.
   The values that you enter position the text in exactly the same place where you positioned the block of text you created on the first screen—six pixels farther from the top and left edges of the stage than the rectangle you pasted on the screen earlier.
4. Click OK.
   Director repositions the block of text.

Delete the rectangle:

1. Select cell 2 in channel 2 in the score.
2. Choose Clear Cells from the Edit menu (or press Delete).
   The rectangle disappears.

Adding a border and drop shadow

Adding a border and drop shadow is easy: you can choose the settings from the Border and Box Shadow submenus on the Text menu.

To add a border and drop shadow:

1. Select cell 2 in channel 3 in the score to select the text block.
2. Highlight the text.
3. Go to the Text menu, and choose 2 pixels from the Border submenu.
   A border appears around the text.
4. Choose 2 pixels from the Box Shadow submenu.
   A drop shadow appears along the right and bottom edges of the border.

You can also add a margin—space between the text and the border.

To add a margin:

1. Make sure the text block is still selected and the text is still highlighted.
2. Choose 3 pixels from the Margin submenu.
   Director makes the border slightly larger so there's more space between it and the text.
3. Click anywhere outside the text block to see the results.

Choosing a color for the background

Choose a color for the background behind the text:

1. Select cell 2 in channel 3 in the score to select the text block.
2. Use the background color chip in the tools window to display the palette, and choose a light color.
   The background inside the border changes to the color you've selected.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the file "Text 2," and click Save.

You're going to continue working with the same movie in the next section.

Creating a realistic shadow

Instead of using the standard drop shadow, you can create a custom shadow for the text block—a semi-transparent shadow that only darkens the background under the text block rather than blacking it out.

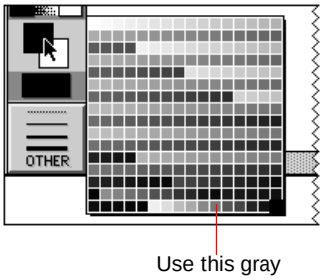
A standard drop shadow, while it looks less realistic than a custom shadow, has one advantage over the latter: if you change the size of the text box, the drop shadow adjusts to the new size automatically. If you change the size or position of the text box after you create a custom shadow, you have to adjust it by hand.

To create a realistic shadow, first remove the drop shadow that's currently part of the text block:

1. Select cell 2 in channel 3 in the score to select the text block, and then choose None from the Box Shadow submenu on the Text menu.
   The drop shadow disappears.
2. Click anywhere outside the text block to remove the selection rectangle around it.

Create a rectangle the same size as the border that surrounds the text:

1. Choose the filled rectangle tool from the Tools window.
2. Use the foreground color chip in the Tools window to display the palette, and choose the gray in the color chip sixth from the right in the bottom row.



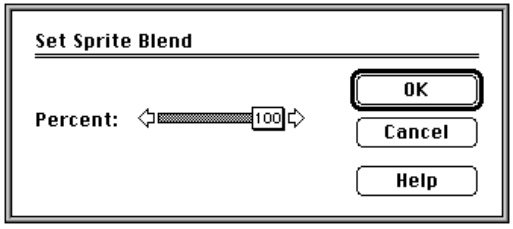
3. Position the crosshair directly over a corner of the border around the text and draw a rectangle that matches it.
   The rectangle appears over the text.
4. Drag the rectangle slightly down and to the right like this:

Move the rectangle behind the text block:

- Click the Shuffle Backward button at the bottom of the score window.
  The gray rectangle moves behind the text block.

Make the gray rectangle partly transparent by applying the Blend ink to it:

1. Make sure the gray rectangle is still selected on the stage.
2. Choose Blend from the Ink pop-up menu in the score window.
   There may be no visible change in the gray rectangle. That's because not only do you have to apply the Blend ink, you also have to set a blend value that indicates how transparent you want it to be.
3. Choose Set Sprite Blend from the Score menu.
   The Set Sprite Blend dialog box appears.



4. Set the percent to 50, and then click OK.
   The dialog box disappears, and the gray rectangle becomes semi-transparent.
5. Click anywhere outside the rectangle to see the effect.

Save the changes you've made to the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the file "Text 3," and click Save.

You're going to continue working with the same movie in the next section.

Converting QuickDraw text to bitmapped text

As mentioned in the previous chapter, QuickDraw text takes less space than bitmapped text because Director saves only the information that defines the text, not every pixel that makes up the image of the text. You can often save even more space by converting QuickDraw text to bitmapped text and then changing the color depth of the text from 8 bits (256 colors) to 1 bit (2 colors).

You can use the Convert to Bitmap command to change QuickDraw text into bitmapped text (and to change PICT graphics into bitmapped graphics). Before you do that, however, it's important to make sure you have the text set up just the way you want it because you can't edit the text after you've converted it.

▶ **Tip** *Just in case you decide you want to make changes after you've converted a cast member to a bitmap, before you do the conversion, make a duplicate of the cast member or save it in the Scrapbook.*

To change the text block to a bitmap cast member:

1. In the cast window, select cast member 3.
2. Choose Convert to Bitmap from the Cast menu.
   The QuickDraw text icon in the lower right corner of the text thumbnail changes to a bitmap icon.

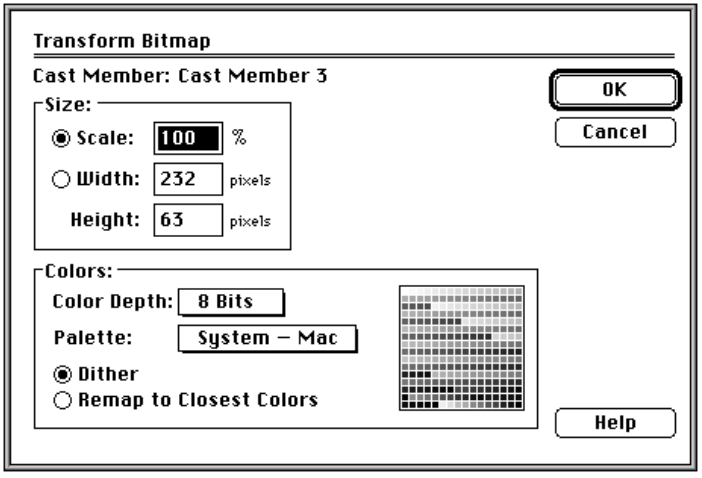
Changing a bitmapped cast member's color depth

If you're working with a cast member that has no more than two colors, you can save both memory and disk space by changing its color depth to 1 bit. (The two colors don't have to be black and white, as the section following this one shows.) Since text is usually a single color (and its background is usually transparent or a single color), it's an ideal candidate for reducing to 1 bit.

Color depth is a fairly complex subject. For a thorough discussion of it, see Chapter 1, "Working with Cast Members," in *Using Director*.

To change the color depth of the text:

1. Select the cast member 3 in the cast window.
2. Choose Transform Bitmap from the Cast menu.
   The Transform Bitmap dialog box appears.



3. Choose 1 Bit from the Color Depth pop-up menu.
4. Select the Remap to Closest Colors option.
   The Remap to Closest Colors option selects the colors from the new set that's available that are closest to the cast member's original colors.
5. Click OK.
   An alert appears telling you that the change you're about to make can't be undone.
6. Click OK.
   The cast member is converted to a 1-bit cast member. The text remains black, but the background becomes white.

Colorizing a 1-bit cast member

You can choose any two colors for a sprite based on a 1-bit cast member—one color for the foreground and one for the background. The colors you choose affect only the sprite—the cast member remains unchanged.

When you're working with a text cast member, the foreground color you choose determines the color of the text, and the background color determines the color of the background behind the text.

To change the color of the text:

1. Select cell 2 in channel 4 in the score to select the text block.
2. Use the foreground color chip in the tools window to display the palette.
3. Choose a dark blue.
   The text—and the border around it—change to the color you've selected.

To change the color of the background behind the text back to the background color you chose earlier:

1. Make sure the text block is still selected.
2. Use the background color chip in the tools window to display the palette.
3. Choose the same background color you selected earlier.
   The background behind the text changes to the color you've selected.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the file "Text 4," and click Save.

Chapter 4

Animating a Sequence of Cast Members

The basic animation techniques in Chapter 1 showed how to create animation by moving a single sprite across the stage. Animation often involves objects that—unlike the moon—change as they move. A bird, for example, flaps its wings as it flies across the sky. This chapter shows how to create animation using a sequence of cast members.

This chapter also covers a second important topic: colorizing cast members. The previous chapter demonstrated how to reduce the color depth of a cast member from 8 bits to 1 bit. This chapter shows the reverse: how to increase the color depth of a 1-bit cast member to 8 bits and then change it from a black-and-white cast member to a color cast member in a color movie.

The examples in this chapter take about half an hour to work through.

Before you start:

- Start Director if it isn't still running.

Colorizing a cast member

Colorizing a cast member has much the same effect as colorizing a black-and-white movie: images that were originally black and white now appear in color. Colorizing a cast member serves a somewhat different purpose, however. Usually you colorize a black-and-white image because you've imported it into a color movie and you want it to look like the other cast members in the movie.

Increasing a cast member's color depth

Colorizing a cast member begins with increasing its color depth. Changing a cast member's color depth from 1 bit to 8 bits means that you increase the number of colors you can use from 2 to 256.

Color depth, as mentioned in the previous chapter, is a fairly complex subject. For a thorough discussion of it, see Chapter 1, "Working with Cast Members," in *Using Director*.

Open the movie that contains the image of the Buddhist priest used in the movie *Noh Tale to Tell*:

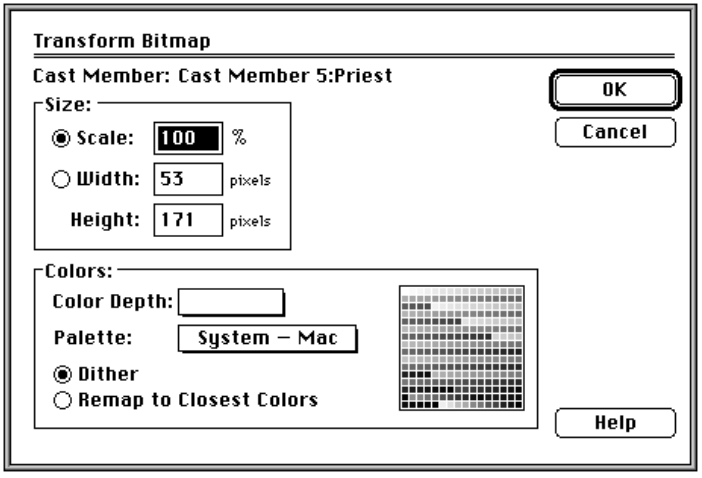
1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Priest," and then click Open.
   If "Priest" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   A rice paper background appears with grass and a bird in the foreground.

Five cast members appear in the cast window: the rice paper, two versions of the grass, a bird, and the priest. The current color depth of the priest—unlike the other cast members—is 1 bit.

Change the color depth of the priest cast member so you can colorize it:

1. Select the thumbnail of the priest—cast member 5—in the cast window.
2. Choose Transform Bitmap from the Cast menu.
   The Transform Bitmap dialog box appears.



3. Choose 8 Bits from the Color Depth pop-up menu.
4. Select Remap to Closest Colors, and then click OK.
   An alert appears telling you that you can't undo the change you're about to make.
5. Click OK.
   The cast member is converted to an 8-bit cast member.

Filling areas with color

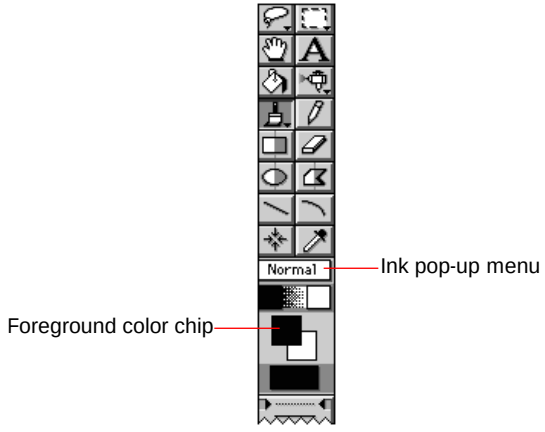
The easiest way to colorize a cast member is to fill solid black or white areas in it with color. The steps that follow show how to fill the priest's robe with color.

Start by displaying the priest in the paint window:

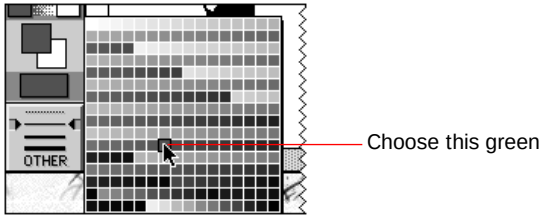
- Go to the cast window and double-click the thumbnail of the priest.
  The paint window appears.

Fill the priest's robe with a color:

1. Select the paint bucket.



2. Select Normal from the Ink pop-up menu.
3. Use the foreground color chip to display the palette.
4. Choose the green in the seventh color chip from the left, in the sixth row from the bottom.

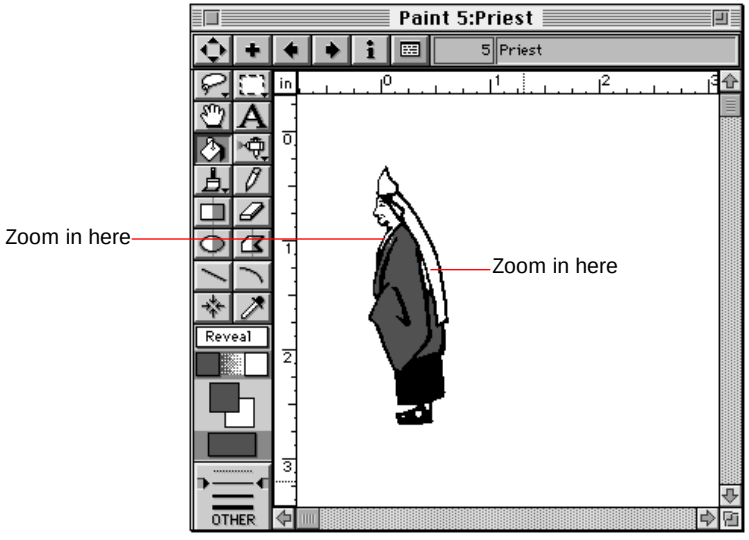


5. Position the paint bucket at the shoulder of the robe and click.
   The front of the robe fills with color.
6. Click inside the bottom part of the robe in the back.
   It fills with color.

Zooming in

Sometimes it's difficult to work with parts of an image because they're too small to see clearly. When that's the case, you can magnify them so they're easier to work with.

The two remaining parts of the priest's robe are easier to fill if you zoom in on them.



To zoom in on the back of the robe:

1. Position the paint bucket over the back of the robe and hold down the Command key.
   The cursor changes to a magnifying glass.

▶ ***Tip*** *Holding down the Command key when you're using any of the drawing tools changes the cursor to the magnifying glass.*

2. Click the mouse button.
   Director magnifies the image.

   If you want to magnify the image more, choose Zoom In from the Paint menu (or press Command-+). When the image is magnified as much as it can be, Zoom In appears dimmed.

To finish filing the robe with color:

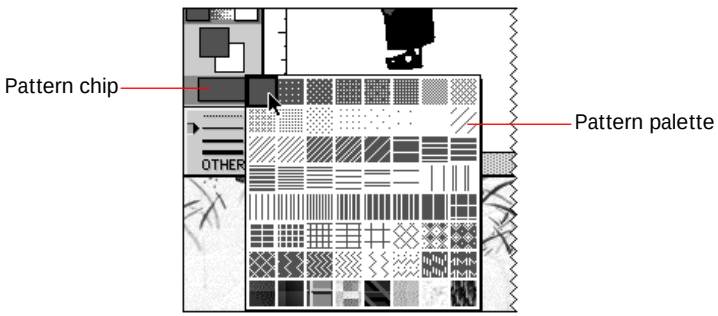
1. Click the paint bucket in the white area on the back of the robe.
   It fills with color.
2. Scroll to the front of the robe and fill it with color the same way.
   Make sure you fill all the white pixels below the priest's neck.

To switch back to normal view:

- Hold down the Command key and click anywhere in the drawing area.

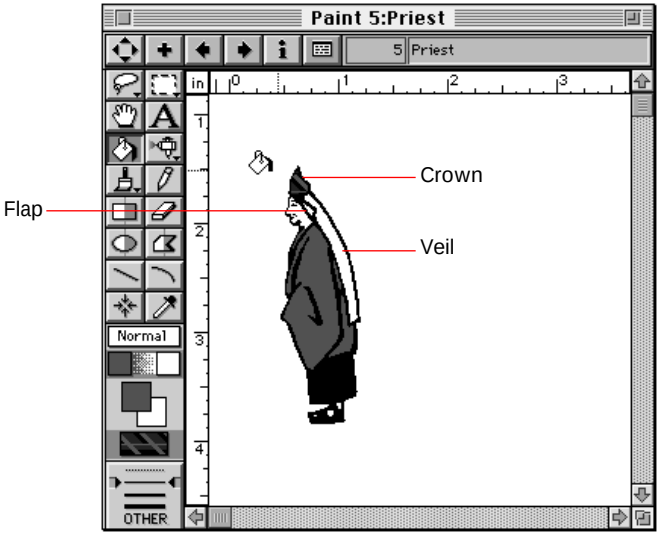
Colorizing with patterns

You can fill areas with patterns as well as with solid colors. The pattern chip, just below the foreground and background color chips, shows the pattern that's currently selected. Use it to display the pattern palette, where you choose the pattern you want to use.



The colors of the patterns that appear on the palette are determined by the foreground and background colors. If you can't find a pattern you like in the palette, you can create your own. (For information, see the Paint menu's Patterns command in Chapter 6, "Menu Reference," in *Using Director*.) The bottom row in the pattern palette contains tiles. Tiles are multicolored patterns based on a cast member. (For information about creating a tile, see "Tiles" in the same chapter of *Using Director*.)

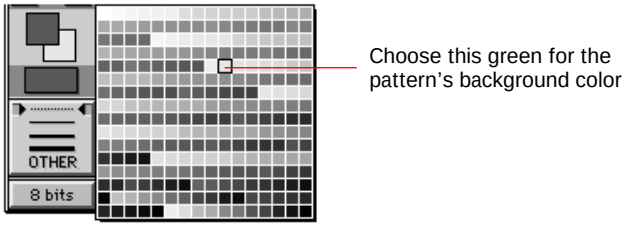
Fill the priest's hat with a pattern.



You don't have to change the foreground color—use the same green you've been using for the priest's robe.

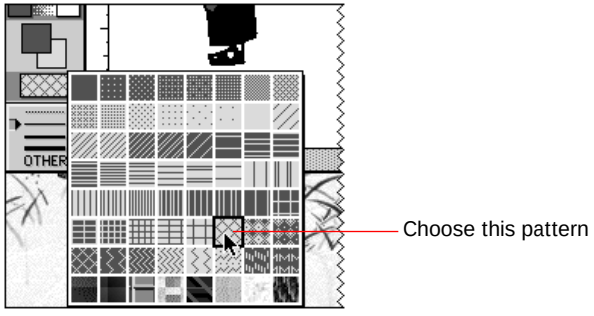
Choose a different green for the background color:

- Use the background color chip to display the palette, and choose the green in the fifth row, seventh from the right.



Choose a pattern and fill the priest's hat:

1. Use the pattern chip to display the pattern palette, and choose the crosshatch pattern third from the right in the third row from the bottom.



2. Select the paint bucket if it's not already selected.
3. Click inside the crown of the hat.
   The crown fills with the pattern.
4. Click inside the veil to fill it.
5. Zoom in on the flap, and click the paint bucket inside it to fill it.
6. Zoom out again when you're finished.

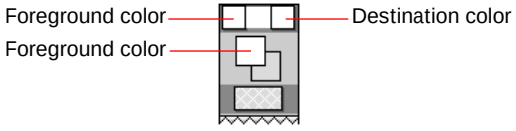
Colorizing with the Switch Colors command

Use the Switch Colors command on the Effects menu to replace a specific color used in a cast member with a different color. Switch Colors has the same effect as the Switch ink, but it works in a different way. When you used the Switch ink in the previous chapter, you used the paint brush to paint over the area you wanted to change. When you use Switch Colors, you select the area you want to change with the lasso or the selection rectangle tool, and then choose Switch ink from the Effects menu.

The steps that follow show how to use the Switch Colors command to change the color of the priest's face and foot to a flesh color.

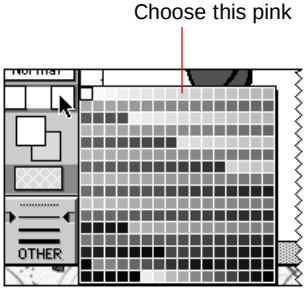
First, select the color you want to replace:

- Select the eyedropper, and then click the priest's face. The foreground color chip changes to white. Notice that the foreground color in the destination color selector is also white.



Select the color you want to use in place of white:

1. Use the destination color chip to display the color palette.



2. Choose the pink in the eighth color chip from the right in the top row.

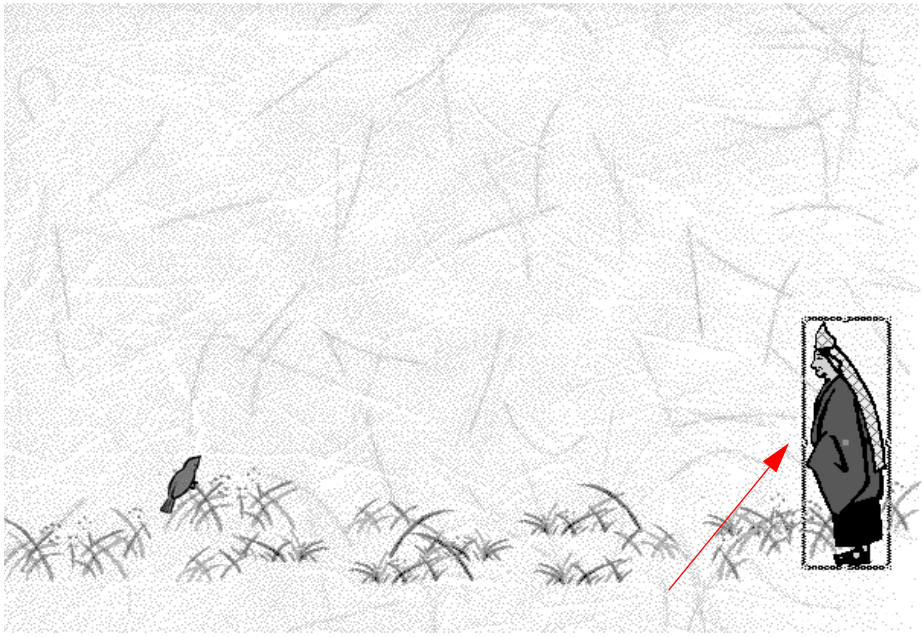
Switch the white areas inside the image of the priest to the pink you've chosen:

1. Point to the lasso icon, hold down the mouse button, and when the pop-up menu appears, make sure that Shrink is selected.
2. Select the priest with the lasso.
3. Choose Switch Colors from the Effects menu.
   The priest's face and feet change to pink.
4. Click anywhere in the drawing area to deselect the priest.

The priest is now completely colorized. Place the cast member on the stage:

1. Point to the Place button, and hold down the mouse button.
   The pointer changes to a hand.
2. Drag the hand to the stage.
   As soon as the hand moves out of the paint window and onto the stage, a dotted outline representing the priest appears.
3. Close the paint window.

4. Position the priest like this:



When you release the mouse button, the priest appears on the stage. The bounding box around it is opaque, so you need to use the Matte ink to make it transparent.

5. Make the score active, and then choose Matte from the Ink pop-up menu.
The white box around the priest becomes transparent.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Priest 1," and click Save.

Leave the movie open after you save it so you can use it in the next section.

Working with a sequence of cast members

This section focuses on three techniques you'll find invaluable when you're working with a sequence of cast members:

- Arranging all the cast members in the sequence on the stage simultaneously to align them properly
- Using the Space to Time command to transfer the cast members you've arranged to consecutive cells in a single channel
- Using the Paste Relative command to extend an animated sequence by pasting a copy of the sequence at the end of the original.

Preparing the movie

Before you add the sequence of cast members to the movie, you need to do two things to get the movie ready:

- Move the bird perched in the grass to the channel below the one where the priest is located. Switching the layers where the priest and the bird are located has no effect on the way the movie looks, it just makes working with the bird easier.
- Fill enough frames with the static elements on the stage—the rice paper, the grass, and the priest—so they remain on the stage while the bird is flying.

To switch the channels the bird and the priest occupy:

1. Select the first cell in channel 6.
   A selection rectangle appears around the priest on the stage.

2. Click the Shuffle Backward button at the bottom of the score.
   Director moves the priest to channel 5 and the bird to channel 6.

To fill the frames that the animation will occupy with the static elements:

1. Select cell 1 in channel 1 and Shift-click cell 10 in channel 5 to select the entire block.
2. Choose In-Between Linear from the Score menu (or press Command-B).
   Director copies the information that's in cell 1 of each channel into the rest of the cells you've selected.

Arranging a sequence of cast members on the stage

When you create an animated sequence, it's often useful to place all of the cast members on the stage at once—in a single frame—so that you can align and space them properly. You can then use the Space to Time command, as shown in the next section, to have Director transfer the cast members to successive frames in a single channel.

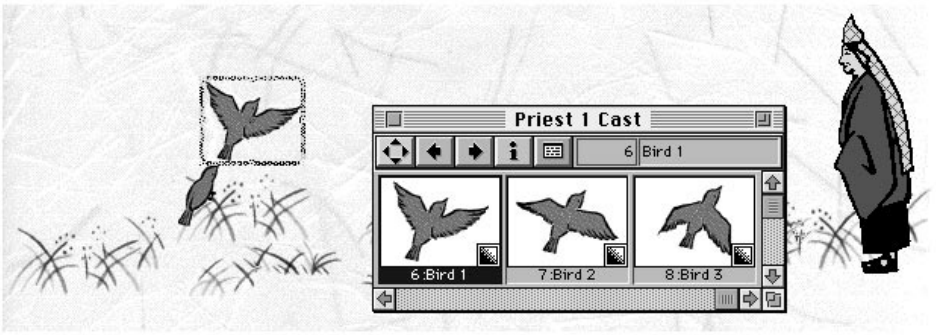
This section shows how to arrange the cast members that make up a sequence of a bird taking flight.

First, import the rest of the cast members in the sequence:

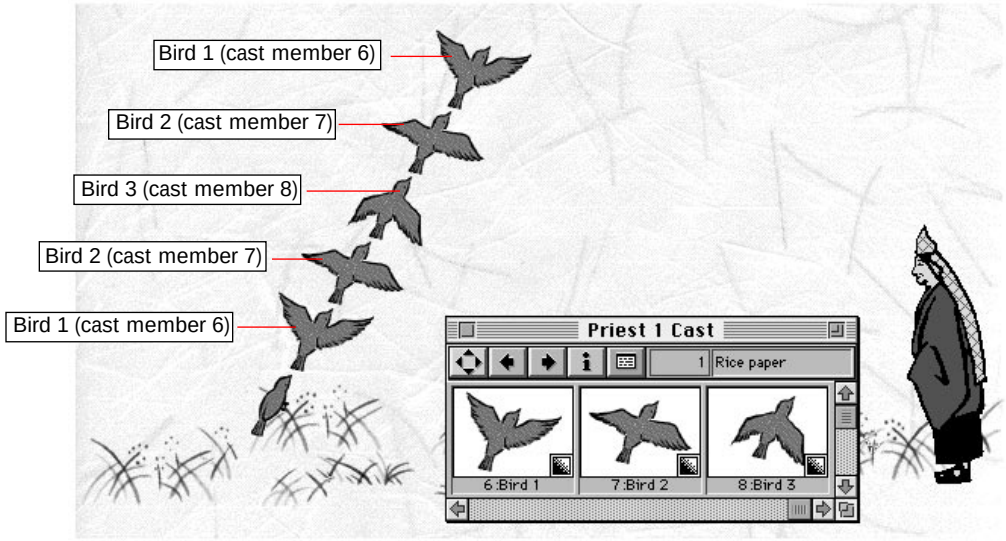
1. Choose Import from the File menu (or press Command-J).
   The Import dialog box appears.
2. Choose PICT from the Type pop-up menu if it isn't still selected.
3. Open the folder named Bird, and select "Bird 1."
   If the folder named Bird doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.
4. Click Import All.
   Thumbnails showing a bird in three phases of flight appear in the cast window.

Position the cast members that make up the sequence on the stage:

1. Press Command-R to rewind the movie.
   Rewinding the movie moves the playback head to frame 1 so that the bird perched in the grass appears on the screen.
2. Close the score window so you can see the stage.
3. If you need to, move the cast window so you can see the bird perched in the grass.
4. Drag Bird 1 (cast member 6) to the stage and position it just above the bird perched in the grass, like this:



5. Drag the other cast members to the stage one by one and position them like this:

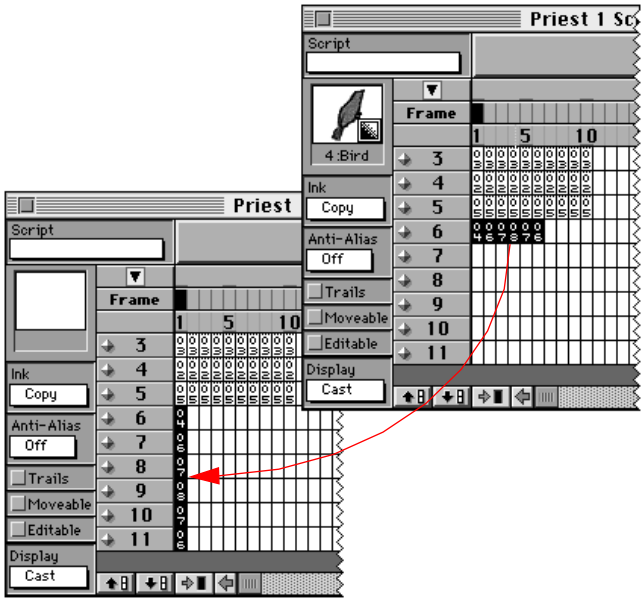


Notice that the sequence ends with the same cast member it starts with. The reason is that later in this chapter you're going to use the Paste Relative command to paste a copy of the sequence at the end of the original to extend the sequence. When you use Paste Relative to extend a sequence, the result always looks best when you overlap the copy and the original. To make an overlap possible, you need to start and end the sequence with the same cast member.

Once you have the cast members aligned and spaced right, you can shift them to the same channel. The next section shows how.

Using the Space to Time command

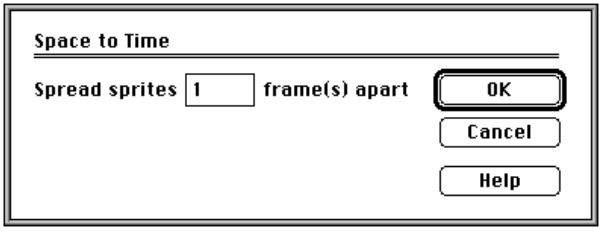
The Space to Time command transforms a series of cast members that are in separate channels in a single frame into an animated sequence by moving the cast members to successive frames in a single channel.



When Director shifts the cast members to a single channel, it leaves each one in exactly the same position on the stage where you placed it.

Turn the series of cast members of the bird into an animated sequence:

1. Open the score, and select the first cell in channels 6 through 11.
   The first cell in channel 6 contains the information about the bird perched in the grass. You include it because it's really the first cast member in the sequence, although unlike the other cast members, it's not repeated as the bird flies.
2. Choose Space to Time from the Score menu.
   The Space to Time dialog box appears.



3. Make sure the Number of Frames setting is 1, and then click OK.
   Director shifts the information from channels 6 through 11 in frame 1 to successive frames in channel 6.

▶ Rewind the movie, and then play it to see how the animation looks.
   Turn looping on if you want to watch the animation play over and over.

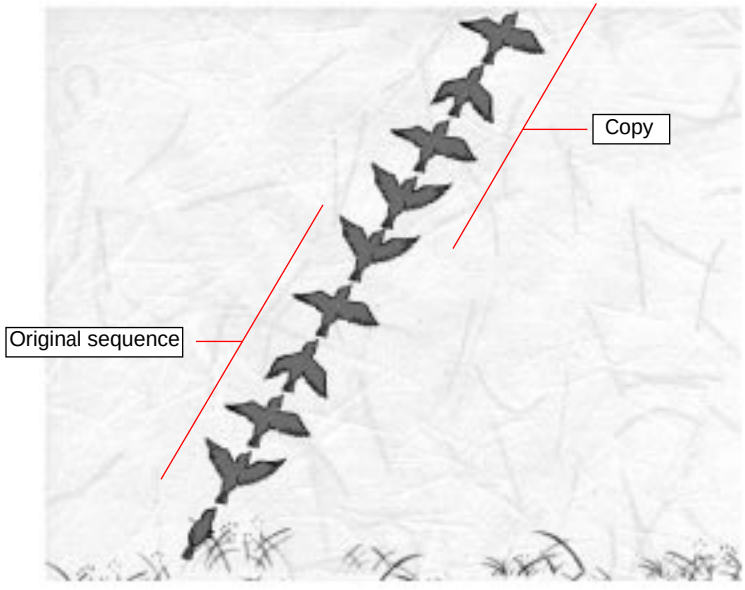
Save the changes you've made to the movie:

▶ Choose Save from the File menu (or press Command-S).

Joining two sequences with Paste Relative

The animated sequence you've created is, as it stands, too short: it ends before the bird reaches the top of the screen. One way to extend sequence is to repeat the process you went through to create the first sequence as many times as you need to until the entire animation is long enough. A less labor-intensive approach is simply to copy the sequence you've created and then use the Paste Relative command to attach the beginning of the copy to the end of the original sequence.

The difference between Paste and Paste Relative is this: If you simply paste a copy of the sequence in the cells following the original sequence, the animation simply repeats itself in exactly the same place on the stage. But if you use Paste Relative, Director automatically adjusts the positions of the cast members on the stage so that the first cast member in the copy follows the last cast member in the original. The result looks like this:



To extend the animated sequence using Paste Relative:

1. Select cell 2 in channel 6 and Shift-click cell 6 in the same channel to select the sequence.
   Don't include cell 1 in the selection: it contains the bird perched in the grass.
2. Choose Copy Cells from the Edit menu (or press Command-C).
   Director copies the cells to the Clipboard.
3. Select cell 6 in channel 6.
   Remember that a copy of a sequence pasted relative to the original looks best when:
   - ◇ The same cast member is at the beginning and end of the sequence.
   - ◇ You overlap the first cell in the copy with the last cell in the original.

   Since the same cast member is at both the beginning and the end of the sequence, Director splices the two together without any interruption in the flow of the animation.
4. Choose Paste Relative from the Score menu (or press Command-Shift-V).
   Director pastes the copy of the sequence into the score.

▶ Rewind the movie, and then play it to see the results.

If you want to extend a sequence farther than one copy takes you, use the Paste Relative command as many times as you need.

Save the movie:

▶ Choose Save As from the File menu (or press Command-Shift-S), name the movie "Priest 2," and click Save.

Creating a film loop

A ***film loop*** is an animated sequence that you can handle as if it were a single cast member. For example, another way to create an animation of a bird taking flight is to create a film loop of the sequence of sprites that show the bird flapping its wings. Then, instead of using the frame-by-frame technique where you position each sprite in the sequence on the stage one by one, you can set the first and last positions of the film loop as if it were a single sprite and then use In-Between Linear to create the intermediate positions. When you run the animation, what you see is the bird flapping its wings as it moves across the stage.

A film loop behaves just like any other sprite that's part of an animation with two exceptions. The first is that when you step through an animation that contains a film loop (either by using Step Forward or Step Backward, or by dragging the playback head in the score), the film loop doesn't animate. Animation occurs only when the movie is running. The second is that you can't apply ink effects to a film loop. If you want to use ink effects with a film loop, you need to apply them to the sprites that are part of the animation before you turn it into a film loop.

To create a film loop of the bird flapping its wings, first open a version of the movie that's slightly different from one that you created:

1. Choose Open from the File menu.
   The directory dialog box appears.
2. Select the file named "Birdloop," and then click Open.
   If "Birdloop" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

The first screen of the movie looks exactly the same as the one you've been working on, but the animation is somewhat different.

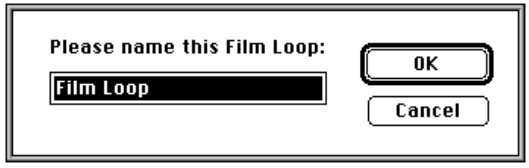
Play the movie to see what the animation looks like:

1. Go to the control panel, make sure the Loop button is pressed, and then click Play button.
   The bird flaps its wings in place instead of flying toward the top of the screen.
2. Click the Stop button.

The reason that the animation is set up so that the bird remains in place as it flaps its wings is this: when you turn the animation into a film loop and then move the film loop across the stage, two different animations are going on simultaneously. In one—the film loop—the sequence of the bird flapping its wings repeats over and over. In the other—the series of positions recorded in the score—the film loop moves across the stage as if it were a single cast member. There's no need for forward movement in the film loop because movement is provided by the series of positions recorded in the score.

To turn the animation of the bird into a film loop:

1. Display a part of the cast window that has an empty cast member position, and make sure you can see it when the score is active.
2. In the score, select cell 2 in channel 6 and Shift-click cell 5 in the same channel to select the range.
   Don't include cell 1 in the selection—it contains the bird perched in the grass.
3. Drag the range to the empty position in the cast window.
   The Film Loop dialog box appears.



4. Name the film loop "Flying," and click OK.
   Director turns the sequence into a film loop and adds it to the cast window.

Note *When you create a film loop, the cast members that are part of it have to remain in the cast window.*

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Loop 1," and click Save.

Leave the movie open after you save it so you can use it in the next section.

In-betweening a film loop

In-betweening a film loop is an alternative to animating a sequence of cast members by setting the position of each one on the stage a frame at a time. For example, you can use In-Between Linear and the film loop you created in the last section to create an animation that's virtually identical to the one you created earlier in the chapter. Instead of using Paste Relative to extend the sequence to the top of the screen, you set the film loop cast member at the spots that mark the beginning and end of the bird's path, and then use In-Between Linear to create the intermediate positions along the path.

The first step in the process of in-betweening the film loop is to remove the animation you used to create the film loop from the score:

1. Go to the score, select cell 3 in channel 6 and then Shift-click cell 5.
   Don't include cell 2 in the selection. It contains the first sprite in the animated sequence. You'll use the sprite in a moment to set the beginning of the film loop's path across the stage.
2. Choose Clear Cells from the Edit menu (or press Delete).
   Director removes the information from the cells you selected.

To set the beginning of the film loop's path at the same spot where the first sprite in the animated sequence is located on the stage, replace the sprite with the film loop:

1. Select cell 2 in channel 6 of the score.
2. Select the film loop in the cast window.

3. Choose Switch Cast Members from the Score menu (or press Command-E).
   Director replaces the sprite with the film loop both in the score and on the stage. (There's no apparent change on the stage because the sprite you've replaced and the first sprite in the film loop are identical.)

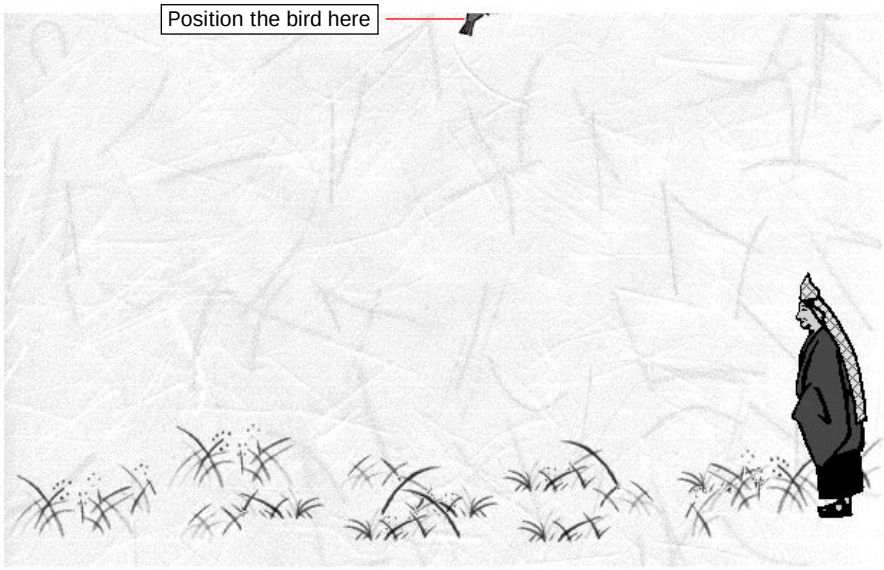
To set the spot where the bird's path ends, first copy the film loop to the cell that marks the end of the sequence:

1. Make the score active, and make sure cell 2 in channel 6 is still selected.
2. Choose Copy Cells from the Edit menu (or press Command-C) to copy the information in the cell.
3. Select cell 10 in channel 6 and choose Paste Cells from the Edit menu (or press Command-V).
   The information from cell 2 appears in cell 10.

The information that Director copies from cell 2 to cell 10 includes not just which sprite to display on the stage, but also where the sprite is currently located.

To set the spot where the film loop's path ends, you need to drag the sprite from its current location to the place on the stage where you want it to arrive at the end of the animated sequence.

► Drag the bird across the stage until it's positioned nearly off the stage, like this:



To generate the bird's intermediate positions along the path:

1. Make sure cell 10 in channel 6 is still selected, and then shift-click cell 2 in channel 6 to select the entire range of cells.
2. Choose In-Between Linear from the Score menu (or press Command-B).
   Director fills the blank cells with the in-between positions of the bird.

► Rewind the movie, and play it to see the results.

Save the movie:

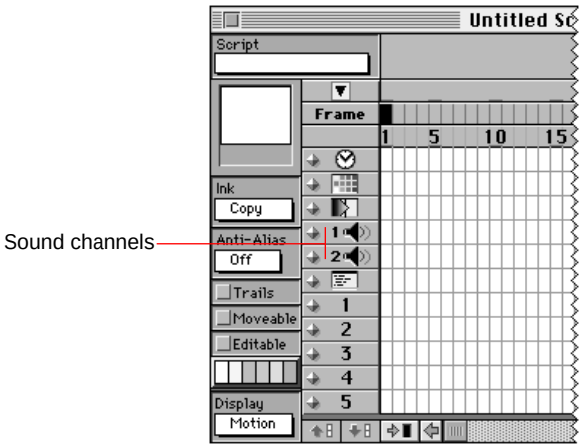
► Choose Save As from the File menu (or press Command-Shift-S), name the movie "Priest 3," and click Save.

Chapter 5

Working with Sounds

Of all the effects you can create in Director, sounds are among the most versatile. You can add voice-overs to provide information, music to create a mood, atmospheric sounds to set a scene, realistic sounds such as footsteps or explosions to reinforce animation, fantastic sounds to enhance special effects—just about anything you can imagine.

Director treats the sounds and music you import into a movie as cast members and displays them in the cast window, just like the graphics you import. But unlike graphic cast members, which appear in the sprite channels of the score, sound cast members appear in the two channels set aside for sounds:



Director provides several ways to play sound files and synchronize them with the animation in a movie:

- In-betweening a sound. If you want to play just enough of a sound file to fill a certain segment of a movie, you can in-between the sound in one of the sound channels just as you in-between a graphic background in one of the animation channels. You use In-Between Linear as described in Chapter 1.
- Controlling a sound with a tempo setting. If you want to play an entire sound file before the movie continues, you can add a tempo setting to the Tempo channel that instructs Director to do so. Adding a tempo setting is described in "Playing a sound file before continuing," later in this chapter.
- Controlling a sound with Lingo. You can also use Lingo, Director's scripting language, to control sound outside the score. Lingo provides much more control over sound files than you can achieve in the score, allowing you to fade them in and out and to change their volume. For more information, see Chapter 4, "Working with Sounds," in *Using Lingo*.

This chapter shows how to import sound cast members and how to add them to the score. It also shows how to set up a sound effect you want Director to play over and over (such as a horse's hooves), and how to use the Set Tempo command to make sure a sound plays all the way through before the movie proceeds.

The examples in this chapter take about fifteen minutes to work through.

Before you start:

1. Start Director if it isn't still running.
2. Make sure that looping is turned off.

Importing sound cast members

You can import several types of digitized sounds: SoundEdit files (such as those that you create with MacRecorder or record with the Macintosh microphone), AIFF files, AIFC files, and SND (8-bit) resources. You can also use MIDI format files, but to do so, you need to write a Lingo statement that uses an external command (XCMD). (For more information, see Appendix B, "Using XCMDs," in *Using Lingo*.)

Open the file you're going to add the sound to:

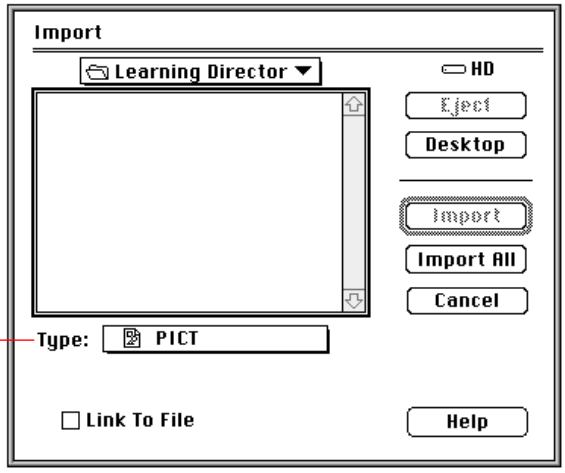
1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Opening," and then click Open. If "Opening" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The shrine scene appears on the stage.

The following steps show how to add music to the movie and then set up the music so that it plays when the movie's title is on the screen.

First, import the sound file that contains the music:

1. Choose Import from the File menu (or press Command-J).
   The Import dialog box appears.



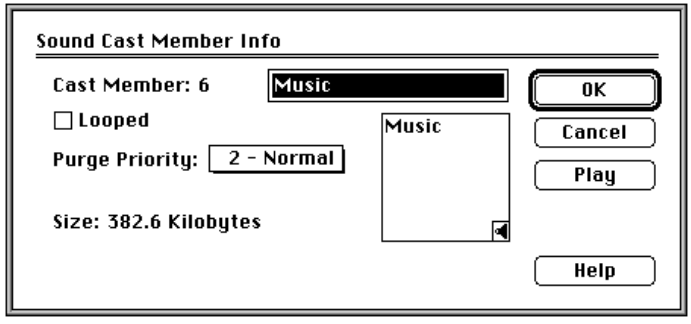
2. Choose Sound from the Type pop-up menu.
3. Select the file named "Music," and then click Import.
   A thumbnail with the name "Music" and the sound cast member icon appears in the cast window.

Previewing a sound file

If you're working with a movie that has lots of sounds, you may not be able to tell just from a cast member's name which sound it represents. You can use the Play button in the Cast Member Info dialog box to play any sound cast member without having to add it to the score first.

To preview the sound file you just added to the movie:

1. Select cast member 6 in the cast window.
2. Choose Cast Member Info from the Cast menu (or press Command-I).
   The Sound Cast Member Info dialog box appears.



▶ ***Tip*** *You can also display the Sound Cast Member Info dialog box by clicking the Info icon at the top of the cast window or by double-clicking the sound cast member you want information about.*

3. Click the Play button.
   Director plays the sound file.
4. Click Cancel to remove the dialog box from the screen.

Looping Sounds

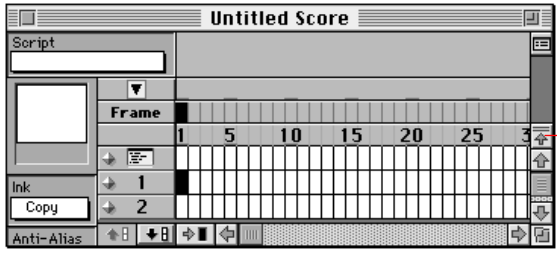
Some sound files are set to repeat—or loop—over and over. If the sound you want to hear is set to loop, select the Looped option in the Sound Cast Member Info dialog box to have Director repeat the sound.

Adding a sound to a movie

Adding a sound to a movie is a simple matter of selecting the cell in the sound channel where you want the sound to start and then choosing the sound from the Set Sound dialog box.

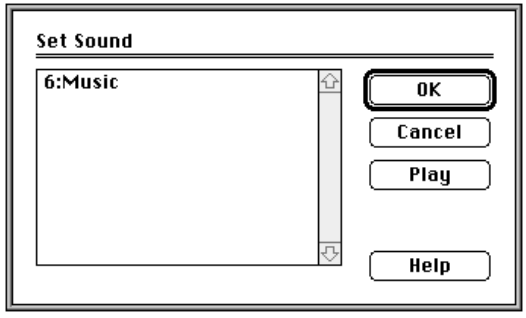
Add the music to the movie:

1. Make the score active.
2. If the sound channels aren't visible, click the Jump to Top button.



You may have to click the button twice. When you click the button the first time, Director moves the script channel to the top of the score if it isn't already positioned there. Clicking the button a second time displays the effects channels.

3. Select cell 3 in sound channel 1, and then choose Set Sound from the Score menu.
   The Set Sound dialog box appears.



4. Select "6:Music" and click OK.
   The number that precedes "Music" is its cast member number. The same number appears in the cell in the sound channel where you've just set the sound.
5. Rewind the movie and play it.
   The title appears for an instant, and if you hear anything at all, it's just a snippet of sound at the beginning of the music. Then the movie proceeds.

The reason you hear so little of the music is that it occupies only one cell in the sound channel and the playback head moves to the next frame before the music can finish playing. The next section, "Playing a sound file before continuing," explains how to adjust the way the movie runs so that the entire piece of music plays before the movie continues.

Comparing several sound files

If you need to compare several sound files to find the one you want to add to a movie, select the cell in the sound channel where you want to add the sound, and then choose Set Sound from the Score menu. The Set Sound dialog box appears. Select the sound you want to listen to, but instead of clicking OK to add the sound to the score, click Play. Director plays the sound. If it's not the one you want, select another one, and click Play. When you find the sound file you're looking for, click OK to add it to the score.

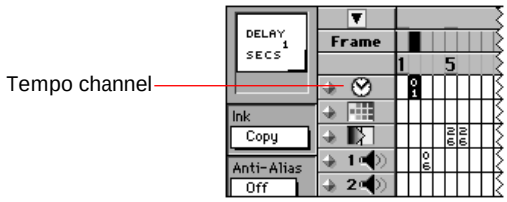
Playing a sound file before continuing

Sometimes you may want a sound file to finish playing before anything else happens in a movie. That's possible with the Set Tempo command.

The Set Tempo command has nothing to do with the tempo of the sound itself. Rather, it gives you a way to control the tempo of a movie, to insert pauses where you need them, and to make sure the movie finishes doing one thing before it moves on to something else. (You'll notice there's already a tempo setting in frame 2: the setting makes Director pause the movie for one second while the scene of the shrine is on the screen before it displays the title.)

One way to make sure that there's time for an entire sound file to play is to slow down the rate at which the movie plays. Another way is to have the movie stop and wait until the sound file is finished. The second approach is the easier one to accomplish. Different computers with different processors play at different rates. The tempo that's perfect on your system may be too fast or too slow on someone else's.

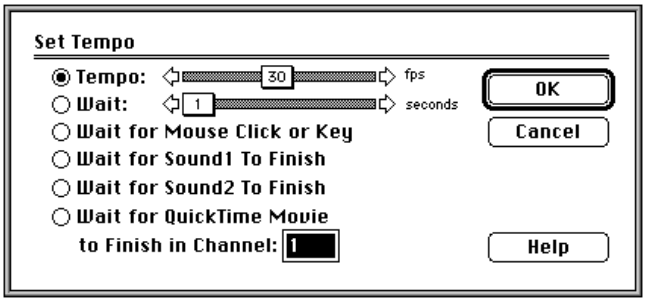
The score has a separate channel for tempo information:



This section shows how to set a tempo that prevents the movie from going on to frame 4 until the music in frame 3 is finished.

To add the tempo setting:

1. Select cell 3 in the tempo channel of the score.
2. Choose Set Tempo from the Score menu.
   The Set Tempo dialog box appears.



▶ ***Tip*** *You can also display the Set Tempo dialog box by double-clicking the cell in the Tempo channel where you want to set the tempo.*

3. Select Wait for Sound1 to Finish.
4. Click OK.
   Director adds the tempo setting to the score.
5. Rewind the movie, and play it to see how the tempo setting affects the music.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Opening 1," and click Save.

Repeating a sound

Occasionally you may want to use a short sound (such as footsteps or the clip-clop of a horse's hooves) that needs to be repeated over and over to create the right effect. The easiest way to repeat a sound is to fill a continuous series of cells in one of the sound channels with the sound. That approach works, however, only if the sound file was set up to loop when it was created. If the file wasn't set up to loop, you have to signal Director to start playing the sound again each time you want it to repeat. The simplest way to signal Director to start playing a sound is to make sure there's a blank cell preceding the one where you want the sound to start.

The following steps show how to create the continuous sound of horse's hooves using a sound file that contains a single set of steps.

Open the file you're going to add the sound to:

1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Genji," and then click Open. If "Genji" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   A scene with several carriages and a man on horseback appears.

Import the sound file:

1. Choose Import from the File menu (or press Command-J). The Import dialog box appears.
2. Choose Sound from the Type pop-up menu if it isn't still selected.
3. Select the file named "Hooves," and then click Import. A thumbnail with the name "Hooves" and the sound cast member icon appears in the cast window.

Add the sound to sound channel 1:

1. Select cell 2 in sound channel 1, and then shift-click cell 10 in the same channel to select the entire range.
2. Choose Set Sound from the Score menu.
   The Set Sound dialog box appears.
3. Select "5:Hooves" and click OK.
   Director fills the range with the number that identifies the sound in the cast window.
4. Rewind the movie and run it to hear the results.
   Even though the sound notation extends over the entire range of frames, you hear only one set of the horse's hooves.

The reason you hear only one set of the horse's hooves is that there's no blank frame to stop the sound so that it can start again. To repeat the same sound in the same sound channel, the sound cast members have to be separated by at least one blank frame. Otherwise, Director continues to play the same sound file. If it's a short sound file like the horse's hooves, the sound Director is playing is over long before the playback head reaches the last cell in the sound channel.

Make every other cell in the sound channel blank:

1. Select cell 3 in the sound channel and then choose Cut Cells from the Edit menu (or press Command-X or Delete).
2. Do the same in cells 5, 7, and 9.
3. Rewind the movie and run it again to hear the results.
   Now you hear the sound of the horse's hooves repeatedly, but the playback head is moving too fast for the entire sound to be played in each instance.

To make sure each sound gets played completely before the playback head moves to the next frame, add a tempo setting to each frame with a sound:

1. Double-click cell 2 in the tempo channel.
   The Set Tempo dialog box appears.

Note

The tempo setting in frame 1 sets the tempo of the movie. Because some computers are faster than others, the playback speed of the sample file has also been locked so the movie will play back at the same speed on most computers. If you create a movie with an effect where timing is important, it's a good idea to set the playback speed and then lock it. For more information, see Chapter 3, "Working Behind the Scenes," in Using Director.

2. Select Wait for Sound1 to Finish.
3. Click OK.
   Director adds the tempo setting to the score.

Copy the setting to each of the other frames where you want the sound to play:

1. Make sure cell 2 in the tempo channel is still selected.
2. Hold down the Option key, and drag the information in cell 2 toward the right.
   As soon as you move the pointer beyond cell 2, a rectangle representing the contents of the cell appears.
3. Drag the rectangle to cell 4, and then release the mouse button.
   Director places a copy of the setting that's in cell 2 in cell 4.
4. Repeat the process to copy the setting to cells 6, 8, and 10 in the tempo channel.
5. Rewind the movie and play it.
   The playback head waits at each frame where you've added a tempo setting until the sound in the frame finishes playing.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Genji 1," and click Save.

Chapter 6

More Animation Techniques

The two earlier chapters about animation dealt with two essentially different types of animation. Chapter 1 showed how to animate the moon rising by moving a single sprite across the stage, and Chapter 4 showed how to create the animation of a bird in flight using a sequence made up of several cast members.

The first section in this chapter, "Working with In-Between Special," focuses on techniques that are useful when you're moving a single sprite across the stage: it shows how to in-between a sprite's blend value, how to decelerate the sprite as it nears the end of its path, and how to in-between two of the sprite's attributes at the same time.

The remaining techniques are most useful when you're creating animation using a sequence of cast members. They demonstrate how to use Director to generate a series of cast members from a single cast member, how to drag an entire sequence of cast members to the stage and have them arranged in a single channel automatically, how to align the cast members that are part of a sequence, and how to reverse an animated sequence.

The examples in this chapter take about half an hour to work through.

Before you start:

- Start Director if it isn't still running.

Working with In-Between Special

As you know from Chapter 1, you can use In-Between Special to in-between a sprite's location along a curved path. You can also use the In-Between Special command to in-between a sprite's size, foreground color, background color, and blend value. The In-Between Special dialog box also has options you can use to gradually accelerate an animation at the beginning of its path or to gradually slow it down as it nears the end of its path.

This section demonstrates how to in-between a sprite's blend value and size, how to slow a sprite down as it nears the end of its path, and how to in-between two attributes of a sprite at once.

In-betweening a sprite's blend value

The following steps show how to animate a bird so that it slowly fades out as it flies into the distance.

First, open the movie that contains the animation of the bird:

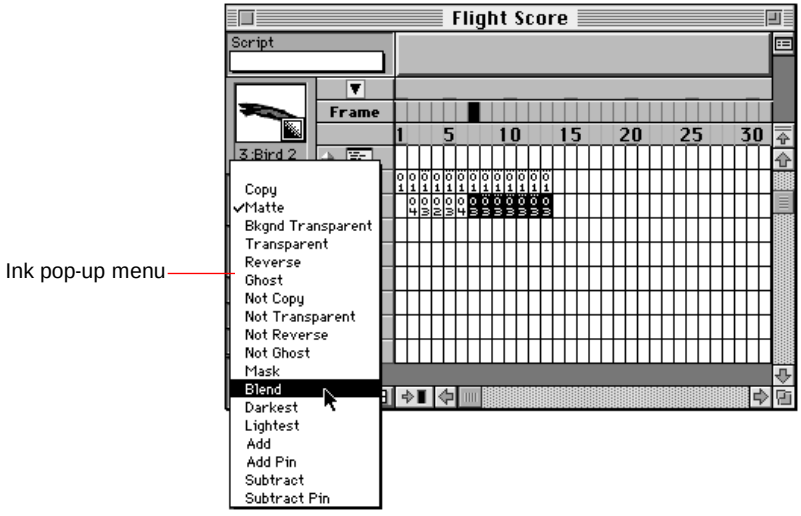
1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Flight," and then click Open. If "Flight" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   This scene appears:

3. Run the movie to see how it looks before you make any changes to it.

To alter the sequence so the bird fades out as it nears the moon, first apply the Blend ink to the sequence where the bird glides without flapping its wings:

1. Make the score active.
2. Double-click channel 2 anywhere between cells 7 and 13. Double-clicking a range of cells containing the same sprite selects the entire range.
3. Choose Blend from the Ink pop-up menu in the score.

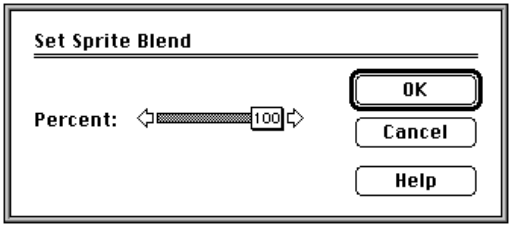


When you're in-betweening a sprite's blend value, once you've applied the Blend ink, you need to set the blend values at the beginning and end of the sequence. In this case, the beginning blend value is 100%, or opaque. The default blend value for any sprite you apply the Blend ink to is 100%, so you don't have to set a blend value for the sprite at the beginning of the sequence.

The blend value for the sprite at the end of the sequence is 0%, or invisible.

To set the blend value:

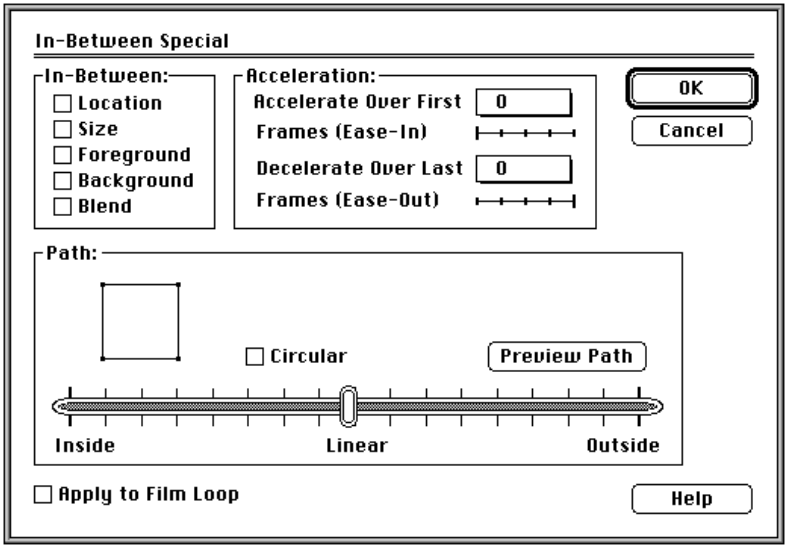
1. Select cell 13 in channel 2.
2. Choose Set Sprite Blend from the Score menu.
   The Set Sprite Blend dialog box appears.



3. Set the blend value to 0%, and click OK.
   The bird at the end of the sequence becomes invisible.

Use In-Between Special to make the bird gradually disappear as it flies toward the moon:

1. Double-click channel 2 anywhere between cells 7 and 13.
2. Choose In-Between Special from the Score menu (or press Command-Shift-B).
   The In-Between Special dialog box appears.



3. Select Location and Blend as the In-Between options, make sure none of the other In-Between options are selected, and click OK.
   Director fills in the empty cells with intermediate blend values.
4. Rewind the movie and run it again to see how the animation looks.

Save the movie before you go on to the next section:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Flight 1," and click Save.

Using In-Between Special to decelerate animation

You use the In-Between Special command to adjust the rate of change at the beginning or end of an animated sequence, in effect gradually speeding up the change at the beginning of the sequence or gradually slowing it down at the end.

This section shows how to decelerate the animation of the bird as it flies toward the moon so it seems to move more slowly as it gets farther away. You're also going to in-between two aspects of the bird at once: its location and its size.

Open the movie that contains the animation of the bird:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Soar," and then click Open.
   If "Soar" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The scene that appears looks the same as the one in the previous movie.
3. Run the movie to see the current speed of the animation.

Changing the size of a sprite

The Scale setting in the Sprite Info dialog box provides an easy way to change the size of any sprite that's on the stage.

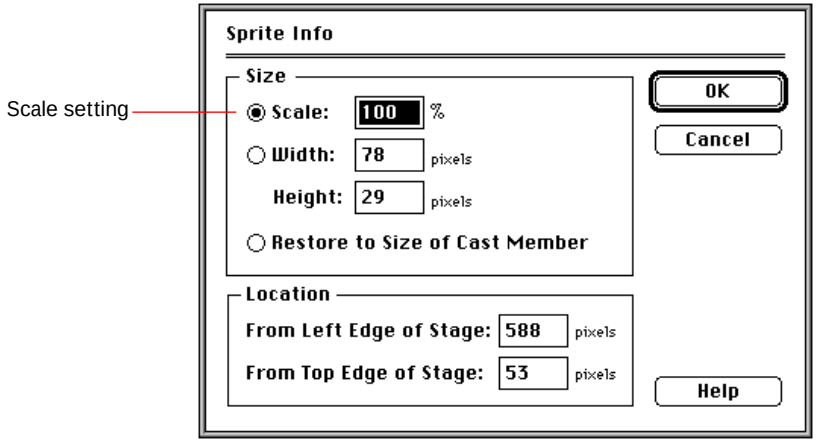
Changing the size of a sprite has no effect on the cast member that's the basis of the sprite—or on any other sprites based on the same cast member. Remember that a cast member and a sprite aren't identical. A cast member is a template for a sprite, but a sprite isn't defined solely by a cast member. A sprite has information associated with it that's totally unrelated to the cast member it's based on—its position on the stage, for example, or an ink you've applied to it.

Another of those pieces of information is the sprite's scale relative to the size of its cast member. Changing the sprite's size doesn't even affect the sprite permanently—like any of the other information associated with a sprite, you can change it to a different value in a different frame.

You need to make the bird in the final frame of the movie smaller to make its flight look more realistic: objects get smaller as they travel into the distance.

To change the size of the bird:

1. Select cell 20 in channel 2 of the score.
2. Choose Sprite Info from the Score menu (or press Command-K).
   The Sprite Info dialog box appears.



3. Change the Scale setting to 5%.
4. Click OK.

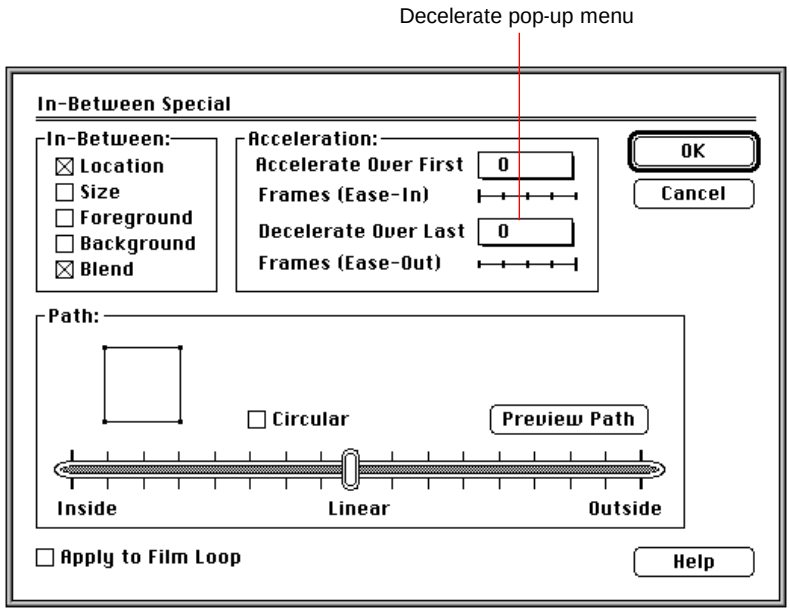
The size of the bird on the stage changes to something not much larger than a dot.

In-betweening two attributes at once

You can use the In-Between options in the In-Between Special dialog box to animate changes to as many as five attributes of a sprite at once. You're going to use the Location and Size options to generate in-between positions and in-between sizes for the bird as it flies across the stage.

In-between the cells between the first and last frames:

1. Double-click in channel 2 anywhere between cell 7 and cell 20.
   Director selects the entire range.
2. Choose In-Between Special from the Score menu.
   The In-Between Special dialog box appears.



3. Select Location and Size as the In-Between options (and deselect any other options that are selected).

The Decelerate pop-up menu lets you choose the number of frames over which you want the deceleration to occur.

4. Choose Other from the Decelerate pop-up menu
   A dialog box appears where you can enter the number of frames over which you want the deceleration to take place.
5. Type 14 and click OK.
   Fourteen frames covers the latter part of the animation, during which the bird glides without flapping its wings. When you click OK, the dialog box disappears.
6. Click OK in the In-Between Special dialog box.
   Director records the information about the intermediate size, location, and speed of the bird in the cells between the first and last in the range.
7. Rewind the movie and run it again to see how the animation looks.

Save the movie before you go on to the next section:

▶ Choose Save As from the File menu (or press Command-Shift-S), name the movie "Soar 1," and click Save.

Using Reverse Sequence

You may find it's sometimes easier to create an animated sequence from end to beginning rather than from beginning to end. For example, if you want to have two sprites meet at exactly center stage, it's easier to start them there and work backward. Or you might find yourself creating an animated sequence in which the second half is simply the reverse of the first half. For example, a door closing is the mirror image of the same door opening. An easy way to accomplish either task is to use the Reverse Sequence command.

The steps that follow demonstrate how to copy a sequence that shows a block of text fading in and then use Reverse Sequence to create a sequence that shows the text fading out.

First, open the movie that contains the text:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Nonomiya," and then click Open.
   If "Nonomiya" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the tutorials folder, and then open the Learning Director folder.

   A blank green screen appears.
3. Play the movie.
   The text fades in.

Duplicate the fade-in sequence:

1. Go to the score, and double-click anywhere between cell 1 and cell 10 in channel 1.
   The entire range is selected.
2. Hold down the Option key and drag the selection.
   A rectangle representing the selection appears.
3. Drag the rectangle to cells 11 through 20.
   Director copies the information in cells 1 through 10 to cells 11 through 20. The result is two sequences showing the block of text fading in.

Play the movie to see what it looks like before you use the Reverse Sequence command:

- Rewind the movie and play it.
  The same text fades in twice.

To create the fade-out sequence:

1. Make sure cells 11 through 20 are still selected in the score.
2. Choose Reverse Sequence from the Score menu.
   Director reverses the sequence of the information in the cells so that the information that was in the first cell is now in the last cell, the information that was in the last cell is now in the first cell, and so on.
3. Rewind the movie and play it again.
   The text fades in and then fades out.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Nonomiya 1," and click Save.

Creating cast members automatically

You can use the Auto Distort command to have Director automatically generate cast members in the intermediate stages of a change. For example, using Auto Distort is an ideal way to create a wheel in various stages of rotation. All you need to provide Director with is a single image of the wheel for it to create the entire sequence.

This section shows both how to use Auto Distort to create a wheel in various stages of rotation and how to move the sequence of wheels to the score in such a way that Director arranges them automatically in consecutive frames.

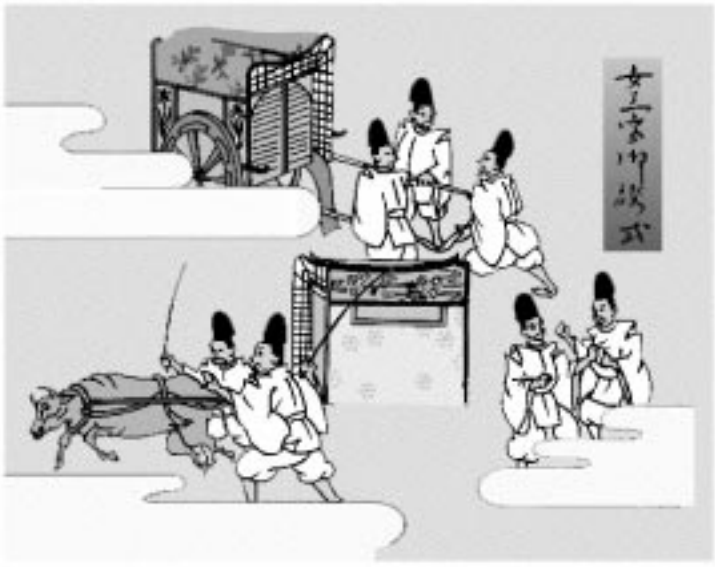
Using Auto Distort

To use Auto Distort to create a sequence of cast members, you first create or import the cast member as it appears at the beginning of the sequence and then use one of the "distorting" commands on the Effects menu—Rotate Left, Rotate Right, Free Rotate, Perspective, Slant, or Distort—to make the cast member look the way you want it to appear at the end of the sequence. You can then use Auto Distort to generate the intermediate cast members.

Open the movie that contains the wheel:

1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Wheel," and then click Open. If "Wheel" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

This scene appears:

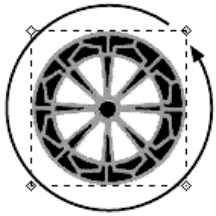


Rotate the wheel to its final position:

1. Make the cast window active.
2. Double-click the thumbnail of the wheel to display it in the paint window.

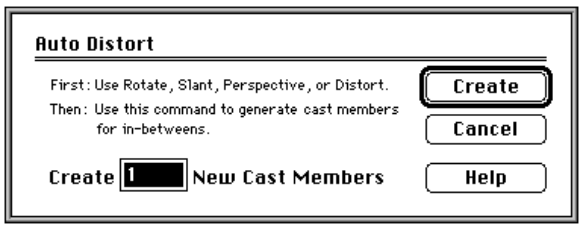
3. Point to the selection rectangle, and hold down the mouse button to display the pop-up menu. Make sure Shrink is selected.
4. Select the wheel.
5. Choose Free Rotate from the Effects menu.
   Handles appear at each of the corners of the selection rectangle.

6. Drag any of the corners in a complete circle around the center of the wheel. Make sure you leave the wheel selected.



Create the intermediate cast members with Auto Distort:

1. Choose Auto Distort from the Effects menu.
   The Auto Distort dialog box appears.



2. Type 12 as the number of cast members you want to create and click Create.
   As Director creates the cast members it displays each of them in the cast window.
3. Close the paint window.

The final cast member is the same as the original. Delete it:

- Select the thumbnail of cast member 14 and choose Clear Cast Members from the Edit menu.

Using the Cast to Time command

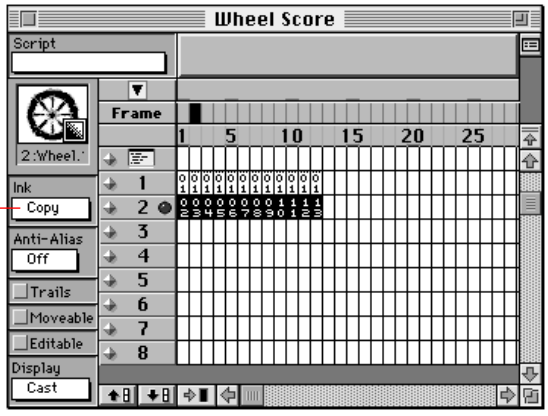
When you have a series of cast members that are all part of an animated sequence—such as the cast members that make up the rotating wheel—you use the Cast to Time command to move them to the score in a single step and have Director automatically arrange them in subsequent frames in a single channel.

Move the cast members that make up the rotating wheel to the score:

1. Select cell 1 in channel 2 of the score.
2. Arrange the score and the cast window so channel 2 of the score is visible when the cast window is active.
3. Resize the cast window so you can see all the wheel cast members at the same time.
4. In the cast window, select cast member 2, and then Shift-click cast member 13 to select the entire sequence.
5. Choose Cast to Time from the Cast menu (or hold down Option and drag the entire selection to channel 2 of the score).
   Director places the cast members in the sequence in successive cells in channel 2.

Make the background of the wheel cast members transparent so you can see the scene behind the wheel between the spokes as the wheel turns.

1. Double-click the 2 beside channel 2 to select all the cells in the channel.

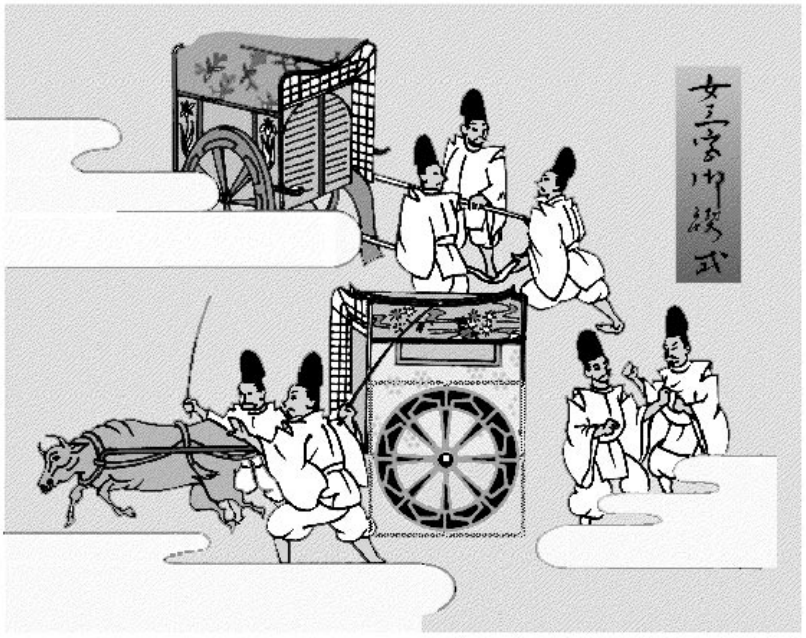


Ink pop-up menu

2. Choose Bkgnd Transparent from the Ink pop-up menu in the score.
   The scene behind the wheel becomes visible through the spokes of the wheel.

Move the wheel into position:

1. Make sure the cells in channel 2 are still selected.
2. Drag the wheel until it's positioned like this:



3. Rewind the movie and play it.
   The wheel rotates in place.

If you want to make a wheel cross the stage as it rotates, turn it into a film loop; then use the film loop as a cast member and create an animation path for it across the stage. For more information, see "Creating a film loop" in Chapter 4, "Animating a Sequence of Cast Members."

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Wheel 1," and click Save.

Aligning cast members precisely

Every cast member has a ***registration point***, which determines its position when you move it to the stage. When you're working with an animated sequence that remains in the same spot on the screen—such as the rotating wheel in the previous example—it's important that the registration points of all the cast members be aligned precisely to make the animation look right. The problem is taken care of for you when you use Auto Distort because as Director creates each cast member in the sequence, it keeps the registration point in the same position. When you're creating cast members separately, however, you have to make sure the registration point for each cast member in a sequence is set correctly.

This section shows how to align registration points, how to use the Align Bitmaps command to check the alignment of cast members, and how to use the Switch Cast Members command to align sprites on the stage.

Aligning registration points

When you import a series of cast members, Director places each one's registration point at the center of the image. That works well when you're dealing with a set of cast members that are all exactly the same size. But take a look at this series of images:

Because they show an arm in motion, each image is slightly taller than the one before it. A registration point in the center of the image would mean that the bottom of each image would be slightly lower than the bottom of the one preceding it.

The solution is to move the registration point to part of the image that remains in the same place throughout the animation: a spot near the bottom edge.

To set the registration point for a cast member, you use the registration tool in the paint window.

The steps that follow show how to change the position of the registration point on a series of images.

Open the movie containing the cast members shown above:

1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Weeping," and then click Open. If "Weeping" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The image that appears looks like this:

Use the Align Bitmaps command to see how the cast members are currently aligned:

1. Go to the cast window and select cast members 3 through 6.
2. Choose Align Bitmaps from the Cast menu.
   Align Bitmaps doesn't reset the position of the registration points to align the images (Director has no way of knowing how you want the images aligned). Align Bitmaps lines up the images in the paint window based on where their registration points are currently set.
3. Double-click cast member 3 to display it in the paint window.

4. Use the right and left arrows on the keyboard to flip back and forth through the four cast members rapidly.
   As you can see, their alignment is slightly off.
5. Display cast member 3 in the paint window again.
   Notice that there's a cross at the bottom (you may have to scroll down a bit to see it).

The cross shows where the registration point should be set. When you create a cast member in an application outside Director, it's a good idea to add a mark that shows where the registration point should be set. After you set the registration point, you can erase the mark.

Set the registration point for each of the cast members:

1. Select the registration point tool.
   Two intersecting lines appear in the paint window. The point where they intersect is the current registration point.
2. Drag the crosshair to the cross below the cast member.
   The intersection point of the two lines follows the crosshair as you drag it.
3. When you have the crosshair positioned precisely over the cross, release the mouse button.
   The two lines remain aligned with the cross, and the new registration point corresponds to the center of the cross.

4. Repeat the procedure with each of the other cast members in the sequence, including cast member 2.
   Cast member 2 is the master shot that all the arm positions are based on. It needs to have the same registration point as the arm positions.
5. Close the paint window when you're finished.

Using Switch Cast Members to align sprites on the stage

The Align Bitmaps command aligns cast members in the paint window, not sprites on the stage. An easy way to align sprites on the stage—once you have the registration points of the cast members they're based on set correctly—is to use the Switch Cast Members command.

For the movement of the woman's arm to look right, the registration point on each sprite in the sequence needs to align with the registration point on the master shot. The easiest way to align each of the sprites is to put a copy of the master shot in each frame of the movie where you want the sequence to appear, and then switch each sprite in the sequence with the copy of the master shot in the corresponding frame. Director automatically aligns the registration point of the sprite with the registration point of the master shot you're replacing.

The first step is to copy four cells of the master shot from channel 2—one cell for each sprite in the movement of the woman's arm—and paste them in channel 3:

1. Select cells 2 through 5 in channel 2 to make a copy of the master shot.
   Don't include cell 1: the first position of the woman's arm is shown in the master shot, and it needs to appear on the stage in frame 1.
2. Choose Copy Cells from the Edit menu (or press Command-C).
3. Select cell 2 in channel 3.

4. Choose Paste Cells from the Edit menu (or press Command-V).
   The copies of the master shot appear in cells 2 through 5 of channel 3.

The next step is to use Switch Cast Member to replace the copies of the master shot in the second through fifth cells in channel 3 with the appropriate sprite in the sequence. When Director replaces one sprite with the other, it positions the registration point of the new sprite in exactly the same position as the old sprite's. The result is that the sprites in the sequence will be perfectly aligned with each other and with the master shot.

To switch cast members:

1. Select cell 2 in channel 3 of the score.
2. Go to the cast window, select cast member 3, and then choose Switch Cast Members from the Score menu (or press Command-E).
   The number in the cell changes to show that Director has replaced the master shot with cast member 3.
3. In the cast window, select cast member 4.
4. Go to the score, select cell 3 in channel 3, and then choose Switch Cast Members from the Score menu (or press Command-E).
5. Repeat the process to replace the master shot in cell 4 with cast member 5 and the master shot in cell 5 with cast member 6.
6. Rewind the movie and play it.
   The woman raises her hand to her eyes.

If the animation is too fast, you can add a tempo setting to the first frame of the movie to slow it down. For information, see "Adding a tempo setting" in Chapter 3, "Working Behind the Scenes" in *Using Director*.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Weeping 1," and click Save.

Chapter 7

Creating Effects

You're already familiar with many of the effects you can create in Director from previous chapters. The Background Transparent, Matte, Reveal, and Transparent inks were covered in Chapters 1, 2, and 3. Chapter 6 demonstrated how to in-between a sprite's transparency and size.

This chapter shows how to use Director's built-in transitions. You can choose from over 50 transitions, so you have a wide range of effects at your disposal.

You can also create effects using color palettes. You can have Director cycle through a range of colors in the palette, which causes any area containing any of the colors in the range to change to each of the other colors in succession. You can also have Director shift from one palette to another, which causes any color on the stage to shift to its corresponding color in the new palette. This chapter shows how to achieve both effects.

The examples in this chapter take about half an hour to work through.

Before you start:

1. Start Director if it isn't still running.
2. Make sure that looping is turned off.

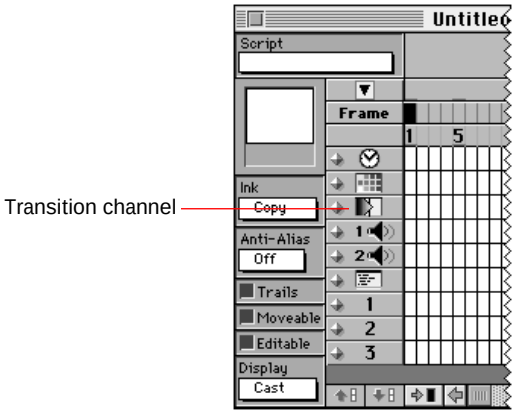
Setting transitions

A transition is a way of making a change on the stage—usually from one scene to another—through a series of intermediate steps.

A Wipe Left transition

Director provides more than 50 predefined transitions you can use to create such effects in a single step. For example, you can dissolve from one scene to the next, display a new scene strip by strip, or switch to a scene as if revealing it through Venetian blinds. You can wipe across the screen revealing the new scene as you go, slide the old scene off the stage revealing the new scene underneath, or slide the new scene onto the stage covering the old. You can also use many of the transitions to make individual elements appear or disappear from the screen, and you can even use transitions to create animation—for example, you can make bars appear to grow on a bar chart as you wipe the new scene over the old.

There's a special channel for transitions, just as there are channels for sounds and tempos:



The steps that follow show how to use just one transition—zooming open a block of text—but the techniques are applicable to all transitions.

Open the movie that contains the block of text:

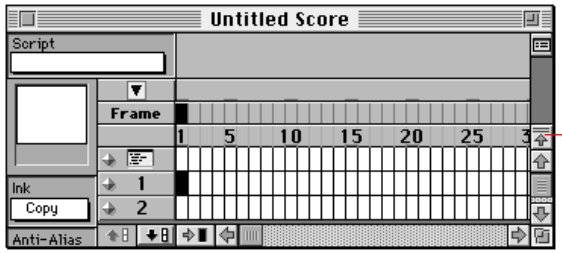
1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Controls," and then click OK.
   If "Controls" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The movie appears. All that's visible in the first frame of the movie is a rice paper background.
3. Play the movie to see how it looks before you set the transition.
   The controls and the text simply appear on the stage.

Before you select the frame where you want to set the 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. So, when you want to zoom open a block of text, you set the transition in the same frame where the text first appears.

Make sure the transition channel is visible:

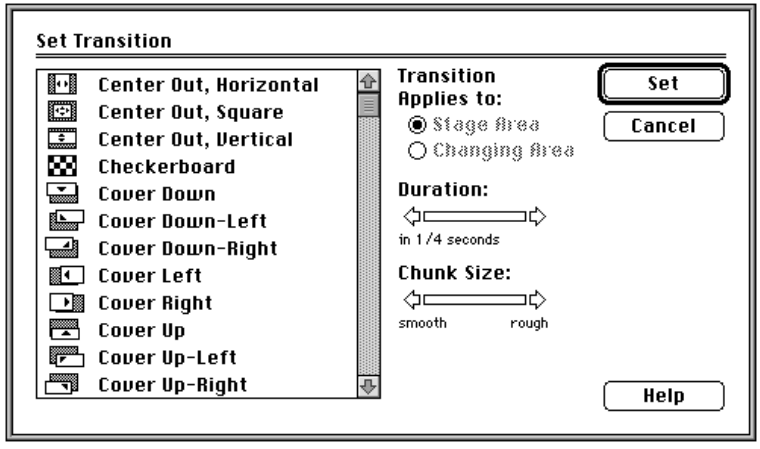
1. Make the score active.
2. If the transition channel isn't visible, click the Jump to Top button.



You may have to click the button twice. When you click the button the first time, Director moves the script channel to the top of the score if it isn't already positioned there. Clicking the button a second time displays the effects channels.

Set the transition:

1. Select cell 3 in the transition channel.
   The text "Click to go back" appears on the stage.
2. Choose Set Transition from the Score menu.
   The Set Transition dialog box appears.



▶ **Tip** *You can also display the Set Transition dialog box by double-clicking the cell in the transition channel where you want to set the transition.*

3. Scroll down to the bottom of the list and select Zoom Open.
4. Select Changing Area (one of the two options under the heading "Transition Applies to" near the top of the dialog box).
   Selecting Changing Area limits the transition to just the text that's being displayed (it's the only change that's taking place on the stage).
5. Make the Duration 2 and the Chunk Size 1.
   Duration sets the length of time the transition takes in fourths of a second (a duration of 2 is one-half second). Chunk size sets the size of each intermediate step in pixels (a chunk size of 1 is the smoothest possible transition).
6. Click Set.
   Director adds the transition to the score.
7. Rewind the movie and play it.
   Instead of just appearing on the screen, the text "Click to go back" zooms open.

Copying a transition

Copying a transition is an easy way to take an effect you've set up and reproduce it elsewhere in the same movie. When you copy a transition, you copy just the effect, not the part of the animation the transition applies to.

1. Hold down Option and drag the transition in cell 3 to cell 5, then to cell 7, and then to cell 9 to place copies of the transition in each of those cells.
2. Rewind the movie and play it again to see how the additional transitions affect it.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Controls 1," and click Save.

Palette transition effects

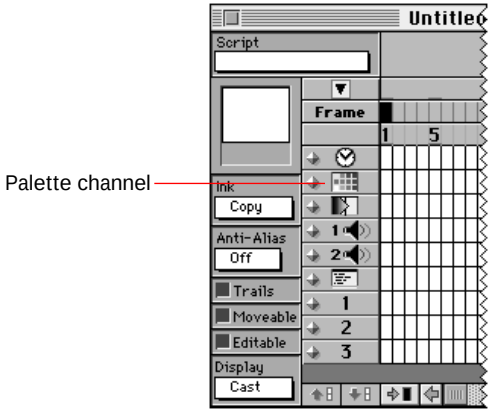
A palette transition is a gradual change from the colors in one palette to the colors in another.

As explained in Chapter 1 of *Using Director* (in "Changing Color Depth"), a monitor—depending on its type and the graphics display card that's installed—can display 1-bit color (black and white), 2-bit color (4 colors), 4-bit color (16 colors), 8-bit color (256 colors), 16-bit color (32,768 colors), 24-bit color (16.7 million colors), and 32-bit color (16.7 million colors and 8 bits of special effects).

Color palettes are available only when the monitor's color depth is set to 2, 4, or 8 bits. When you have the monitor set to 1 bit, there's no color palette because the only colors you have to choose from are black and white. When you have the monitor set to thousands of colors (16-bit color) or millions of colors (24- or 32-bit color), you choose colors not from a palette—a collection of 4, 16, or 256 discrete colors—but from a continuous spectrum of the thousands or millions of colors available.

Palettes and how they work are fairly complex subjects; for a thorough discussion, see Chapter 3, "Working Behind the Scenes," in *Using Director*.

This section shows how to use a series of six palette transitions to create the changes in light that occur during the day from sunrise to sunset (the scene is the same Japanese shrine you worked with in Chapter 1). To create a palette transition, you use a palette setting rather than a transition setting. Palette settings, like tempos, sounds, and transitions, have their own channel in the score:



The most important thing to remember about effects you create with palette settings is that they affect not just the stage, but anything that appears on the monitor. For example, if you fade a movie to black at the end, everything on the screen—the menu bar, the Finder, and so on—fades to black.

Open the movie that contains the Japanese shrine and the custom palettes you need to create the transitions:

1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Daylight," and then click Open. If "Daylight" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

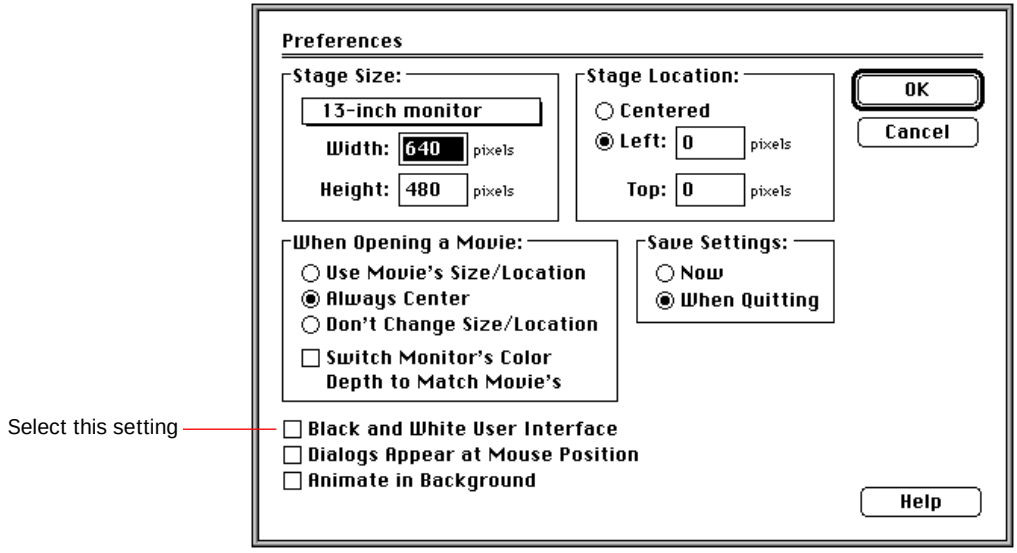
   The shrine appears on the stage.

The background looks odd because the System palette is currently in effect and the background was designed to be used with the custom palettes that appear in the cast window (Night, Twilight, Daylight, and Black). (For information about creating custom palettes, see Chapter 3, "Working Behind the Scenes," in *Using Director*.)

Since the palette that's active affects everything displayed on the monitor—including Director's interface—you'll find it difficult to see what you're doing after you switch to the custom palettes in the course of the steps that follow.

To avoid that problem, switch to Director's black-and-white user interface:

1. Choose Preferences from the File menu.
   The Preferences dialog box appears.



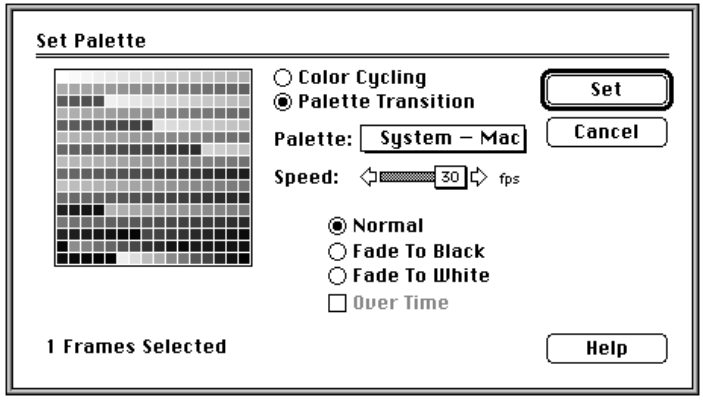
2. Select Black and White User Interface.
   The black-and-white interface looks the same no matter which palette is active.
3. Click OK.
   Director's interface changes to black and white, but the image on the stage remains in color.

Create the first palette transition:

1. Select cell 1 in the palette channel of the score.
2. Choose Set Palette from the Score menu.
   The Set Palette dialog box appears. The settings in the dialog box depend on whether the Color Cycling or the Palette Transition setting is selected.

Tip *You can also display the Set Palette dialog box by double-clicking the cell in the palette channel where you want to add a palette setting.*

3. Select the Palette Transition setting if it isn't already selected.
   The dialog box looks like this:



4. Choose Night from the Palette pop-up menu.
   As soon as you select the Night palette, it becomes the active palette, and the system remaps everything on the screen to the colors it contains.
5. Set the speed slider to 15 fps.
6. Click Set.
   The dialog box disappears, and the palette setting appears in the first cell of the palette channel.

Create the second palette transition:

1. Double-click cell 2 in the palette channel.
   The Set Palette dialog box appears.
2. Select the Palette Transition setting if it isn't already selected.
3. Choose Twilight from the Palette pop-up menu.
   The Twilight palette becomes the active palette, and the system remaps everything on the screen to the colors it contains.
4. Make sure the speed slider is still set at 15 fps.
5. Click Set.
   The dialog box disappears, and the palette setting appears in the second cell of the palette channel.

The steps are the same for each of the other four frames in the animation:

1. Double-click the appropriate cell in the palette channel of the score.
   The Set Palette dialog box appears.
2. Select the Palette Transition setting if it isn't already selected.
3. Choose the name of the palette from the Palette pop-up menu:
   - For cell 3, choose Daylight.
   - For cell 4, choose Twilight.
   - For cell 5, choose Night.
   - For cell 6, choose Black.
4. Make sure the speed slider is set at 15 fps.
5. Click Set.
   The dialog box disappears, and the palette setting appears in the appropriate cell of the palette channel.
6. Rewind the movie and play it to see how the palette transitions look.
   The scene changes from night to dawn to morning to afternoon to twilight to night to black.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Daylight 1," and click Save.

Switch back to Director's color user interface:

1. Choose Preferences from the File menu.
   The Preferences dialog box appears.
2. Click the checkbox next to Black and White User Interface to remove the X.
3. Click OK.
   Director's interface changes back to color.

Color cycling

You can choose a set of colors adjacent to each other on the palette and have Director cycle through them. For example, if you select a range of four colors—say red, green, blue, and yellow—any area that's red will change to green, then blue, and then yellow during the cycling; any area that's green will change to blue, yellow, and then red; and so on.

This section shows how to use color cycling to create the effect of the sun setting behind the Japanese shrine.

Open the movie that contains the shrine:

1. Choose Open from the File menu (or press Command-O). The directory dialog box appears.
2. Select the file named "Sunset," and then click Open. If "Sunset" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

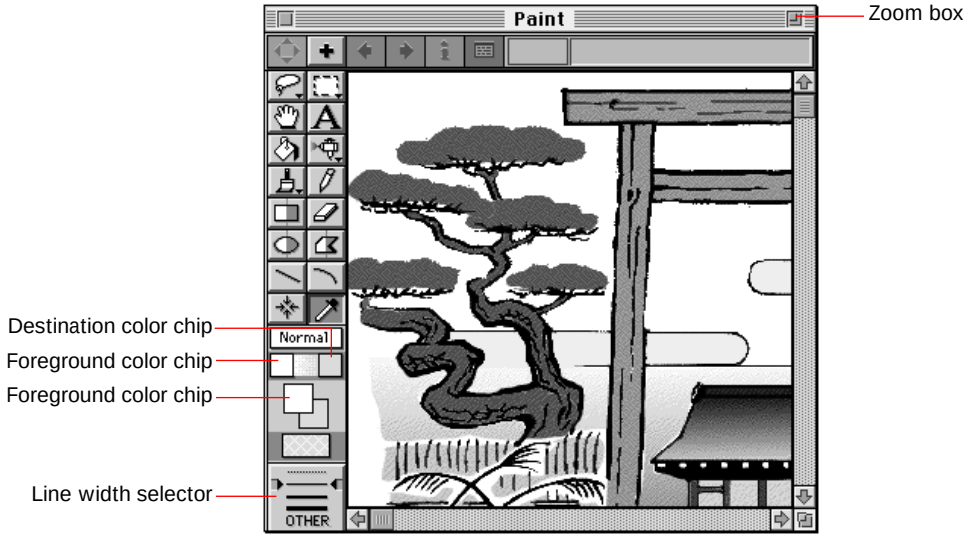
   The shrine appears on the stage.

Creating a gradient

The sunset effect uses an interesting technique to create the illusion of the setting sun. The palette for the scene contains a broad range of yellows and oranges that are close to each other in hue. From those colors you create a gradient: a color that's a gradual blend of colors starting with the brightest yellow and ending with the darkest orange. As Director cycles through the colors in the yellow-orange range, the sky appears to darken.

The first step in creating a gradient is to choose the colors you want to use:

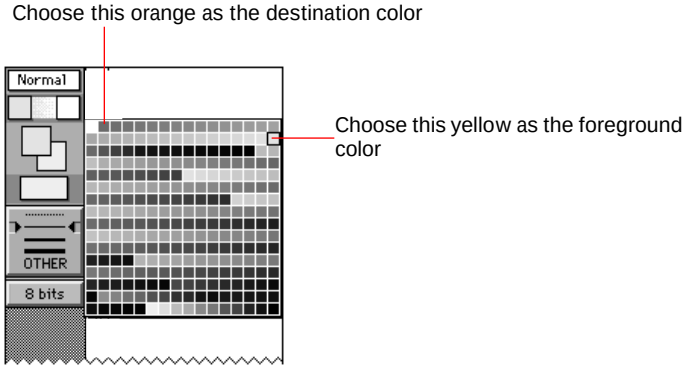
1. Choose Paint from the Window menu (or press Command-5) to display the paint window.



2. Click the Add button to display a blank cast member in the drawing area.

3. Click the zoom box to expand the window to its full size.

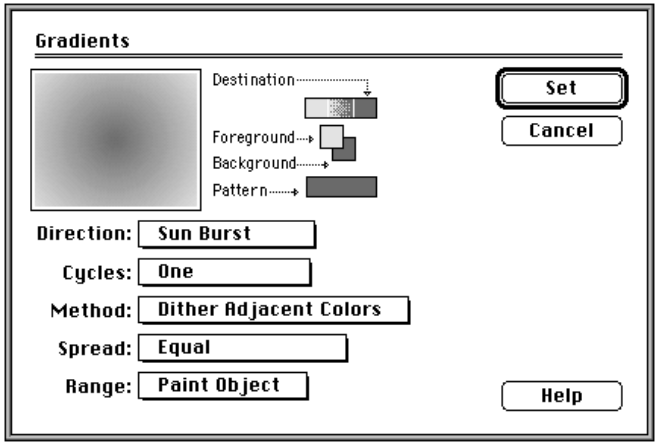
4. Use the foreground color chip to choose the yellow in the last chip in the second row as the foreground color.
There are two foreground color chips. You can use either to choose the foreground color.



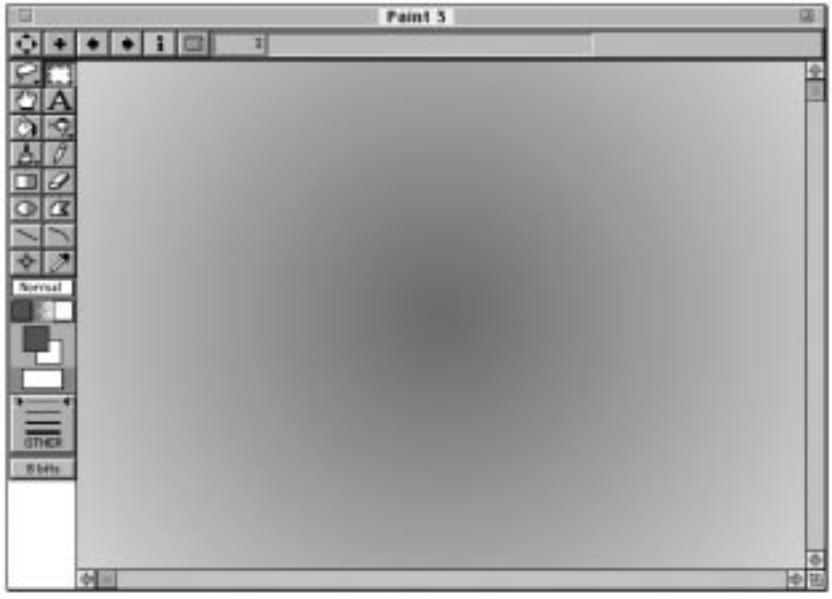
5. Use the destination color chip to choose the orange in the second chip in the top row as the destination color.

Create the gradient:

1. Select the filled rectangle tool.
2. Choose Gradients from the Paint menu.
The Gradients dialog box appears.

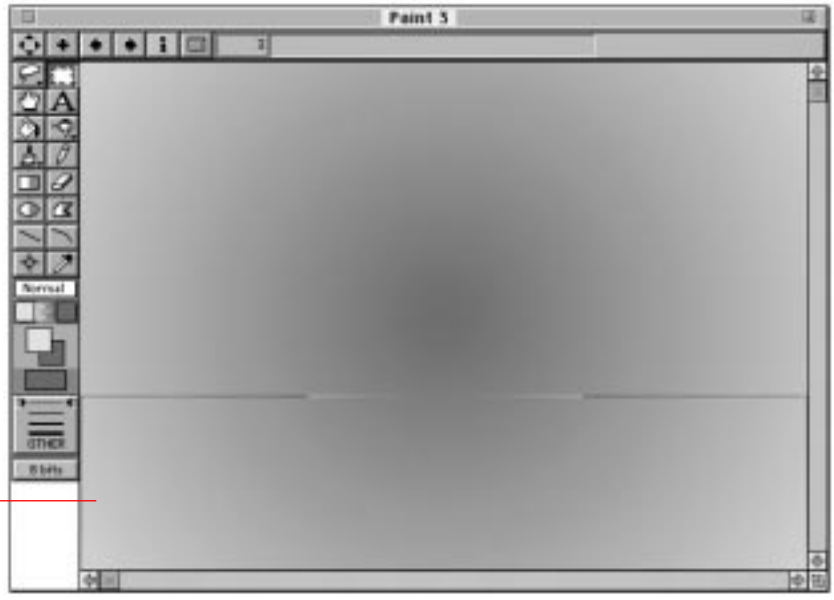


3. Select the settings shown in the illustration and then click Set.
   For a description of all the options that are available in the Gradients dialog box and the effect each setting produces, see "Gradients" under "Paint menu" in Chapter 6 of *Using Director*.
4. Select the dotted line in the line width selector.
   The dotted line lets you draw a shape without an outline.
5. Draw a rectangle that fills the window.
   The result looks like this:



Remove the bottom third of the gradient so the sun appears to set on the horizon:

1. Select the selection rectangle.
2. Select the bottom third of the gradient.

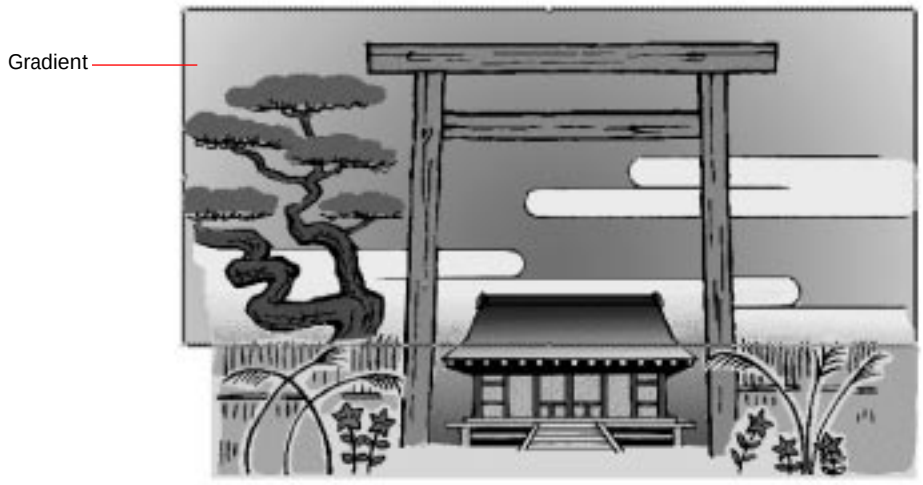


3. Press Delete.
4. Close the paint window.

Place the gradient on the stage:

1. Select cell 1 in channel 1 of the score.
2. Open the cast window if it isn't already open.

3. Drag the gradient cast member from the cast window to the stage, and position it like this:



Director places the gradient behind the shrine, which is located in channel 2 of the score.

In-between the gradient and the shrine scene in front of it:

1. Select cell 1 in channel 1 and then Shift-click cell 30 in channel 2 to select the entire range.
   Thirty frames provide the appropriate amount of space to create the animation of the sunset.
2. Choose In-Between Linear from the Score menu (or press Command-B).
   The gradient and the shrine fill the frames.

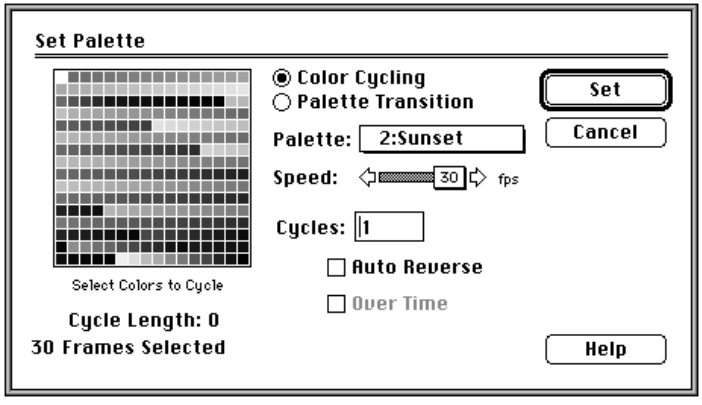
Selecting the options that control color cycling

Color cycling is controlled by a palette setting. The information contained in the palette setting comes from the Set Palette dialog box, where you choose the palette you want Director to use, speed and number of cycles, and—most important—the colors you want Director to cycle through.

The steps that follow show how to select the settings that will turn the gradient you've created into an animated sunset.

Open the Set Palette dialog box:

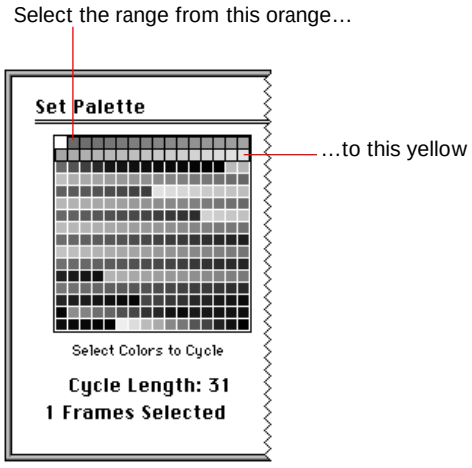
1. Select the first cell in the palette channel of the score and then Shift-click cell 30 in the same channel to select the range.
2. Choose Set Palette from the Score menu.
   The Set Palette dialog box appears. The settings in the dialog box depend on whether the Color Cycling or the Palette Transition setting is selected.
3. Select the Color Cycling setting if it isn't already selected.
   The dialog box looks like this:



4. Select the Over Time option in the lower half of the dialog box.
   The Over Time option extends the color cycling over as many frames as you select in the score rather than running through the entire cycle in each frame.

Select the colors you want to cycle through in the palette that's displayed:

1. Select the orange in the second chip in the top row.



2. Shift-click the yellow in the last chip in the second row.
3. Click Set.
   Director adds the settings to the score.
4. Rewind the movie and play it.
   The sky deepens to orange as the sun sets.

If the effect happens too fast, you can add a tempo setting to the first frame of the movie to slow it down. For information, see "Adding a tempo setting" in Chapter 3, "Working Behind the Scenes" in *Using Director*.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Sunset 1," and click Save.

You can create other illusions of movement with color cycling. For example, by cycling through the colors on a striped ball, you can make the ball look like it's rotating. By cycling through a range of pale blues and near-whites, you can create the illusion of a water falling or waves breaking on a shore.

Chapter 8

Adding Interactivity to a Movie

Making a movie interactive means building into it the ability to respond to choices that users make. The goal of interactivity is to give users some degree of control over a movie. Interactivity can sometimes be extraordinarily subtle and difficult to achieve, but when your goals are modest you can achieve remarkable results with very little effort.

Normally, the only control a user has over a movie you've created is to start it and let it run until it reaches the end. The simplest level of control you can build into the movie itself is to give users control over the pace at which they move from one part of the movie to the next.

Director gives you two ways to provide that kind of control. The easiest to use is a tempo setting. One of the options you have to choose from when you create a tempo setting stops the movie and simply waits until the user clicks the mouse button or presses any key on the keyboard before it allows the movie to go on to the next frame. A more sophisticated approach is to create "next" and "previous" buttons that allow users to move both forward and backward through a movie.

A more complex form of interactivity is branching—allowing users to choose a path through a movie, rather than limiting them to a single path that goes directly from beginning to end.

Branching uses buttons to show users what their choices are. Whenever you create a button—whether to allow users to go from one segment to the next or to choose the path they want to follow—you also need to write a Lingo script that tells Director what to do when someone clicks the button. While writing scripts may sound like the kind of thing only people with experience in programming should try, it's a lot easier and less intimidating than you may think.

This chapter shows how to create a tempo setting that halts a movie and waits for a mouse click, how to create and use markers, how to create buttons and write scripts for them, and how to set up hypertext links.

The examples in this chapter take about half an hour to work through.

Before you start:

1. Start Director if it isn't still running.
2. Make sure that looping is turned off.

Waiting for a mouse click

The simplest way to add interactivity to a movie is to pause the movie until a user either clicks the mouse button or presses any key on the keyboard. The Set Tempo dialog box contains an option you can use to do just that.

The steps that follow show how to create a tempo setting that pauses a movie until the user clicks the mouse or presses a key. The pause allows users to control when they want to proceed to the next screen image.

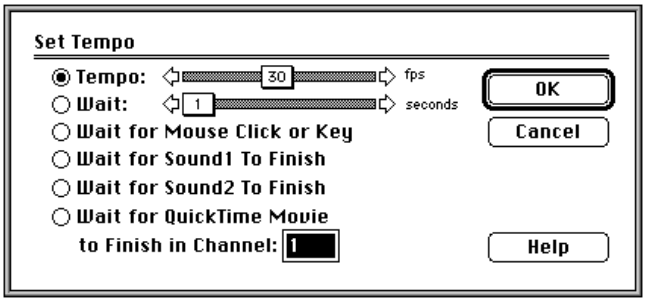
Open the movie that contains the images:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Images," and then click Open.
   If "Images" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The shrine scene appears.
3. Play the movie.
   The first image is replaced by the second almost immediately.

Add the tempo setting that pauses the movie:

1. Select cell 2 in the tempo channel of the score.
2. Choose Set Tempo from the Score menu.
   The Set Tempo dialog box appears.



▶ ***Tip*** *You can also display the Set Tempo dialog box by double-clicking the cell in the tempo channel where you want to add the tempo setting.*

3. Select Wait for Mouse Click or Key.
4. Click OK.
   Director adds the tempo to the score.

Play the movie again to see how the tempo setting affects it:

1. Make sure that looping is off, and then press Command-1 to close all the windows.
2. Press Command-R to rewind the movie, and then press Command-P to play it.
   The first image remains on the screen. Notice that the cursor changes to an icon of the mouse.
3. Click the mouse button or press any key.
   The next image appears.

Save the movie:

▶ Choose Save As from the File menu (or press Command-Shift-S), name the movie "Images 1," and click Save.

While waiting until the user clicks the mouse or presses a key is the easy way to provide interactivity, it has one drawback: the user can only go in one direction—forward. If you want to find out how to set up buttons that let a user go both forward and backward through a movie, see the tutorials in *Lingo Expo*.

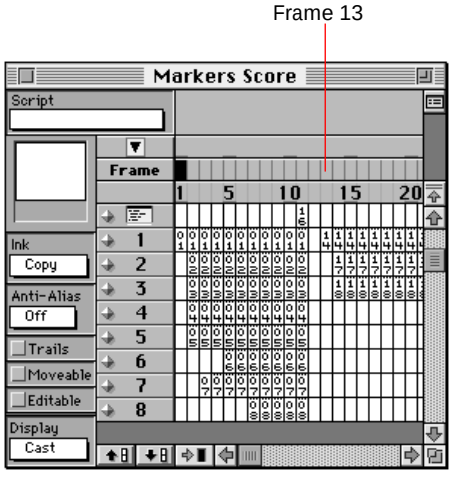
Creating buttons

Creating buttons that appear on the screen is another easy way to allow interactivity. Creating a button is slightly more complicated than using a tempo setting because you have to write a Lingo script that tells Director what to do when a user clicks the button. Writing a script is a lot easier and less intimidating than it may sound. For example, in this section you'll create a button that requires a script only seven words long—and Director provides three of those words before you start.

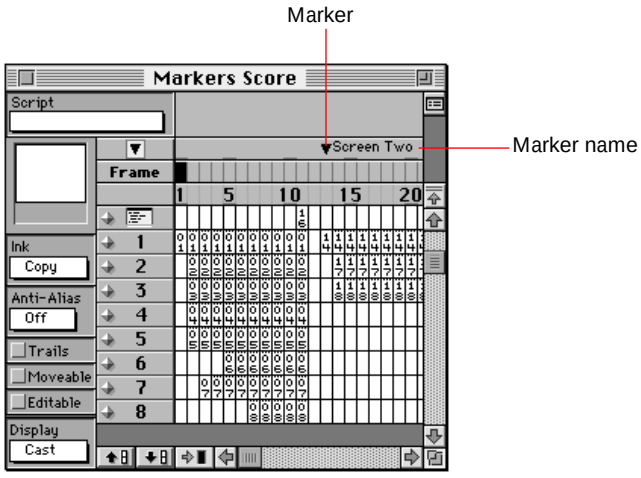
For more information about creating buttons, see Chapter 4, "Making a Movie Interactive," in *Using Director*. For detailed information about writing Lingo scripts, see *Using Lingo*.

Creating and labeling a marker

You can write a script that tells a movie to go to a specific frame that marks the beginning of a segment. Such a script would say something like "`go to frame 13`"—which means to go to the frame numbered 13 in the score.



The problem with that approach is that if you add or delete a frame before frame 13, the script no longer tells the movie to go to the right place. A much better practice is to put a marker in the first frame of a segment and give the marker a name.

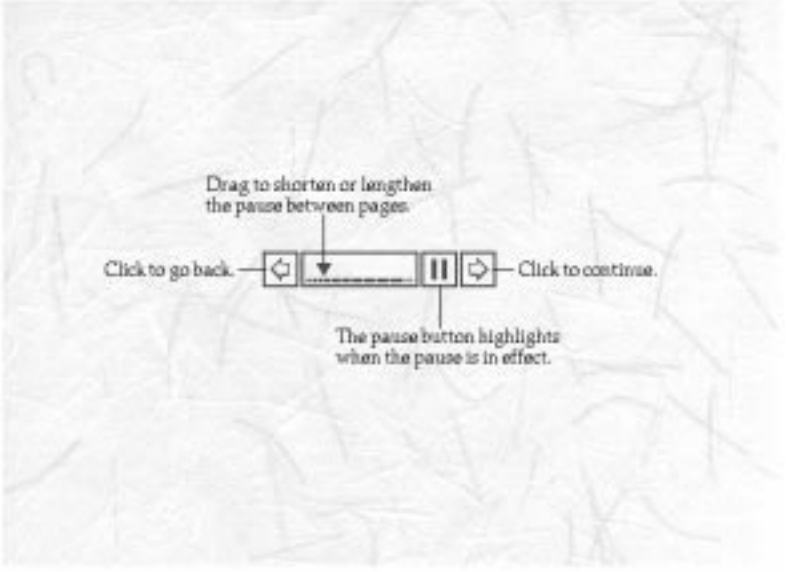


When there's a marker, the script can tell the movie to go to the marker, and you can add and delete frames without worrying about having to rewrite scripts whenever you do so. A script that tells a movie to go to a marker looks something like this:

```
go to frame "Screen Two"
```

The script is always accurate as long as you don't rename the marker.

If you've looked at the Director sample movie *Noh Tale to Tell* included in the package, you may remember that it starts with a screen that explains how to use the controls that are part of it. The screen looks like this:



When you click the Start Story button, this screen appears:

The frame where the text "Japan" appears is identified with a marker labeled "Start." The Start Story button has a script that tells Director to go to the frame labeled "Start" when a user clicks the button.

This section shows you how to create the marker and label it.

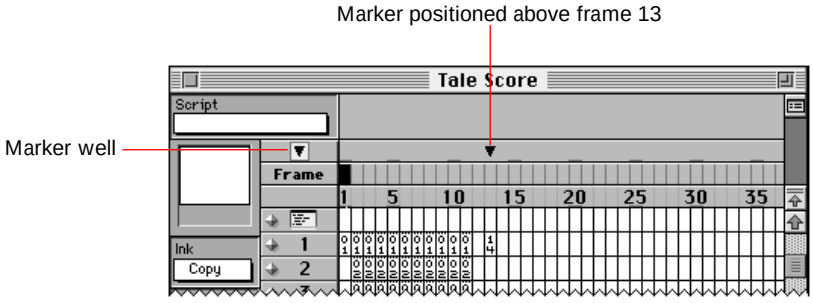
Open the movie that shows the first two screens of *Noh Tale to Tell*:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Tale," and then click Open.
   If "Tale" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The image that appears is blank except for the rice paper background.
3. Play the movie.
   The instructions explaining the controls appear, and they're followed immediately by a black screen with the text "Japan."

Add the marker to the frame where "Japan" appears:

1. Go to the score, drag a marker from the marker well, and place it above frame 13.



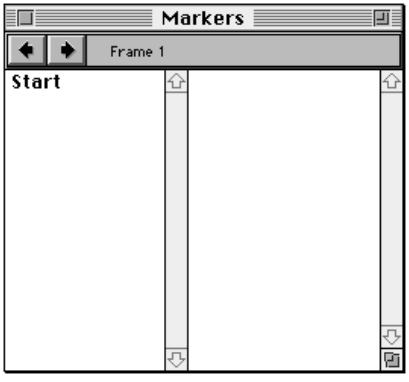
2. Type ***Start*** next to the marker and press Return.
   You can now use the label "Start" to refer to the frame in a script.

The markers window

The label you give a marker appears not only at the top of the score but also in the markers window.

To display the markers window:

- Choose Markers from the Window menu.
  The markers window appears.

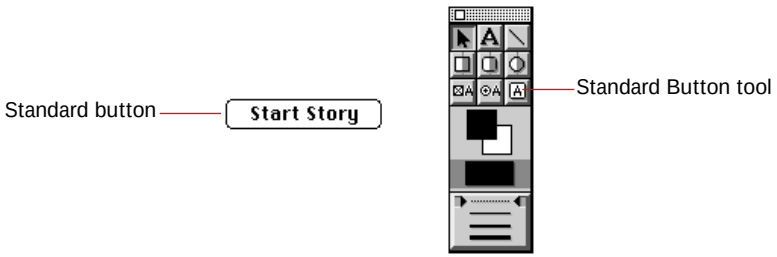


You can use the marker window to add comments about a frame and to display the part of the score where a marker is located. (For more information, see Chapter 4, "Making a Movie Interactive," in *Using Director*.)

▶ Close the markers window.

Creating a button

The tools window has a special tool you can use to create a standard button:



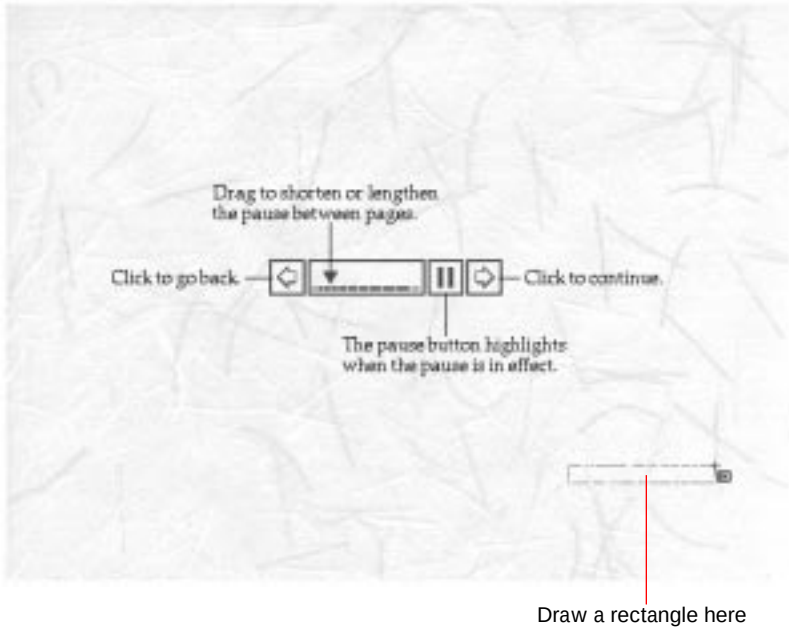
The button automatically highlights when a user clicks it, just like any standard button. But remember that the button you create with the Standard Button tool is just an animated image—it needs a script before it can do anything.

To create a button:

1. Select cell 11 in channel 14 of the score.
   That marks the location in the score where you want to record the information about the button.
2. Choose Tools from the Window menu (or press Command-7) to open the tools window.

3. Select the Standard Button tool.

4. Use the Standard Button tool to draw a rectangle on the stage:



When you release the mouse button, Director replaces the rectangle with a blank button.

5. Type ***Start Story*** in the button.
6. Highlight the text and choose Chicago from the Text menu's Font submenu and 12 point from the Size submenu.
7. Drag the handle on the right of the button to adjust its size. The result is the kind of button you'd expect to see in a dialog box.

▶ ***Tip*** *To change the text on a button, either select the button on the stage and change the text there or go to the cast window, double-click the button cast member, and edit the text in the text window that appears.*

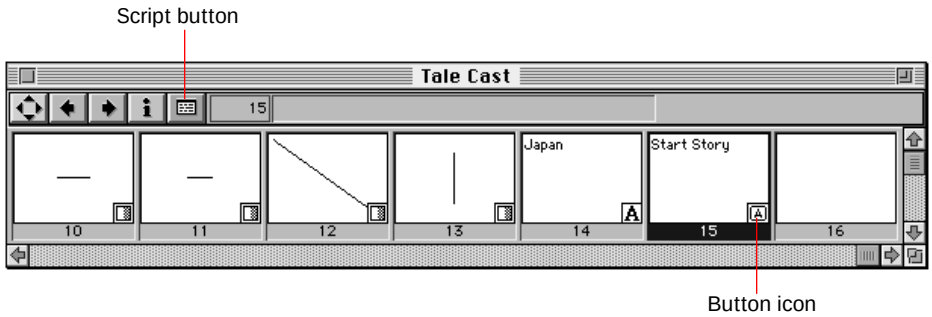
Creating a script for the button

To work, a button needs a script. Without a script, a button is just another graphic element on the stage. You can click it, and Director will highlight it just like any other button—but nothing will happen.

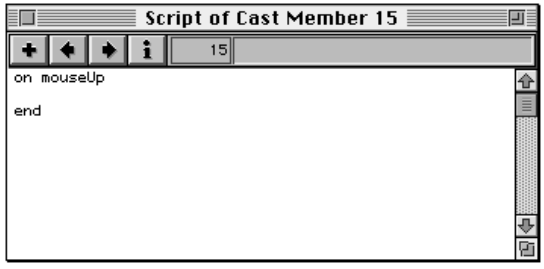
The script for the Start Story button is simple. It tells Director to go to the frame named "Start" when someone clicks the button.

To create the script for the button:

1. Make the cast window active.
2. Select cast member 15, the thumbnail that represents the Start Story button.



3. Click the Script button at the top of the cast window. The Cast Member Script window appears.



Director automatically supplies the first and last lines of the script. You need to supply only the middle line.

The first line, `on mouseUp`, means "when a user clicks this button with the mouse." The last line, `end`, indicates the end of the script.

4. On the middle line of the script, type:
   ```
   go to frame "Start"
   ```

   Make sure you enclose "Start" in quotation marks. The quotation marks tell Director that "Start" is a marker.

   The entire script in English means, "When a user clicks the mouse on this button, go to the frame that has the marker named 'Start'. That's the end of the script."

5. Press Enter on the keypad to close the Script window.

Adding a pause

When you add a button to a movie, you give users a choice. For example, the Start Story button implicitly asks the question, "Do you want to start the story?" Clicking the button means yes, not clicking it means no. When you give users a choice, you also need to give them an opportunity to make the choice.

You'll remember that earlier in the chapter, you used a single tempo setting to do two things:

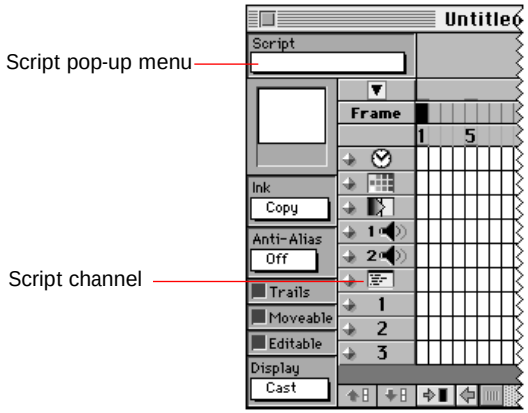
- Pause a movie
- Continue the movie when a user clicked the mouse button or pressed a key.

The pause was just a way of giving users the opportunity to choose to display the next image when they were ready, rather than being forced to go to the next image when the movie was ready to move on. What's missing from the movie you're working on now is a pause that allows users to make the choice you've given them.

Play the movie and watch what happens:

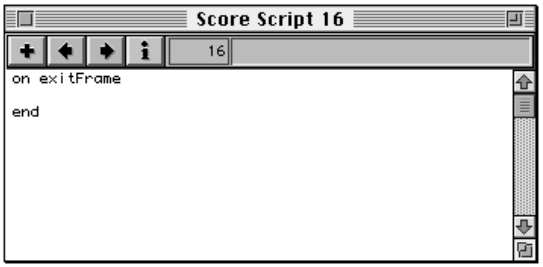
- Press Command-R to rewind the movie, and then press Shift-Enter to play it. (Use Enter on the keypad.)
  Pressing Shift-Enter closes any windows that are open and starts the movie. The text explaining the controls appears, the Start Story button flashes on the screen for an instant, and then the screen turns black and "Japan" appears.

Adding a pause requires another script. The new script is connected with the frame where the Start Story button appears rather than with the button itself. Director records scripts that are connected with a frame in the script channel, which is just above channel 1:



To set up the script that tells Director to pause:

1. Select cell 11 in the Script channel of the score.
2. Choose New from the Script pop-up menu in the score window.
   A new script window appears.



Director automatically supplies the first and last lines of the script. You need to supply only the middle line.

The first line, `on exitFrame`, means "when it's time to go to the next frame." The last line, `end`, indicates the end of the script. So, if you were to add a middle line that read

```
pause
```

the script would mean, "When it's time to go to the next frame, wait for further instructions. That's the end of the script." The instructions Director waits for are supplied by the script attached to the button the user clicks.

3. On the middle line of the script, type:
   `pause`
4. Press Enter on the keypad to close the script window.
   Director turns the script into a cast member. The number that appears in the cell of the script channel is the number of the script cast member.

Run the movie to see how the two scripts—the script for the button and the script in the script channel—work:

1. Make sure that looping is off, and then press Command-1 to close all the windows.
2. Press Command-R to rewind the movie, and then press Command-P to start it.
   The screen that explains how to use the controls appears.
3. Click the Start Story button.
   The screen with the text "Japan" appears.

Any button that you set up in the same way as the Start Story button—to refer to a frame marked with a label—works the same way. Whenever someone clicks the button, Director goes to the frame that's named in the script.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Tale 1," and click Save.

Creating hypertext links

Some people would argue that during the millennia before computers came into existence, text was invariably linear: you started at the beginning of a piece and read without deviation straight through to the end. That's an over-simplification.

Writers have for centuries used cross-references, footnotes, tables of contents, and indexes to direct their readers from one place to another, from one pertinent passage to the next. Computers have, however, made it possible to automate the links between related chunks of information. The result is hypertext—text in an electronic form with built-in links between information that's connected. Readers of hypertext documents don't need to track down the section heading that contains the cross-reference they're looking for; they need only to click the text that's linked to a related passage, and the passage appears on the screen.

In Director, a hypertext link works just like a button: when a user clicks the text that's linked with a related passage, a script associated with the text tells Director to go to the frame in the movie where the passage is located.

There are two ways to set up a hypertext link:

- You can make an entire text block act as the button.
- You can make just a word or phrase within the cast member act as the button.

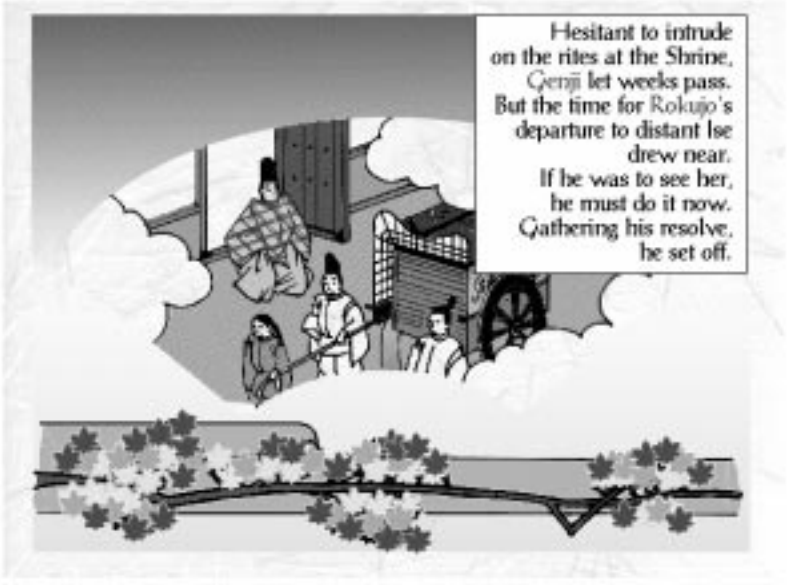
Making an entire text block a button is easy: you write a script for it in exactly the same way you wrote the script for the Start Story button in the previous section. (For the complete procedure, see "Using an entire text block as a button" in Chapter 4, "Making a Movie Interactive," in *Using Director*.)

The steps that follow show how to manage the more difficult approach: using a single word within a block of text as a button.

Open the movie that's set up for you to experiment with:

1. Choose Open from the File menu (or press Command-O).
   The directory dialog box appears.
2. Select the file named "Hypertext," and then click Open.
   If "Hypertext" doesn't appear in the dialog box, go to the Macromedia Director 4.0 folder, open the Tutorials folder, and then open the Learning Director folder.

   The scene that appears looks like this:

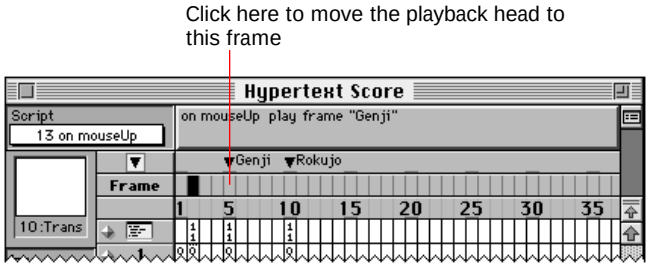


The movie has one hypertext link set up. Run the movie to see how it works:

1. Press Shift-Enter to start the movie.
2. Click ***Genji***.
   A screen of text appears with information about *The Tale of Genji*.
3. Click the Return button in the lower right corner of the screen.
   The first screen reappears.
4. Press Command-period to stop the movie.

Take a look at the score:

1. Make the score active.
   Notice that there's a marker labeled *Genji*. The marker identifies the frame that contains the text that appeared on the screen when you clicked the word *Genji*.



2. Click just below the marker labeled ***Genji*** to move the playback head to the frame with the text about ***The Tale of Genji***.
   The text appears on the screen.

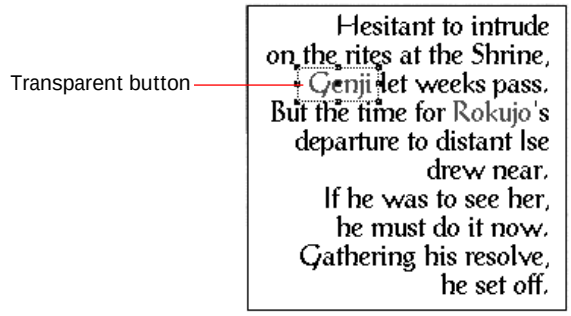
3. Move the playback head to frame 1.
   The illustration of Genji's departure reappears.

Take a look at the block of text on the screen and you can see why you can't make the entire block a hypertext button: two words—*Genji* and *Rokujo*—are in red. Each has a separate passage related to it, and so each needs its own script to tell Director where to find the passage. (*Rokujo* isn't linked with its passage yet—that's the hypertext link you're going to set up later in this section.)

But that presents something of a mystery: The script linking *Genji* with its related passage isn't part of the text block's cast member, and the script can't be connected directly with *Genji* because *Genji* isn't a separate cast member. How, then, is *Genji* linked with the passage that appeared when you clicked it? The answer is that the script for *Genji* is part of a transparent button that overlays the word *Genji*.

Display the transparent button overlaying *Genji*:

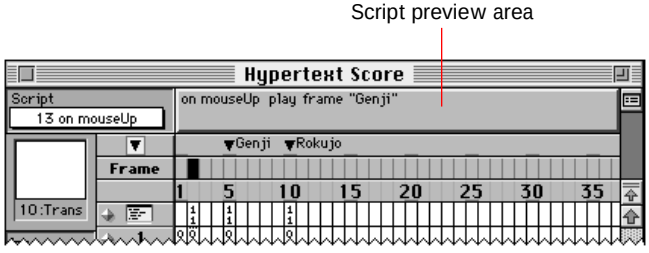
- Select cell 2 in channel 6.
  The selection rectangle that appears on the stage makes the button visible.



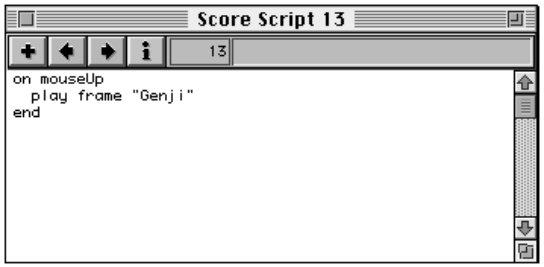
Because the button is completely transparent, it looks as if you're clicking *Genji* when in fact you're not—you're clicking the button on top of it.

Take a look at the script that's attached to the button sprite:

1. Make sure cell 2 in channel 6 is still selected.
   Notice that a script appears in the script preview area at the top of the score.



2. Click anywhere in the script preview area to display the script window.
   The script window that appears looks like this:



The script there reads:

```
on mouseUp
  play frame "Genji"
end
```

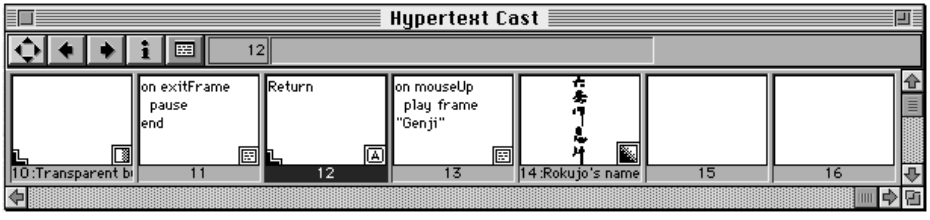
You'll remember that when you created the script for the Start Story button earlier in the chapter, you used the statement `go to frame "Start"`. The statement in the preceding script, `play frame "Genji"`, works the same way: it tells Director to go to the frame that's named in the script. The difference between the two is this: `play frame "name"` is always paired with another statement, `play done`. The purpose of `play done` is to tell Director to return to the frame it came from.

The process works like this: You place `play frame "name"` at the point in a movie where you want Director to branch to the beginning of a different segment; you place `play done` at the end of the segment. When Director comes across `play frame "name"` it goes to the frame that's named. When it comes across `play done`, it returns automatically to the frame it came from.

The `play done` statement is part of the script for the Return button that's on the screen that contains the information about *The Tale of Genji*:

Take a look at the script:

1. In the cast window, select cast member 12.

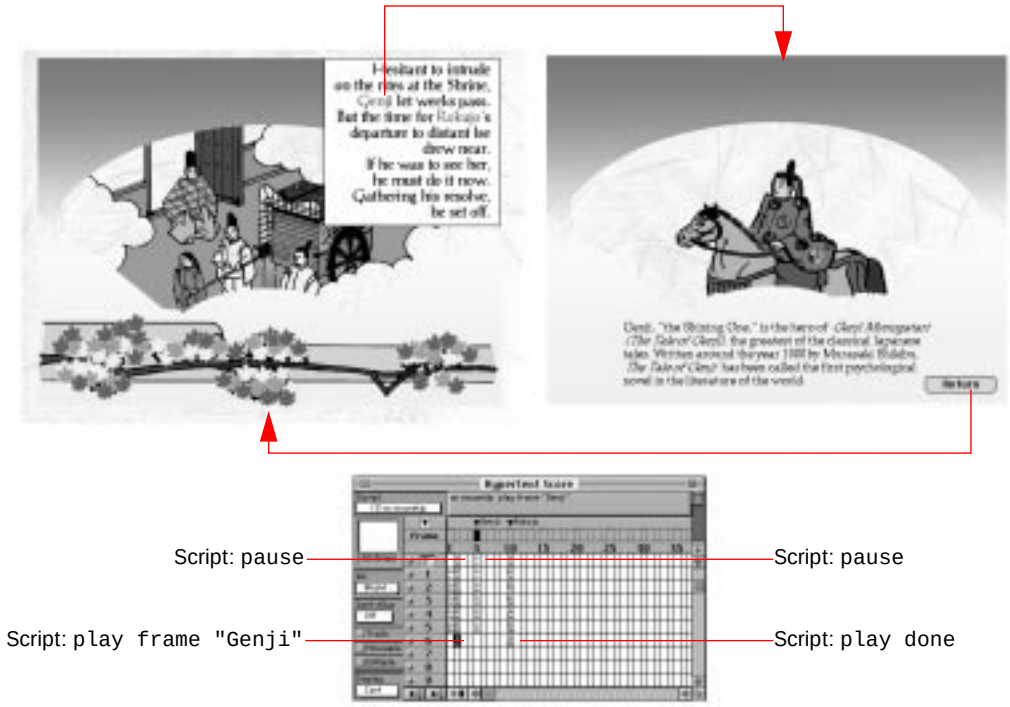


2. Click the Script button at the top of the cast window.
The text in the script window is replaced by the script attached to the Return button.

The script reads:

```
on mouseUp
  play done
end
```

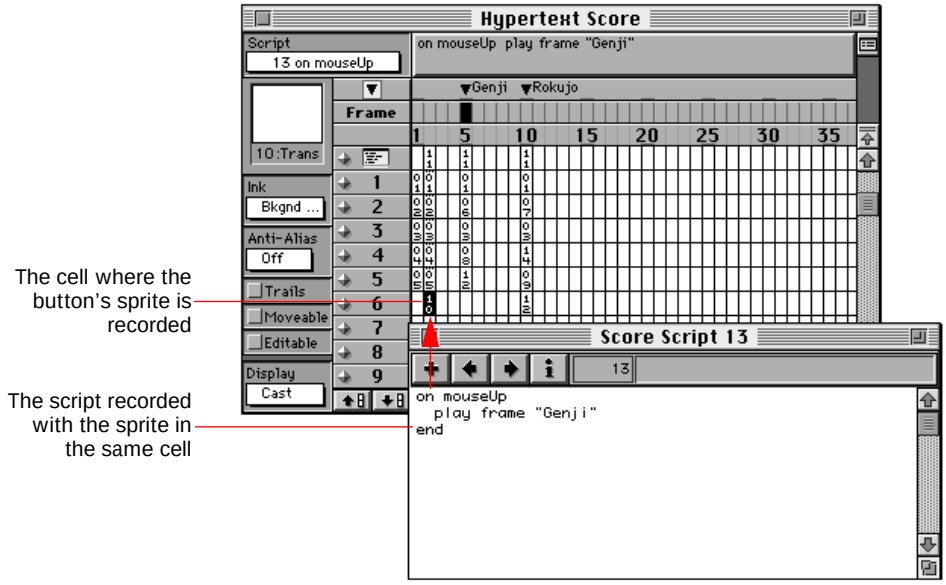
The interaction between the `play frame "Genji"` script and the `play done` script works like this: When you click the word "Genji" on the first screen of the movie, Director branches to the frame that contains the information about *The Tale of Genji*. There's a pause script in the script channel of the frame, so Director simply waits there for further instructions. When you click the Return button, Director reads the script there, comes across the `play done` statement, and returns to the place it came from.



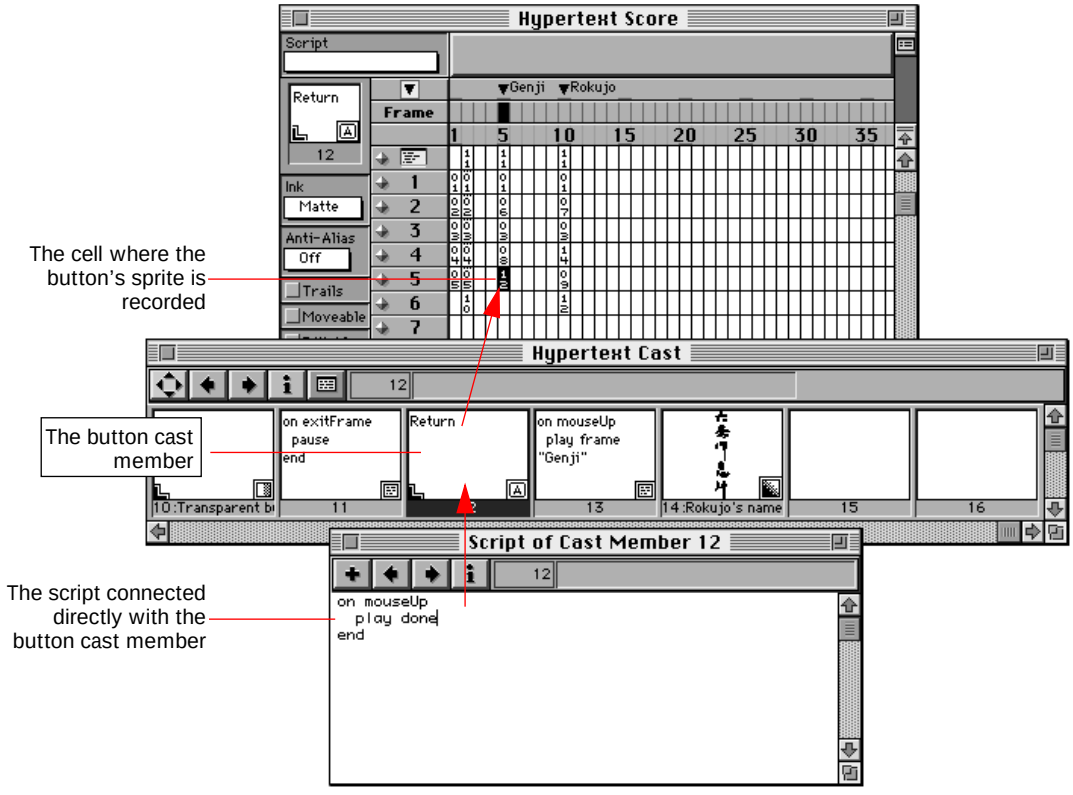
► Close the script window.

Types of scripts

You may have noticed that the script for the transparent button overlaying the word *Genji* is connected with the cell where the button's sprite is recorded, but the script for the Return button is connected with the button's thumbnail in the cast window. That's because the scripts are different types of scripts. The script associated with the transparent button is a sprite script; the script associated with the Return button is a cast member script.



A sprite and its script



A cast member and its script

Cast member scripts

A cast member script—which you attach to a cast member in the cast window—becomes a permanent part of the cast member. The script goes with the cast member no matter where you use the cast member in the movie. (You can attach a script not just to a button cast member, but to any bitmap, PICT, shape, or text cast member; that means you can use any of those cast members as a button.)

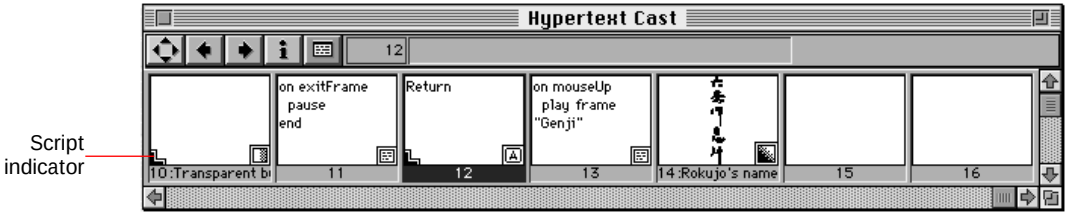
You use a cast member script when you want Director to do exactly the same thing whenever anyone clicks the cast member that the script is attached to. That's why the Return button uses a cast member script: you want Director to return to the frame it came from whenever a user clicks the Return button.

But be aware that "do exactly the same thing" means "do absolutely exactly the same thing." Suppose, for example, you've set up a button named *Next* at the end of the first screen of a movie, and you want the button to take the user to the second screen. So you label the marker in the first frame of the second screen *Screen Two* and attach this cast member script to the button:

```
on mouseUp
  go to frame "Screen Two"
end
```

The button works fine. But if you try to use the same button on the third screen, Director will go, not to the fourth screen, but back to the second screen. That's because even though the button says *Next,* the script tells Director to go to the frame labeled *Screen Two* no matter where the button is located in the movie.

It's a good idea before you start working with cast member scripts to open the Cast Window Options dialog box (to do so, choose Cast Window Options from the Cast menu), and then select Indicate Cast Members with Scripts. Once you've done that, when you attach a script to a cast member, an indicator appears in the lower left corner of the cast member's thumbnail in the cast window.



Sprite scripts

Remember that when you place a cast member on the stage, what Director displays is not the cast member itself, but a sprite associated with the cast member. The cast member remains in the cast window, and the sprite—an image of the cast member—appears on the stage.

Remember also that a cast member and a sprite aren't identical. A cast member is the template for a sprite, and the sprite has information associated with it—such as its position on the stage—that isn't associated with the cast member. Director stores information associated with a sprite in a cell in the score, and that information—like the sprite's position—can change from cell to cell. Part of the information that can be stored in the cell is a script associated with a sprite.

Because the information associated with a sprite can change from cell to cell, a sprite script—unlike a cast member script—is associated with a button in only one cell at a time. You could, for example, have two sprites associated with the same cast member on the stage at the same time, and if they had different sprite scripts, something different would happen when you clicked each of them. In fact, that's exactly what you're going to do in the next section: you're going to create another sprite based on the transparent cast member used as the button overlaying *Genji*, position the new sprite over the word *Rokujo*, and write a script that tells Director to go to a different frame containing different text.

Creating a sprite script

Create a new sprite and position it over *Rokujo*:

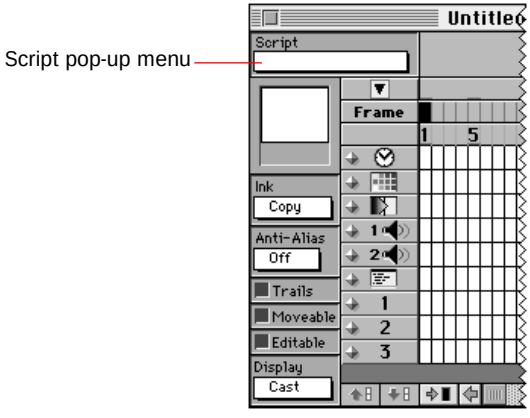
1. Select cell 2 in channel 7 of the score.
2. Drag cast member 10 from the cast window over the word ***Rokujo*** on the stage.
   Director creates a sprite based on the cast member. The sprite looks blank because it's white like the background.

   The information about the sprite appears in the cell you selected in the score.
3. Go to the score, and select Bkgnd Transparent from the Ink pop-up menu to make the sprite transparent.

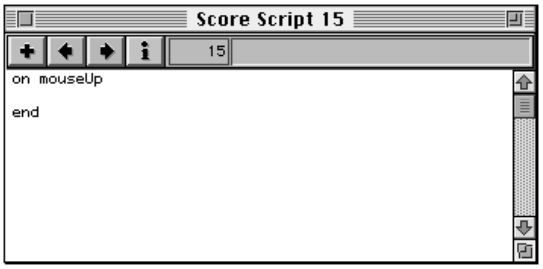
All you have to do to make the new hypertext link work properly is to give the sprite a script similar to the one for *Genji*. The script tells Director to go to the frame labeled *Rokujo*.

To create the script:

1. Make sure cell 2 in channel 7 is still selected.



2. Choose New from the Script pop-up menu.
   A script window appears.



3. On the second line of the script, type:
   `play frame "Rokujo"`

   Make sure to include the quotation marks around *Rokujo*.

4. Press Enter on the keypad to close the Script window.

Play the movie again to see how the new hypertext link works:

1. Press Command-R to rewind the movie.
2. Press Shift-Enter to start it.
3. Click ***Genji***.
   A screen of text appears with information about *The Tale of Genji*.
4. Click the Return button.
   The first screen reappears.
5. Click ***Rokujo***.
   A screen of text appears with information about Rokujo's role in *The Tale of Genji*.
6. Click the Return button.
   The first screen reappears.
7. Press Command-period to stop the movie.

Save the movie:

- Choose Save As from the File menu (or press Command-Shift-S), name the movie "Hypertext 1," and click Save.

This chapter just scratches the surface of the hundreds of ways you can use buttons and the thousands of things you can do with Lingo. One of the next things you'll probably want to find out is how to make a sprite highlight when a user clicks it. For information, see Chapter 4, "Using Puppets," in *Using Lingo*. *Using Lingo* contains not only a dictionary of all the elements that make up Lingo, but a comprehensive set of tutorials that provide a thorough grounding in how Lingo works and how to make the best use of it.

Note

The movies you've created in the course of working through the examples in this guide take up considerable disk space. It's a good idea to delete them once you've finished with them.

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