Working with the Stage, Sprites, and Score

Writing a technical book is always a bit of a challenge. Sometimes it's necessary to hint at something that you need to cover but that you don't want to cover just yet in your presentation. It's that way with sprites. Chapters 1 and 2 offered a few hints about what a sprite is, but it's time now to lay the groundwork before discussing sprites in detail.

On the CD-ROM

In this chapter, you create a complete animation sequence of a rocket landing on the planet Mars. You are asked to save your movie at the end of almost every exercise in order to add to it in the following exercises. If you prefer to skip some of the exercises, you can open the movie from the CD-ROM instead of opening a saved version. The movies used in this chapter are located in the folder EXERCISE: CH03 (EXERCISE\CH03). If you want to sneak a peek at the final movie that you build in this chapter, open and play the LANDER16.DIR movie from the CD-ROM.

What's a Sprite?

What exactly is a sprite? In simplest terms, a cast member becomes a sprite when you place it on the Stage. A sprite is not actually the graphic that appears in the Cast window, but rather a clone (or *instance*) of a cast member when it's moved to the Stage. You can place multiple copies (or clones) of the cast member on the Stage. Changes that you make to a cast member affect its associated sprite, but changes that you make to a sprite do not affect the cast member. A sprite can move across the Stage and have attributes independent of its associated cast member.

Suggestions for reducing the number of sprites on the stage

Any Director movie can contain sprites that move or are interactive, as well as sprites that remain static. You can reduce the amount of resources required to render your scene by combining several graphic cast members into a single composite bitmap image. Never include buttons, fields, graphics that have scripts applied to them, or any other graphic that may change over time.

For example, if you have props or other elements that are part of the background image, and other sprites don't animate behind them, then you can make the props part of your background, thereby reducing the number of sprites on the Stage. Even if they become part of a 640×480 image, it costs less in resources to load one image than to load the background plus several sprites. You can use either the Paint window or an external editor to merge the elements into a single image, and then choose Edit ⇨ Exchange Cast Members (Command+E or Ctrl+E) to replace the background image. You can change the background image later if the elements change.

By thinking in terms of layers of activity and scenery, you become more adept at reducing the number of sprites on the Stage while maintaining the interactivity you want.

Unlike the Cast window, where you can have up to 32,000 cast members in a single movie, Director's authoring mode accommodates a maximum of only 1000 sprites on the Stage at any given time. It is possible to break the 1000 Sprite rule by using Lingo to create additional Sprite channels.

Caution   As the number of sprites on the Stage increases, the amount of time it takes for the image or scene to render to screen increases.

Each sprite occupies a *sprite channel*. Sprite channels have a specific order on the Stage, arranged from back to front. In other words, elements in channel 1 appear *behind* those in channel 2, and so forth. If you had sprites in channels 1 to 20, the sprite in channel 20 would appear closest to you. Sprites actually exist in a four-dimensional (time being the fourth dimension) space. You can position them anywhere along the horizontal and vertical axes of the Stage, and they have a specific hierarchy that defines their distance from the viewer.

Sprites also have a life span measured in frames. A frame is a variable amount of time and is the smallest unit of time that Director recognizes. Director maintains an internal clock that describes how often it redraws the screen. Because the actual number of frames per second can change, you can't define a frame as a specific amount of time. The concept is similar to the frames of a film. As the film progresses, each frame describes a scene that is slightly different from the previous and subsequent frames. For example, in the space of a frame, a car will move fractionally, or a neon sign will switch from ON to OFF.
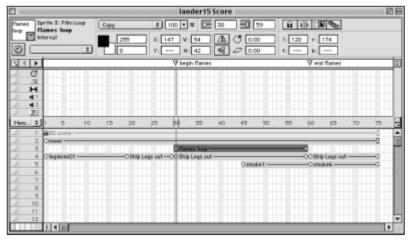
You use Director's Score window to control sprites. You activate the Score window by choosing Window ⇨ Score or by pressing Command+4 (Ctrl+4). The Score window contains a great deal of information. It displays each sprite's order on the Stage, its life span, and any sprite scripts that you attached to the sprite. In addition, the Score displays any effects that you placed in your movie. At first look, the Score resembles a spreadsheet. The rows represent sprite channels and the columns represent frames (see Figure 3-1).

Figure 3-1: The Score resembles a spreadsheet with rows and columns.

Note   You can adjust the way that sprites appear in the Score window by choosing File ⇨ Preferences ⇨ Score. The Score Preferences dialog box appears and enables you to select the properties of a sprite that are displayed in the Score window.

The Score arranges the sprites from back to front in a hierarchy of sprite channels from 1 to 1000, and in frames from left to right horizontally across the Score window. Although this arrangement makes it easy to see and manipulate sprites by using the Score, it can complicate the job of making a sprite move past other sprites toward or away from you. Let's take a closer look at how this works.

Caution   You should adjust the number of Score channels in your movie to use only the ones you need. Using all 1,000 Score channels can cause the movie to run slower when it's played. Set the number of sprite channels by choosing Modify ⇨ Movie ⇨ Properties or press Command+Shift+D (Ctrl+Shift+D). This activates Director's new Property Inspector and displays the Movie Preferences Tab. Type the number of Score channels you need in the Score Channels field. You can adjust this setting at any time to add more channels.

Moving on to the Stage

Understanding how sprites work on the Stage is one of the first steps to creating movies in Director. Director provides two basic methods for placing a cast member on the Stage. You can drag the cast member from the Cast window to the Stage, or you can drag it to the Score window and place it in a channel. If you drag a cast member to the Score window, the sprite of the cast member automatically appears centered on the Stage. As you drag the cast member from the Cast window, the thumbnail image of the cast member changes to a small dashed box. When you release the mouse button, the image appears on the Stage.

You can change the size of the Stage and its position in Director's main window. Normally, it's a good idea to work with the Stage centered, because it gives you a better visual sense of the space your movie occupies. Because projectors — self-running versions of your movie — are displayed in the center of the screen, it's important to establish this mental frame of reference regarding space during development and before you create a projector of a finished movie.

In the following exercise, you place a cast member on the Stage to create the back-drop for a movie.
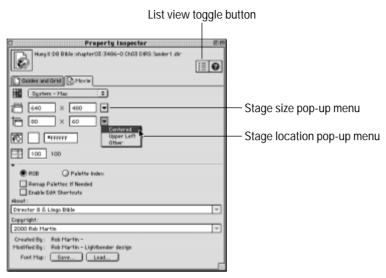
Tip   It's important that you save the movie to your hard disk, because this same movie is used again in other exercises in this chapter. If possible, you might also want to set the color depth of your monitor to display millions of colors. The exercises in this chapter use 32-bit images with alpha channels, which display better at the higher color depth.

On the CD-ROM   For the following exercise, you can use the LANDER1.DIR movie found on the companion CD-ROM located in the EXERCISE:CH03 (EXERCISE\CH03) folder.

Placing a Sprite on the Stage

1. In Director, open the LANDER1.DIR movie.

2. Choose Modify ⇨ Movie ⇨ Properties, or press Command+Shift+D (Ctrl+Shift+D) to display the Movie Properties tab in the Property Inspector (see Figure 3-2). If the List View button, located in the upper-right corner, is active, click it to deactivate it.

3. In the Stage Size Width and Height boxes, set the width to 640 and the height to 480. Alternatively, you can select the size by clicking the list menu next to the size fields and choosing 640 × 480.

4. Click the list menu next to the Stage Location fields to open the Stage Location list and then choose Centered.

List view toggle button

Stage size pop-up menu

Stage location pop-up menu

Figure 3-2: You can set a variety of Movie and Stage properties in the Property Inspector's Movie settings tab.

5. Open the Cast window either by choosing Window ➪ Cast or by pressing Command+3 (Ctrl+3). If the Cast window is already open, this command closes the window. All the window commands in Director are toggles.

6. In the Cast window, select the cast member called BG Scene, and drag it onto the Stage.

7. Position the sprite on the Stage so that the upper-left corner of the sprite is flush with the upper-left corner of the Stage (see Figure 3-3). Alternatively, you can select the Property Inspector by pressing Command+Option+S (Ctrl+ Alt+S) and set the Stage Location Left "l" and Top "t" boxes both to 0.

8. Save your movie to your hard disk as LANDER2.DIR.

Congratulations, you've just created your first sprite. Take a look at the box (the Sprite Overlay) in the lower left corner of the graphic (see Figure 3-3). This Sprite Overlay contains relevant information about the sprite, including the sprite number, the cast member that currently occupies the sprite, its location and dimensions, blend setting, and script information. There is also a Behavior icon that displays any behaviors that are applied to the Sprite. Clicking either the Sprite Info icon or the Cast Info icon activates the tab in the Property Inspector that contains the properties for the element.

Note   There are no behaviors applied to this sprite, so the behavior listing is blank.

Figure 3-3: The sprite is positioned flush with the upper-left corner
of the Stage.

Tip   If you find the information box distracting, you can turn it off either by choosing
View ➪ Sprite Overlay and clicking the Show Info toggle command or by pressing
Command+Shift+Option+O (Ctrl+Shift+Alt+O). To make the information box visi-
ble, reselect the command. A check mark beside Show Info indicates that the
information box is active and visible on the Stage.

The Property Inspector

As you have seen in the preceding exercise, Director's new Property Inspector,
shown in Figure 3-4, is a global tool that enables you to modify the attributes of
almost every element of your movie. You will be working with the Property
Inspector continually, so look at the features contained in this tool.

Earlier versions of Director handled the properties for various elements, such as
Sprites and Cast members, with individual windows that you used to modify the ele-
ment's properties. Director 8 has rolled most of that functionality into the Property
Inspector, giving you one convenient place to handle all of those operations. There
are several ways to activate the Property Inspector; the preceding exercise covered
the first two, choosing Window ➪ Inspectors ➪ Property Inspector or pressing
Command+Option+S (Ctrl+Alt+S). You can also activate the Property Inspector by
clicking on the blue Properties icon found in the Cast window and the Sprite Overlay.
It also is activated when you want to modify properties that affect the entire movie,
such as Grid and Guide Settings and adjusting the Movie Properties. Last, but not
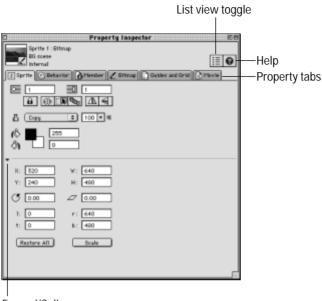least, you can activate it by clicking the Property Inspector button on the toolbar.

List view toggle

Help
Property tabs

Expand/Collapse pane

Figure 3-4: Director's new Property Inspector replaces many of the property dialog boxes found in previous versions of the program.
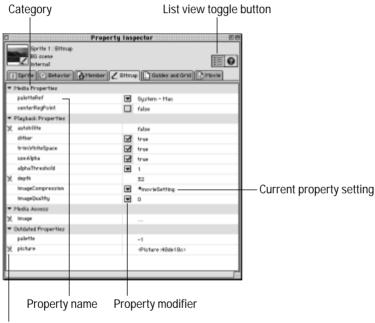
The Property Inspector automatically reconfigures itself to enable you to adjust all of the available properties of a chosen element. If you have selected a sprite on the Stage, for example, the Property Inspector displays a series of tabs that you can use to adjust the following attributes associated with the sprite:

 ◆ **Sprite:** The Sprite tab replaces the Sprite Inspector found in previous versions of Director and enables you to set properties that determine how the sprite will act on the Stage, including (among other things) its position, ink effect, foreground and background color, and blend setting.

 ◆ **Behavior:** Although this tab does not entirely replace the Behavior Inspector — you still need the Behavior Inspector to create new behaviors and to read a behavior's comments — it enables you to apply, and set the parameters of, a behavior that is associated with a chosen sprite.

 ◆ **Member:** The Member tab replaces the functionality found in the Cast Member Properties dialog box in previous versions of Director. Using it, you can set Cast member properties, such as the member's name and memory allocation. A new Comments window enables you to enter comments that pertain to the member. These comments are viewable in the new List View mode of the Cast Window.

 ◆ **Bitmap:** Using the Bitmap tab, you can modify a bitmap cast member's properties, such as color depth and palette, as well as access Director's new bitmap compression features. You can also Optimize the graphic by using Fireworks' image-optimizing features, provided you have Fireworks 2.0 or later installed on your computer.

✦ **Guides and Grid:** This tab enables you to set and modify the way that the grid and Director's new feature — Guides — appear on the Stage.

✦ **Movie:** This tab replaces the Movie Properties dialog box, enabling you to set the properties that affect the entire movie, such as size, background color, and centering.

Another powerful new feature of the Property Inspector is the List View mode, as shown in Figure 3-5. All of the Properties of an element can be displayed in a list that is usually grouped into categories. Toggle the List View mode by pressing the List View mode toggle button found in the upper-right corner of the Property Inspector.

Category   List view toggle button

Property name   Property modifier

Indicates that a property is not modifyable

Figure 3-5: The Property Inspector's List View mode displays the chosen element's properties in an editable list that is broken up into categories.

The properties in the List View are generally grouped into categories, which are indicated by the gray bars that can be expanded or collapsed via the small arrow sitting to left of the category listing. The properties are modified via a combination of pop-up menus, check boxes, and text-entry fields located to the right of the property name. A crossed-out pencil icon displayed to the left of the property name identifies properties that cannot be modified in this view.

Caution

The List and Normal Views often contain properties that are not available in the opposing view of the Property Inspector. One example is the Save and Load Font map function found in the Normal View of the Movie Properties tab that does not appear in the List View mode of the same tab. If you can't find a property that you are sure can be set, toggle the view mode; the property will almost always be available in the opposing view.

Now that you have a good grasp of the inner workings of the Property Inspector, it's time to get back to learning how to create your movies by exploring the functionality of Director's Score window.

Tip
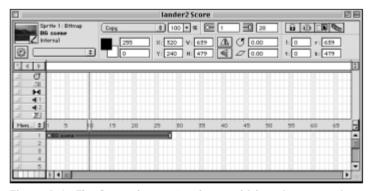
At first, all the parameters displayed in the List View may seem a bit overwhelming. Director has done a good job of defining each property for you by using the ToolTips feature. Just hold the cursor over the property for a second or two, and a description of the property appears.

Using the Score window

The Stage is where everything takes place. It provides you with the visual result of your actions, but it doesn't tell you much about the overall scheme or organization that you're using. One way to look at Director's Score window is to consider it an alternate method of viewing the same movie.

To open the Score window, choose Window ➪ Score, or press Command+4 (Ctrl+4). As Figure 3-6 shows, you can tell at a glance that there is only one sprite currently on the Stage, that the sprite extends for 28 frames, and that the sprite is in channel 1.

Figure 3-6: The Score shows at a glance which sprites are active on the page.

Tip

You can modify the way that the Score window is displayed by Ctrl-clicking (right-clicking) anywhere in the Score window except the Sprite Channel cells. This click activates a pop-up menu that enables you to choose what information and toolbars are displayed, as well as access the Score Preferences dialog box.

When you first start Director, the default number of sprite frames is set to 28. Every sprite you place on the Stage or in the Score window spans 28 frames initially. You can adjust the sprite interactively to span more or fewer frames by clicking the handle (called the *tail*) in the last frame of a sprite and dragging it to another frame. There are times when you want a sprite to span a single frame. Spanning several frames enables you to specify *keyframes* within the span, and generally gives you some room to work. (Keyframes are frames that control the other frames in the sprite.)

You can choose the number of frames you want to use as the default for all your movies. This default is a matter of personal preference, which you should base on the way you work and the types of animations that you create most often. For example, if you use many film loops in your movies, 28 frames will be much too long. Ideally, you want a sprite to span a single frame while you're creating a film loop. (More information about creating film loops appears later in this chapter, in the "Working with Film Loops" section.) Specifying a higher number of frames, such as 60, might require you to scroll the view of the Score window to work on a single section of your movie. This is inconvenient; you'll spend too much time continually scrolling back and forth through your movie.

The Sprite Preferences dialog box contains other choices you can make for your Score, such as having the sprite span the visible width of the Score window, or having it stop when it encounters a marker in the Score window.

Specifying the Default Number of Frames for a Sprite

1. Choose File ➪ Preferences ➪ Sprite to display the Sprite Preferences dialog box (see Figure 3-7).
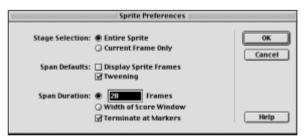

Figure 3-7: The Sprite Preferences dialog box specifies the default number of frames for a sprite to span.

2. Click the Span Duration radio button and enter the number of frames you want a sprite to span by default. If you want the sprite to end before the next Marker in the Score window, check the Terminate at Markers option.

3. Click OK to complete the operation and return to Director's main window.

The Span Duration value that you specify remains in effect from one movie to the next, until you change the value. As you work with Director, you'll discover the Span Duration that works best for you.

Setting sprite attributes

When you first create a sprite in the Score window, it has several attributes in addition to those gained from its associated cast member. Initially, a sprite that spans multiple frames has a head, body, and tail. The *head* (or first frame) of the sprite is a keyframe, as indicated by the large dot at the beginning of the channel. The *body* of a sprite is the central) portion of the sprite between the head and tail. The *tail* of the sprite is the end frame, which designates the end of the sprite's life span on the Stage.

When you select a sprite in the Score window, the top of the window displays information about the sprite relative to the active frame. This information is also displayed in the Sprite tab of the Property Inspector. If the sprite is a graphic element, a thumbnail of the image appears in the upper-left corner. The sprite information identifies the following:

  ◆ The type of sprite

  ◆ The sprite's cast library

  ◆ A description of any associated behaviors or scripts

  ◆ Its X and Y orientation on the screen (relative to the upper-left corner of your monitor)

  ◆ Its width and height

  ◆ Its location relative to the upper-left corner of the Stage

  ◆ The location, in pixels, of the right-hand side of the sprite

  ◆ The location, in pixels, of the bottom side of the sprite

  ◆ The rotation and skew angles of the sprite

Note   If the Sprite toolbar is not visible in the upper part of the Score window, activate it by Ctrl-clicking (right-clicking) anywhere in the Score window (except in the Sprite channel cells) and choosing the Sprite Toolbar option in the pop-up menu.

You may need to resize the Score window to view all of the information. In Windows, move your cursor to the side of the window until it becomes a double-headed arrow, and then drag the edge of the window to resize it. On the Macintosh, you can resize the window by dragging the lower-right corner.

By default, Director uses *dynamic linking* to link the portion of a sprite that is between the starting and ending frames of the sprite. When you click anywhere in the center of the sprite, the entire sprite is selected. This indicates the dynamically linked relationship of the sprite, and enables you to apply changes to the entire sprite as a unit.

Dynamic linking also enables the sprite to be responsive. If you change or move either the starting or ending sprite, the rest of the sprite responds to the change. You can extend a sprite by clicking the tail of the sprite and selecting a new ending frame, or you can extend a sprite by choosing Modify ➪ Extend Sprite.

Tip   You can disable dynamic linking of sprites by choosing the Director 5 Style Score Display option in the Score Preferences dialog box. When this option is checked, the sprites appear as individual frames in the Score window. Sprites worked this way in the Score before Director introduced dynamic linking in version 6.

The following exercise takes advantage of a sprite's dynamic linking to extend the range of frames in which the sprite appears.

Extending the Range of a Sprite

1. Open the LANDER2.DIR movie from the earlier exercise in this chapter, if it's not already open. If necessary, open the Score window by pressing Command+4 (Ctrl+4).

2. In the Score window, click the tail of the background sprite in channel 1 (frame 28) to select it (see Figure 3-8).

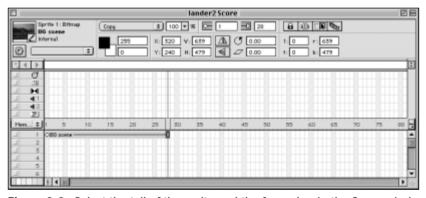3. Hold down the Shift key and click the frame bar in frame 75.

Figure 3-8: Select the tail of the sprite and the frame bar in the Score window.

4. Choose Modify ➪ Extend Sprite or press Command+B (Ctrl+B). The sprite extends to frame 75 in sprite channel 1 of the Score window (see Figure 3-9).

5. Save the movie as LANDER3.DIR.

Tip   You can also use this technique to reduce the range — the number of frames that a sprite takes up — by clicking a lower number on the frame bar.
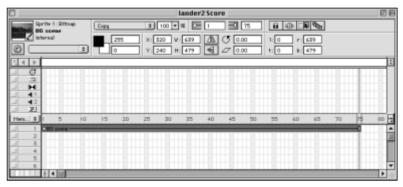
Figure 3-9: The sprite is extended through frame 75.

Locking a sprite

One of the most frustrating aspects of creating movies in previous versions of Director was accidentally moving a sprite that needed to remain in an exact position on the Stage. Another annoying problem was trying to select sprites that were sitting on top of a large bitmap graphic. It always seemed that the large graphic was selected instead of the sprite you wanted to select. Director has finally solved these two problems by giving you the ability to lock a sprite on the Stage. This feature works the same way as it does in programs such as Fireworks and Freehand in that a locked element — a sprite, in Director's case — cannot be selected or modified until it is unlocked.
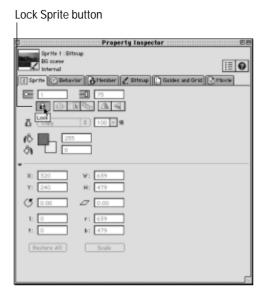
New
Feature   Director 8 now has the capability to lock a sprite to avoid your accidentally moving
               or modifying it while creating your movie.

In the next exercise, you lock the background sprite that you worked with in the preceding lesson, so that it can't be accidentally moved or modified. This lock also makes it much easier to select other sprites that are placed on top of the background sprite, which you do in exercises later in this chapter.

Locking the Background Sprite

1. In Director, open the LANDER3.DIR movie from the preceding exercise, if it's not already open. If necessary, open the Property Inspector by pressing Command+Option+S (Ctrl+Alt+S).

2. Select the background sprite on the Stage, and then click on the Sprite tab in the Property Inspector. If the Inspector is in List View mode, click the List View toggle button in the Property Inspector to switch to the Normal View.

3. Click the Lock button, located in the upper portion of the Property Inspector, to lock the sprite (see Figure 3-10).

4. Open the Score window and look at the background sprite. Note that there is now an icon (shown in Figure 3-11) in the first frame of the sprite, indicating that the sprite is locked.

Lock Sprite button

Figure 3-10: Click the Lock button found on the Sprite tab of the Property Inspector to lock the selected sprite.
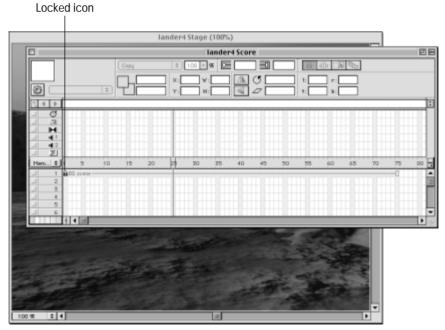
Locked icon

Figure 3-11: An icon located in the first frame of the sprite indicates that it is locked.

Note	You can unlock a sprite at any time while authoring by selecting the sprite in the Score window and choosing Modify ⇨ Unlock Sprite or by pressing Command+ Shift+L (Ctrl+Shift+L).

5. Save the movie as LANDER4.DIR

Tip	You can also lock a sprite by selecting the sprite on the Stage or in the Score and choosing Modify ⇨ Lock Sprite or by selecting the sprite and pressing Command+L (Crtl+L).

Often during the movie-creating process, you will need to unlock a sprite that has been locked. Obviously, you can't do that by selecting the sprite on the Stage; you can, however, select it in the Score window, and then unlock it in one of three ways:

◆ Choose Modify ⇨ Unlock Sprite.

◆ Press Command+Shift+L (Ctrl+Shift+L).

◆ Open the Property Inspector, click on the Sprite tab, and then click the Lock button. The Lock button acts a toggle between Lock and Unlock.

Putting multiple sprites on the Stage

Most animation sequences are composed of a series of individual cast members placed on the Stage. Dragging each individual cast member onto the Stage can be very time consuming, and it's also very difficult to keep them aligned, which is often a challenge when animating sprites. Fortunately, Director provides an easy way to accomplish this task by using a command called Cast to Time. Cast to Time enables you to select multiple cast members and place them on the Stage as a single sprite.
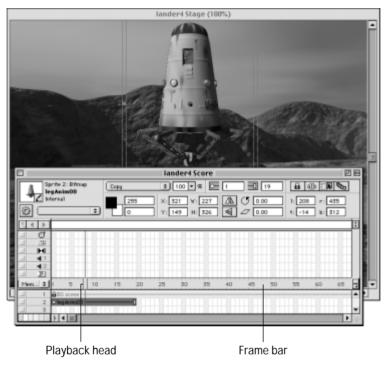
Using Cast to Time

1. Open the LANDER4.DIR movie in Director. If the cast window isn't already open, press Command+3 (Ctrl+3) or choose Window ⇨ Cast.

2. Select the cast member named legAnim01, and while holding the Shift key down, select the cast member named ship legs out. With cast members still selected, choose Modify ⇨ Cast to Time. This command places all of the selected cast members on the center of the Stage as a single sprite.

Note	When Director places cast members in the Score in response to Modify ⇨ Cast to Time, the order from lowest number to highest in which the cast members appear in the Cast window determines their placement in the Score. Be sure the cast members are in the desired sequence in the Cast window *before* you execute Cast to Time.

3. Open the Score window by choosing Window ⇨ Score or press Command+4 (Ctrl+4). Drag the Playback head across the frames of sprite 2. Note that the sprite in channel 2 actually contains all 19 cast members that you selected in the preceding step.

4. Drag the Score window toward the bottom of the screen so that the sprite is visible on the Stage. Make sure the frame bar is visible (see Figure 3-12).

Playback head   Frame bar

Figure 3-12: The Cast to Time command places a series of cast members on the Stage as a single sprite.

5. Drag the Playback head across the range of sprite 2. The legs of the ship unfold. The sprite is actually referencing the 19 cast members that were selected when you chose the Cast to Time command.

6. Save the movie as LANDER5.DIR.

You may be wondering why there isn't a white bounding box around the sprite even though the ink is set to Copy. It's because the cast members used for the sprite are 32-bit bitmap graphics with an alpha channel that defines the edges of the graphic. Alpha channels are useful for graphics that have a lot of transparent detail, such as the legs on the ship sprite, and they are also a good way to avoid the halo problems mentioned in Chapter 2.

Caution

The file size of 32-bit graphics is larger than the file size of 8-bit graphics. You need to consider the playback medium when using 32-bit graphics in your movies. If your movies will be shown on the Web, or if they will be seen primarily on low-end computers, you may want to use 32-bit graphics sparingly, or even avoid them altogether.

Using Keyframes and Tweening

You learned in the preceding section that it's possible to create an animation in Director by placing a series of cast members on the Stage as a single sprite. To create truly effective animations, you need to create a sense of movement. The ship with its legs extending is dynamic, but it still doesn't look very realistic unless the ship is moving at the same time as the legs are extending. You accomplish this effect by creating keyframes, and then tweening the sprite from one keyframe to the next.

Creating keyframes

The following exercises direct the animated sprite of the ship from the preceding exercise to fly in from the upper-right corner of the Stage and land in the left foreground of the Stage. Also, the legs of the ship extend while it is moving.

This touch of realism is accomplished by adding keyframes to the sprite, and then moving the keyframes to points of the animation where you want a major change to occur. You can change any of the sprite's properties at a keyframe; for instance, you can change the size and rotation angle of the sprite. The properties of the sprite automatically change over time as it moves from one keyframe to the next, using a process called tweening.
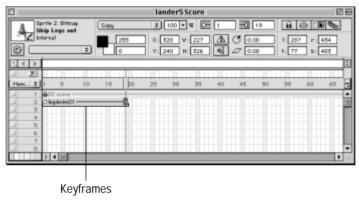
Keyframes and tweening

Despite all the fancy bells and whistles, Director is, at its heart, an animation program, deriving a great deal of its architecture from traditional animation methods. The terms *keyframe* and *tweening* are cases in point.

In traditional animation, a *keyframe* is an animation cel (or image) that is drawn by an artist for setting a pose or a mood in an animation sequence. These keyframes typically occur at points where action changes. To be convincing, the rocket's flight could be broken into several keyframes. Initially, the ship appears to be very far away in the upper-right corner of the Stage. The ship then flies toward the left side of the Stage, appearing to get closer to the viewer, and finally it lands in the lower-left corner of the Stage. In theory, the keyframes should be able to tell the whole story.

Tweening, on the other hand, is the creation of intermediate steps added to create smooth movement — changes in position from one keyframe to the next. Tweening can also create intermediate steps for fades, color changes, and other effects.

Adding Keyframes and Tweening a Sprite

1. Open the LANDER5.DIR movie in Director, and then open the Score window by pressing Command+4 (Ctrl+4), if the Score window is not already open.

2. Click frame 1 of the sprite named legAnim01 in channel 2 and then choose Insert ⇨ Keyframe or press Command+Option+K (Ctrl+Alt+K) to insert a keyframe in frame 1 of the sprite. Repeat the operation on frame 19 of the sprite to insert a keyframe in frame 19. The sprite now has two keyframes, one at the beginning of the sprite and one at the end (shown in Figure 3-13).
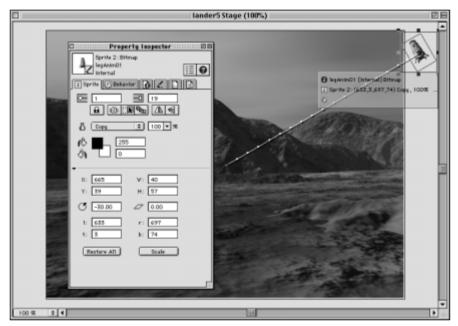

Keyframes

Figure 3-13: A keyframe has been inserted at the beginning and the end of the sprite.

3. Click the first keyframe in frame 1 of the sprite, and then drag the Score window so that the Stage is visible. Click one of the corners of the sprite's bounding box; then, while holding down the Shift key, drag the bounding box toward the center of the sprite. This task scales the size of the sprite. Make the sprite about ¼ of its original size.

4. Drag the sprite so that it is just outside the left corner of the Stage. Open the Property Inspector by choosing Window ⇨ Inspectors ⇨ Property Inspector, or press Option+Command+S (Alt+Ctrl+S). Click on the Sprite tab and enter the number **-30** in the field next to the Rotation Angle icon, as shown in Figure 3-14.

> **Note**
> Take another look at Figure 3-14. A line with dots appears in the image. This line isn't visible when you play your movie. It indicates the animation path of a selected sprite. The dots on the line are tweening stages spaced evenly along the line, between the head and tail of the sprite. The path turns yellow when the entire sprite is selected in the Score.

5. Click the Stage to make it active, and then drag the red circle (indicating the selected keyframe) so that it's in the upper-left quadrant of the Stage, as shown in Figure 3-15.

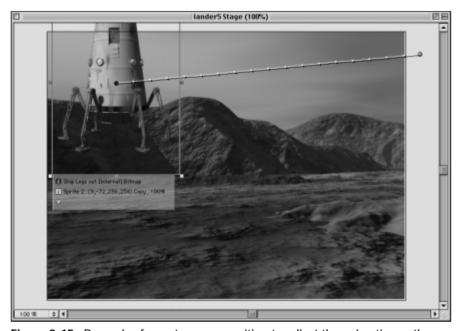**Figure 3-14:** Use the Property Inspector to modify the properties of a sprite while it is on the Stage.

Figure 3-15: Drag a keyframe to a new position to adjust the animation path.

6. In the Property Inspector, enter the number **6** in the Rotation Angle field. Drag the Playback head in the frame bar across the range of sprite 2 to see the movement of the sprite along its path. At this point, you can adjust the starting or ending point of the path by selecting a keyframe and moving it.

7. When you are satisfied with the animation, save the movie as LANDER6.DIR.
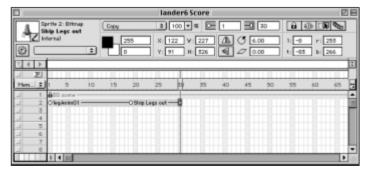
New Feature

You may have noticed that you were still able to see the sprite even after it was dragged off the Stage. That's because Director's Stage now has a viewable Canvas outside the actual Stage, as well as the capability to zoom in and out on the Stage. This Canvas feature is present only in authoring mode. All sprites positioned off the Stage will be invisible when a presentation is finished and made into a standalone projector or Shockwave application.

You can modify any attributes of a sprite in a keyframe, including the position, size, and angle of the sprite. The sprite attributes then automatically tween from one keyframe to the next.

So far, the ship has flown into the screen, and the legs have extended. Now it's time to make a nice smooth landing. To accomplish this animation, you need to add two more keyframes to end of the sprite. The first one adjusts the sprite so that it is parallel with the ground; the second keyframe places the sprite in its landed position.
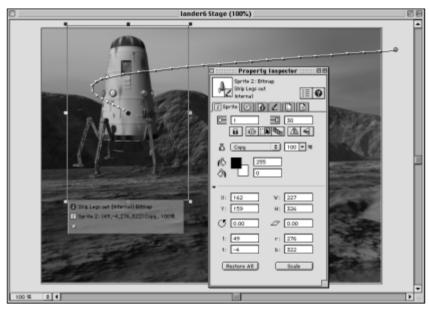
Adding Additional Keyframes to a Sprite

1. Open the LANDER6.DIR movie that you saved in the preceding exercise, if it's not already open. Make sure the Score window is active by clicking it, or open it either by choosing Window ⇨ Score or by pressing Command+4 (Ctrl+4). Command+4 (Ctrl+4) is a toggle, so it closes the window if it's open.

2. Click the keyframe in frame 19 of sprite 2; then, while holding down the Option (Alt) key, drag the keyframe to frame 30 (see Figure 3-16). This action creates a copy of the keyframe from frame 19 in frame 30. If you move the playback head, you do not see the sprite changing between these frames.

Figure 3-16: To make a copy of a keyframe, Option+click (Alt+click) the keyframe and drag it to a new frame in the Score.

3. Click frame 30 of sprite 2 to make sure it is active. Then, if necessary, drag the Score window so that sprite 2 is visible on the Stage.

4. On the Stage, drag the sprite so that it's slightly down and to the right of its previous position, as shown in Figure 3-17. Open the Property Inspector, click the Sprite tab if it's not active, and enter the number **0** in the rotation angle field.
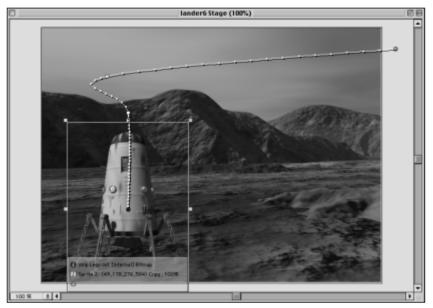

Figure 3-17: Moving the sprite modifies the copy of the keyframe.

5. Click the Score window to make it active, and then Option-drag (Alt-drag) the keyframe in frame 30 to frame 60. Click the keyframe in frame 60, and then drag the Score window to the right side of the Stage so that the sprite and the bottom of the Stage are visible.

6. On the Stage, click the sprite, hold down the Shift key, and drag the sprite to the bottom of the Stage. This creates a straight path (see Figure 3-18).

Note You can use the Tweak window to fine-tune the position of a sprite by typing a positive or negative number into the X and Y Offset fields. Activate the Tweak window either by choosing Modify ⇨ Tweak or by pressing Command+Shift+K (Ctrl+Shift+K). Chapter 9 has more information about the Tweak window.

7. Check the animation by dragging the frame indicator on the frame bar. You can adjust any of the keyframes by clicking the keyframe in the Score and then moving the point on the Stage.

8. When you are satisfied with the position of the keyframes, save the movie as LANDER7.DIR.

Figure 3-18: As with most other graphics applications, holding down the Shift key while dragging a sprite constrains the movement horizontally, vertically, or at 45-degree angles.

Tip   At this point, you might want to see what the movie looks like when it's actually playing. Setting the playback to loop is the best way to view movies in their early stages of development. Open the Control Panel by choosing Window ⇨ Control Panel or by pressing Command+2 (Ctrl+2). Click the Loop Playback button in the upper-right corner of the Control Panel if it's not already activated—the icon in the button should look like a loop. Click the Play button in the Control Panel or on the toolbar to see the animation in action.

The placement of keyframes affects the speed of an animation sequence. If they are placed at regular intervals spanning the length of the sprite in the Score window, the speed remains consistent. You can use this placement of keyframes to your advantage to create motion that seems to slow in some places and speed up in others. For example, if you add a keyframe five frames from the start of a sprite and then put the sprite into a substantially different position on the Stage, the sprite appears to jump rapidly to the new location. Conversely, if you increase the number of frames between the keyframes but decrease the distance the object moves on Stage in that span, the object appears to move slowly to that location.

At this point, the animation sequences look pretty realistic — the placement of the keyframes gives the illusion that the ship is constantly slowing down as it gets ready to land. However, the movement is still a little jerky. In the next exercise, you use the Sprite Tweening dialog box to adjust the way a sprite moves through the keyframes and to adjust the speed of the sprite as it moves along the path.

Creating smoother animations

With the Sprite Tweening dialog box, you control the speed with which the sprite travels along the animation path, how smoothly the sprite passes through the keyframes, and the way the sprites accelerate at the beginning and end of the animation path. You can also turn on and off the properties of the sprite to be tweened.
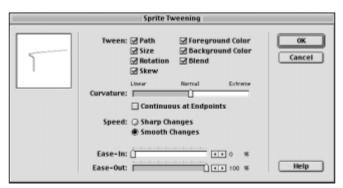
The default setting applies the changes to all of the sprite's properties.

Changing the Tweening Settings

1. Open the LANDER7.DIR movie from the preceding exercise, and then open the Score window by choosing Window ⇨ Score or by pressing Command+4 (Ctrl+4).

2. Select the sprite in channel 2 by clicking in the middle of the sprite. Then choose Modify ⇨ Sprite ⇨ Tweening or press Command+Shift+B (Ctrl+Shift+B) to bring up the Sprite Tweening dialog box (see Figure 3-19). A thumbnail of the animation path appears in the upper-left of the dialog box.

Caution

Clicking one of the keyframes to select an entire sprite causes only the keyframe to be selected, not the entire sprite.

Figure 3-19: Refine the motion of an animation path with the Sprite Tweening dialog box.

3. Click the Smooth Changes radio button to smooth the motion.

4. Move the Ease-Out slider to 100 percent. This will enable the animation to slow as the ship appears to grow larger in the frame. Adjust the Curvature slider to round out the direction changes of the path. The path will appear more rounded as you drag the slider toward the Extreme option. The thumbnail in the upper-left corner displays the changes as you make them.

5. Click OK to complete the operation and return to Director's main window.

At this point, you want to extend the rocket sprite so that it remains on the Stage in the landed position until the end of the movie (in this case, that's frame 75).

Tip Because the sprite is no longer moving after frame 60, the last 15 frames of the ease-out setting would have had no effect on the sprite if you had extended it earlier, and the animation wouldn't have been as smooth.

6. Click the keyframe in frame 60 of the rocket sprite, and Option+drag (Alt+drag) the keyframe to frame 75.

7. Save your movie as LANDER8.DIR.

8. Rewind your movie by clicking the Rewind button in the toolbar and click the Play button on the toolbar to play the animation sequence.

The Ease-In and Ease-Out values tell Director what percentage of the tween frames should be devoted to increasing or decreasing the speed of the path, respectively. The higher the ease rate, the more gradual the acceleration or deceleration. By increasing the Ease-Out rate to 100 percent, you specified the maximum deceleration rate for the path, slowing the rocket's landing to a float. Increasing the Curvature and specifying Smooth Changes modifies the path slightly to smooth the animation sequence. If the animation path is a loop, clicking the Continuous at Endpoints check box smoothes the way the sprite passes through the first and last keyframes.

The rocket now moves like you would expect it to in real life — steadily decreasing speed and making smooth adjustments to its path as it gets ready to land, then slowly and carefully touching down on the surface of the planet. Congratulations! Using Director's powerful animation tools, you have successfully landed on the surface of Mars.

Using the Paint Window for Animation

Part of any convincing animation involves the user's perception and expectation of reality. For example, in the previous exercises, you created an animation sequence in which the rocket flew into the scene and then gently landed on the surface of the planet. Although this is not a bad animation sequence, it lacks elements of reality that would make it more convincing. You would expect to see a flame coming out the rocket engine, and smoke surrounding and slowly disappearing as the ship touches down for landing.

As you have seen in the previous sections of this chapter, adding elements to a movie to make an animation sequence appear more realistic involves creating a collection of cast members that suggest motion. In the cartooning industry, the creation of these cast members is called cel animation. Each subsequent image in the collection is slightly different from the preceding image. As the sequence plays, an image

replaces the preceding image at a speed that tricks the mind's eye into mentally drawing the intermediate steps, which creates the illusion of smooth movement. The trick to creating a successful sequence is twofold. First, the sequence must have enough images to produce the desired effect. Second, the images depend upon precise alignment, known as *registration,* to complete the effect.

In the rocket's case, having exhaust flames shoot out of the engine would add another layer of realism to the animation sequence. It's a relatively simple task to create the flame images and ensure their correct registration, but you will run into a problem. The number of frames required to make the flames move realistically exceeds the number of frames in your movie. The result is that the flames animate too slowly to be convincing.

If you extend the frames of your movie to allow for the animation of the flames, you also need to increase the number of frames for the other sprites. This only serves to make the motion of the entire animation sequence slow down.

Fortunately, Director provides a solution for making the flames animate more authentically: create the animation sequence of the flames separately from the rest of the movie and then convert them into a film loop. By placing the film loop of the flames in the Score window, the animation sequence is more believable.
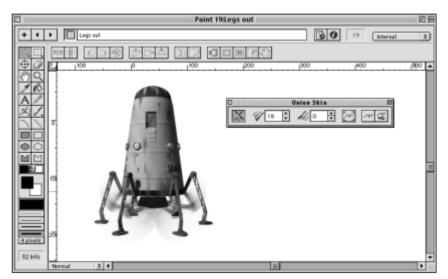
Creating a film loop solves the first problem. As far as the second problem, registration, is concerned, Director 8 can also help with that. Using the Paint window in conjunction with the Onion skinning feature makes aligning cast members much easier.

Onion skinning and registration

Traditional animators have long relied on onion skinning to create animations. *Onion skinning* derives its name from the strong translucent paper traditional animators use to create animation cels. Onion skin enables the animator to view images below the image in progress. This enables the animator to reproduce the image faithfully while adding the slight variation necessary to create a smooth animation. A successful animation requires many sequential frames, each slightly different from its predecessor, to create realistic movement.

Using Director's Onion Skin window

Like traditional animation, the capability to create keyframes and tween frames is at the heart of animation in Director. After the Onion Skin window first made its appearance in Director 5, the process of creating realistic movement became immensely easier. When you have a cast member open in the Paint window, the Onion Skin window enables you to view up to 99 cast members, both preceding and following the active cast member. The active cast member appears normally in the Paint window. Each successive cast member appears gradually fainter as its order in the Cast window becomes more distant from the active image (see Figure 3-20).

Figure 3-20: Cast members appear fainter as their distance from the active image in the Paint window increases, as determined by their order in the Cast window.

The Onion Skin window helps you create new cast members that differ slightly from their predecessors, and to align graphic elements by setting their registration points. Open the Onion Skin window now by choosing View ⇨ Onion Skin. Note that the buttons in the window are grayed out. The Onion Skin window becomes active only when the Paint window is open and onion skinning is enabled (see Figure 3-21).

Figure 3-21: After the Paint window is open and onion skinning is enabled, the buttons in the Onion Skin window become active.

When the Onion Skin window is active, you can specify the number of preceding and subsequent cast members that you want to view. You can also specify a background image upon which to base subsequent cast members and to track the background. Table 3-1 describes the function of each of the buttons in the Onion Skin window.

There's more to this small window than meets the eye. It provides the tools to make sequential animation much easier by enabling you to control the display in the Paint window. You can readjust the settings in the Onion Skin window as you work. The changes you make are reflected immediately in the Paint window.

Table 3-1
Onion-Skinning Functions

Button	Action	Description
	Toggle Onion Skinning	Turns onion skinning on and off
	Preceding Cast Members	Specifies how many cast members are visible before the active image
	Following Cast Members	Specifies how many cast members are visible after the active image
	Set Background	Sets the current image in the Paint window as the background image
	Show Background	Hides or displays the active background image you specified
	Track Background	Registers, tracks, and maintains the relative position in the Cast window of the active foreground image and background image, updating the background image as needed

A word about background tracking

Background tracking is one of the least understood features of the Onion Skin window. Although it's a bit cumbersome, Background Tracking can be useful if you need to create a series of cast members that will need to precisely align with another series of cast members. Suppose that you want to create a series of sparks that travel down the fuse of a stick of dynamite. Background tracking enables you to create each flame cast member on top of a dimmed version of the individual dynamite cast member with which the flame needs to align.

Using Background Tracking

1. Make sure that the cast members that you are using for the background elements are arranged in the correct order in the Cast window.

2. Open the Paint window and choose View ➪ Onion Skin.

3. Make sure that the Toggle Onion Skinning button is active and that all of the values are set to 0.

4. Open the cast member that you want to use as the first background image, and click the Set Background button (see Table 3-1).

5. Select the first position in the Cast window where you want the first fore-
   ground element to appear and then click the New Cast member button in
   the Paint window.

6. Click the Track Background button (see Table 3-1), and the first background
   cast member is displayed as a dimmed element in the window.

7. Paint the new cast member, using the background image for reference.

8. When you have finished painting the cast member, click the New Cast member
   button in the Paint window.

   Director then displays the next background cast member in the series,
   enabling you to paint the next foreground member. Repeat the previous
   step until you have created all of the foreground cast members that you
   need for the sequence.

Tracking the background image is useful when you need to create keyframe cast
members, because you can set the Onion Skin window to display only the keyframes.
By setting the background image as one keyframe and then turning on tracking while
displaying another keyframe, you can skip displaying the images in between the two
images by specifying 0 cast members in both the Preceding and Following boxes.
Note that for this method to work, you must enable Show Background.
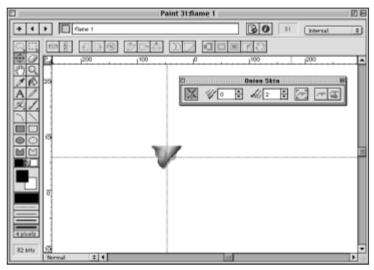
In the following exercise, you work with three bitmaps to create the flames coming
out the rocket engine. Using onion skinning, you can see all three images at the
same time, making it easier to reset the registration point so that the top of each
image lines up.

Tip   By default, Director sets the registration at the center point of a bitmap. If you
       change the registration point and later want to reset it to the center, open the
       bitmap in the Paint window and double-click the Registration tool.

Using Registration to Align Cast Members

1. With the LANDER8.DIR movie open in Director, double-click the cast member
   called flame1 to open it in the Paint window.

2. From the Director menu, choose View ⇨ Onion Skin to display the Onion Skin
   window.

3. Click the Toggle Onion Skinning button to turn on the onion-skinning feature.
   This button is an on/off toggle. Set the Preceding Cast Members values to 2,
   and the Following Cast Members value to 2.

4. Click the Registration tool in the Paint window toolbox. A set of cross-
   hairs appears, showing the registration point of the cast member (see
   Figure 3-22). Click the top-middle part of the cast member to move the
   registration point. Click the Next Cast Member button in the upper-right
   part of the Paint window to see the next cast member.

Figure 3-22: The crosshairs represent the registration point of the cast member.

5. Repeat Step 4 with the cast members flame2 and flame3 so that the top of the bitmap aligns with the top of the previous cast member.

6. When you are finished, save your movie as LANDER9.DIR.

By adjusting the number of preceding and subsequent cast members in the Onion Skin window, you can use the view in the Paint window to adjust the registration of successive cast members.

Tip
While onion skinning is enabled, it doesn't turn off if you close the Onion Skin window. When onion skinning is turned on with the on/off toggle in the Onion Skin window, it remains available while the Paint window is active. Toggling the Onion Skin window off is useful if you have a lot of windows open and need more screen real estate. To disable onion skinning, you need to reopen the Onion Skin window and click the Toggle Onion Skinning button.

After you've created and registered the cast members for the animation sequence, you're ready to place them in your movie. To give the illusion of the flames flickering, you need to create a film loop that constantly cycles between the three "flame" cast members.

New Feature
If you switch the Cast window to the List View mode by clicking on the List View mode toggle button, you will see that the dates under the Modified heading reflect the date that you changed the modified the cast members.

Working with film loops

With film loops, you can replace several cast members with a single cast member. In addition to creating smoother animations that span fewer frames, film loops help you keep the Score tidy and compact, thereby reducing the file size of your movie.

Creating a film loop isn't difficult, but it is somewhat awkward. Film loops are generated from the Score window, so you need to temporarily move the cast members to an empty sprite channel in the Score window. The move is temporary because, after you create the film loop, you no longer need the cast members in the Score window and you need to remove them.

Creating a Film Loop

1. Open the LANDER9.DIR movie in Director, if it's not already open.

2. In the Cast window, select flame1. Then press the Shift key and select the last member in the sequence, flame3.

3. In the Score window, select the first frame of an empty sprite channel.

4. Choose Modify ➪ Cast to Time. Director places all three cast members into the Score.

5. Drag the Score window so that the sprite is visible on the Stage. Note that there is a white rectangle surrounding the sprite (see Figure 3-23). Because the cast members that compose this sprite don't have an alpha channel, the bounding box (rectangle) of the cast member is visible.

Caution   Film loops cannot use ink effects. If you want to use ink effects in a film loop, make sure that you apply them to the sprites *before* you create the loop.

Figure 3-23: Cast members that don't have an alpha channel have a bounding rectangle around them when you place them on the Stage as sprites.

6. Select the sprite in the Score and apply the Matte ink effect from the Ink Effect pop-up menu located near the top of the Score window, as shown in Figure 3-24.

Cross-Reference   Ink effects are covered in more detail in the "Drawing Sprites with Blends and Inks" section of this chapter.

Figure 3-24: The Matte ink effect eliminates the bounding rectangle of the background color around the sprite.

7. With the sprite still selected, choose Insert ➪ Film Loop. The Film Loop dialog box appears, prompting you to name the film loop. Enter the name **Flames loop** and then click OK to complete the operation. Director creates a film loop of the sequence and places it into the Cast window.

8. Delete the sprite from channel 3 of the Score window by selecting the sprite and pressing the Delete key on your keyboard.

9. Save the movie as LANDER10.DIR.

Film loops save space in the Score and smooth the animation of your movie. They also offer another advantage: grouping or bundling elements together. Film loops are invaluable for animation sequences, as well as an important tool to group static images that appear in sequential channels in the Score. Like other sprites, you can extend a film loop to the length you need for your movie.

Tip   If you need to modify the film loop but have deleted the sprites from the Score, it's possible to recover the original Score data. Select the film loop in the Cast window, and then copy it to the Clipboard. In the Score window, select a frame in an empty sprite channel and paste the film loop into it. The original Score data reappears and then can be modified.

Now that you have the flames ready to add to the movie, it's time to create the smoke that appears when the ship is landing. Because smoke is very fluid and never remains in the same shape for very long, it won't look very convincing unless its shape is constantly changing. You *could* achieve this effect by drawing several different cast members, but Director speeds up this process by enabling you to create several different distorted cast members from a single cast member using the Auto Distort operation.

Cast window housekeeping

A film loop doesn't actually contain the cast members it represents. It contains *pointers*; these pointers call the cast members in sequence and then display them on the Stage. In other words, you can't delete the associated cast members. If you delete them, your film loop won't work, and the movie fails.

As your movie grows, these cast members accumulate and clutter up the Cast window, making it more difficult to find specific cast members. So, what do you do with all those extra cast members floating about the Cast window? Although you can't delete them, you can move them to another cast. To do this, you simply create a new cast by choosing File ➪ New ➪ Cast, and give the cast a name that identifies its purpose. To ensure that this associated cast doesn't accidentally become separated from your movie, it's a good idea to specify that the cast is internal rather than a linked external cast. After creating the new Cast window, select the cast members to move from the original cast. Drag them to an open cast member slot in the new cast, and release the mouse button. The moved cast members are out of the way but are still available for use in your movie. After moving the cast members, you can close the new Cast window. It's still attached to your movie as an internal cast, and Director updates the pointers for the film loops when you next save your movie.
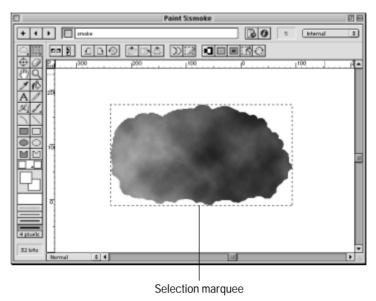
Using Auto Distort to generate cast members

If you drop a tennis ball to the ground, it stays perfectly round until it hits the ground. At that point, however, it doesn't simply change direction. The energy of the collision distorts the ball, making the ball flatter along its direction of motion and spreading it out along the other two axes. As the ball rebounds, it regains its shape.

Animators have known this principle for years as *squash and stretch.* A character preparing for a leap doesn't just jump up; the body has to crouch to tighten the muscles of the legs, and then releases that tension as the character stretches up into the sky. Director can create those intermediate steps by using Auto Distort. Any animation that requires a change in the dimensions of a graphic over several cast members is a prime candidate for the Auto Distort technique.

Creating an Animation Sequence Using Auto Distort

1. Make sure the LANDER10.DIR movie is open in Director.

2. Open the Cast window either by choosing Window ➪ Cast or by pressing Command+3 (Ctrl+3).

3. Double-click the cast member named smoke to open it in the Paint window.

4. Click the Marquee selection tool, and hold down the mouse button briefly to display the tool's pop-up menu. Select No Shrink from the menu.

5. In the Paint window, drag to create a rectangular bounding box that surrounds the smoke. You can also double-click the Marquee tool to select the graphic. A selection marquee appears around the graphic (see Figure 3-25).

Selection marquee

Figure 3-25: A selection marquee appears around the graphic,
indicating that it has been selected.

6. **Click the Warp transform button located above the canvas. Then drag each
of the four handles at the corners of the selection marquee and distort the
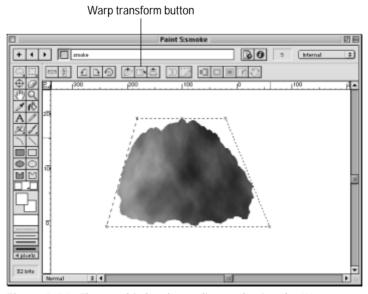graphic so that it looks similar to the one shown in Figure 3-26.**

Warp transform button

Figure 3-26: The graphic has been distorted using the Warp operation.

7. With the smoke still selected, choose Xtras ➪ Auto Distort to display the Auto Distort dialog box (see Figure 3-27).

Figure 3-27: The Auto Distort dialog box enables you to specify the number of cast members to create.

Caution

When you use the Auto Distort Xtra to create additional cast members, each new cast member is placed in the next available cast member slot. This could cause the new cast members to be scattered throughout the Cast window. You can create several empty cast member slots next to the one that you are about to distort by Shift+clicking the number of empty cast member slots that you need, and then dragging them next to the cast member that you will be distorting. This operation creates several empty cast member slots next to the one that you're going to distort.

8. Enter **5** as the number of new cast members that you want to generate, and then click the Begin button. Director automatically generates the cast members you requested.

9. Close the Paint window, and note that there are now six cast members, all named smoke. This can be confusing, causing you to make the wrong choices when referring to a specific cast member in a script. To avoid this confusion, it's a good idea to rename the new cast members. To do this, click a cast member to display the name at the top of the Cast window, and then rename the new cast members smoke1, smoke2, and so on.

Note

If you are in List View mode in the Cast window, rename the members by clicking on the name and retyping the new name.

10. Save the movie as LANDER11.DIR.

Caution

When a script specifies a cast member by name in the Cast window, Director searches all Cast windows associated with the movie for the correct cast member. If Director finds multiple cast members with the same name, the program uses the first instance of the cast member. But the first instance might not be the one you intended to use, in which case, the results might be less than desirable. Giving each cast member a unique name prevents this problem from occurring.

Back onto the Stage

Now it's time to add the flames and the smoke that you created in the previous exercises to the movie to add yet another layer of realism to the animation sequence. Placing the flames loop in the movie and then having to align it by

hand with the rocket nozzle while it's moving can be a very tedious process, and more than likely never looks quite right.

Again, Director provides an easier way to accomplish this task. In the next exercises, you create a duplicate version of a portion of the animation path that was created for the rocket animation sequence. Then you attach the flames loop to the duplicate path so that it travels along the same path as the rocket does. You will also be introduced to Director's Markers channel. *Markers* are labels that you can apply to specific frames in your movies, making it easier to identify points in the Score where changes occur.

The first step in the process of adding the flames loop to the movie is to split the rocket sprite, and then create a copy of a section of the sprite in the Score.

Splitting and joining sprites

Until now, all the sprites placed on the Stage have been treated as a single unit. A situation often arises in which you need to break a sprite into several separate units. For example, you might want to have a sprite momentarily pass behind another sprite. Or, you might want to apply a new sprite (the flames film loop, in this case) to part of an existing animation path created for another sprite (the rocket).
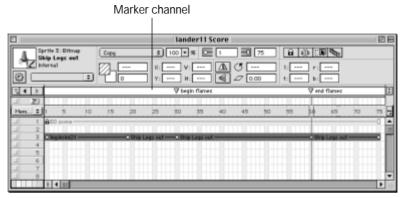
Splitting, Joining, and Moving Sprites

1. Open LANDER11.DIR movie in Director, if it's not already open.

2. Make the Score window active by clicking it if it's visible, or open the Score window by pressing Command+4 (Crtl+4).

3. Select the sprite in channel 2, and then drag the sprite to channel 3. This creates an open sprite channel behind the rocket sprite, where you eventually will put the flames.

4. Click in frame 30 of the Marker channel, as shown in Figure 3-28, and type **begin flames**. This adds a marker to the movie that indicates where the flames first appear in the movie. Click in frame 60 of the Marker channel and type **end flames** next to the marker. This makes it easier to identify the frame where the sprite is will be split.

5. Click frame 30 of sprite 3, and then choose Modify ➪ Split Sprite or press Command+Shift+J (Ctrl+Shift+J) to split the sprite.

> **Tip** You can select a single frame in a sprite that doesn't contain a keyframe by Option+clicking (Alt+clicking) the frame.

6. Click frame 60 of sprite 3 and press Command+Shift+J (Ctrl+Shift+J) to split the sprite. There are now three sprites in channel 2. The first sprite extends from frame 1 to frame 29, the second sprite extends from frame 30 to frame 59, and the third sprite extends from frame 60 to frame 75.
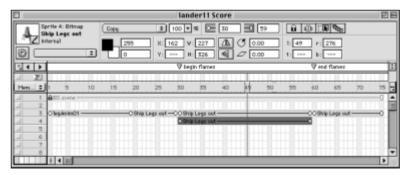
Marker channel

Figure 3-28: Markers are a good way to indicate where a major event is occurring in a movie.

7. Click the second sprite in channel 3 (between the markers) to select the sprite. Hold down the Option (Alt) key, and drag the sprite to channel 4. This action creates a copy of the sprite that was selected in channel 3 and places it in channel 4 (see Figure 3-29).

Note

You also can copy the selected sprite to the Clipboard, click the frame where you want the copy to be located, and paste the sprite.

You might be wondering why you didn't put the new sprite in channel 2. It will be easier to position the flames in the next exercise if they are on top of the rocket. Then you can move them behind the rocket sprite after they are positioned correctly.

Figure 3-29: Option (Alt)+dragging a sprite creates a copy of the selected sprite in a new channel.

8. Click frame 1 of the rocket sprite in channel 3, and then hold the Shift key down and click in frame 75 of the third rocket sprite to select all three of the sprites in channel 3.

9. Choose Modify ➪ Join Sprites, or press Command+J (Ctrl+J). This joins the three rocket sprites so that they act as a single unit again.

10. Save the movie as LANDER12.DIR.

> **Tip** Markers are a great way to organize the Score. Use markers to indicate the beginning of a new sprite, specific keyframes of a sprite, as well as scene and action changes. This makes locating the frames where specific events occur much easier. Markers are also indispensable for creating movies that play back nonlinearly. Chapter 7 covers using markers for navigating a movie.

Now that you've created the section of the rocket sprite animation to which to apply the flames, you need to swap out the cast member that the sprite is referring to (the rocket) with the cast member that contains the flame film loop. You use the Exchange Cast Member command to accomplish this task.

Exchanging cast members

When you exchange one cast member for another, only the cast member to which that sprite refers changes. All the other properties of the sprite — the animation path, ink effect, size, location, foreground and background color, rotation and skew angles, and blend setting — remain the same as what is currently applied to the sprite.

The Exchange Cast member command works for any cast member except scripts. Note, however, that you probably won't get the results you intend if you exchange an editable text cast member with a sprite that has a wildly rotating animation path applied to it (unless you happen to be building a multimedia extravaganza for a rave).

Using the Exchange Cast Member Command

1. Open the LANDER12.DIR movie in Director if it's not already open.

2. Open the Score window by choosing Window ➪ Score, or press Command+4 (Ctrl+4). Then click the sprite in channel 4 to make it active.

3. Open the Cast window by choosing Window ➪ Cast or press Command+3 (Ctrl+3) and select the cast member called flames film loop. Choose Edit ➪ Exchange Cast Member, or press Command+E (Ctrl+E) to exchange the cast member in sprite 4 for the flames film loop cast member. The sprite in channel 4 now refers to the flames film loop cast member instead of the rocket cast member (see Figure 3-30).

Figure 3-30: Switch one cast member of a sprite for another
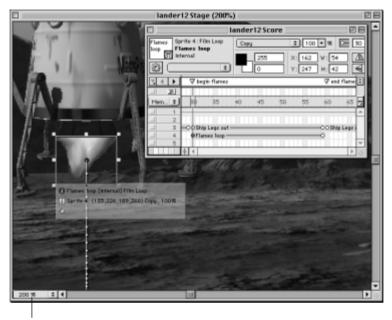by using the Exchange Cast Member command.

If you play your movie at this point, you will notice that the flames sprite is
positioned roughly at the center of the rocket. For the effect of the flames com-
ing out of the bottom of the engine nozzle, you need to adjust the position of
the flames sprite so that it lines up with the bottom of the engine nozzle. If the
flames sprite is referencing a single bitmap cast member, the easiest way to
adjust it is to move the registration point of the cast member so that it is offset
the correct amount to appear at the bottom of the engine nozzle. Unfortunately,
you cannot adjust the registration point of a film loop cast member unless you
use Lingo (you learn to do that in Chapter 15). You can, however, achieve the
same effect—although not as elegantly as doing it with Lingo—by adjusting
the beginning and ending keyframes of the flames sprite. The next steps in this
exercise show you how.

4. Click the first keyframe of the flames loop sprite, and then make the Stage
active by choosing Window ⇨ Stage or by pressing Command+1 (Ctrl+1). This
action makes it easier to adjust the position of the sprite.

New Feature
You might want to take advantage of Director's capability to zoom in on the Stage
to make it easier to position the flames sprite. Click the Zoom Factor pop-up menu
located in the lower left corner of the Stage window, choose 200%, and then slide
the bottom and side scroll bars to adjust the view so that the flames are visible.

5. Drag the first keyframe of the sprite so that the top of the flame lines up with
the bottom of the engine nozzle, as shown in Figure 3-31.

6. Click the last keyframe of the sprite and position the flame so that it's near the
center of the rocket, as shown in Figure 3-32. This action gives the appearance
of the flame diminishing as the rocket lands.

Zoom menu pop-up

Figure 3-31: Positioning flame sprite at the bottom of the rocket is easier if you zoom in on the Stage.
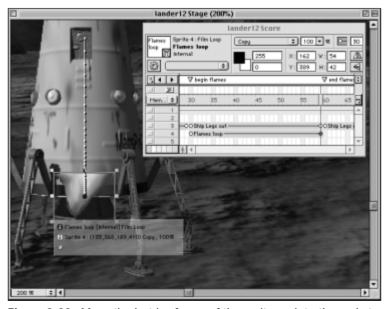

Figure 3-32: Move the last keyframe of the sprite up into the rocket.

7. Drag the playback head across the range of the flames loop sprite. If the flames appear to separate from the rocket, you may have to readjust the keyframes. This separation happens because the registration point of the film loop is located in the center of the sprite, causing it to travel differently on the path than the rocket cast member does.

8. When you have the flames working properly, select the flames sprite and drag it into channel 2 of the Score to put it behind the rocket.

9. Save the movie as LANDER13.DIR, and then rewind the movie and play it. Note that the movie plays back at 100 percent size instead of the enlarged view you had set it to. The Zoom Stage feature is in effect only while you are creating the movie, not while it is playing.

> **Cross-Reference**
>
> Exchanging cast members can also be performed with Lingo. A common use for exchanging cast members with Lingo is to create multiple state buttons that highlight when you roll over them, and then appear to be pressed when they are clicked. You can learn more about using Lingo to exchange cast members for creating multistate buttons in Chapters 7 and 14.

In the next exercise, you add the six smoke cast members that you created earlier. When you place them on the Stage using the Cast to Time command, the sprites are placed on the Stage in the reverse order of what you need them to be. Ideally, you want the smallest smoke cast member to appear first, and then tween to the largest smoke cast member. You could place each cast member on the Stage one at a time, but Director provides the Reverse Sequence command, a quicker way to reverse the order of a sprite.

Using reverse sequence

Reversing the sequence of a sprite can be very useful when the cast members that the sprite refers to were created in the order opposite of the way that you want them to appear in the movie. Reversing the sequence of a sprite is also an easy way to have the rocket take off again. It is a simple matter of copying the rocket sprite and placing it in the Score at the end of the first LANDER sequence, and then applying the Reverse Sequence command. Presto! The rocket takes off and flies away.

Sometimes the exact placement of the last keyframe of a sprite is important. For example, if the rocket needs to land in an exact spot on the Stage, it might be easier to tween the sprite from that point first, and then use the Reverse Sequence command to have it play correctly in the movie.

Using the Reverse Sequence Command

1. Make sure the LANDER13.DIR movie that you saved in the preceding exercise is open in Director.

2. Press Command+4 (Ctrl+4) to open the Score window if it's not already open, and then click in frame 45 of sprite channel 4.

3. In the Cast window, click the first smoke cast member, and then hold down the Shift key and click the last smoke cast member. Choose Modify ➪ Cast to Time. This command places the smoke cast members in the Score.

4. With the sprite still selected, choose the Matte ink effect from the pop-up menu in the Score window. Extend the length of the sprite by dragging the tail of the sprite to frame 60.

5. Select the smoke sprite by clicking the middle of the sprite, and then choose Modify ➪ Reverse Sequence. This command reverses the order in which the cast members in the sprite are displayed on the Stage.

6. With the sprite still selected, move the playback head in the Score to the last frame (60) of the sprite, and then drag the Score window so that the smoke sprite is visible on the Stage.

7. Position the smoke sprite so that it covers the bottom two-thirds of the rocket (see Figure 3-33).

Tip

You can reduce the size of the Score window by dragging the window from the bottom-left corner. Adjust the view inside the Score window by adjusting the horizontal and vertical scroll bars. You also might want to adjust the Stage window by adjusting its scroll bars.
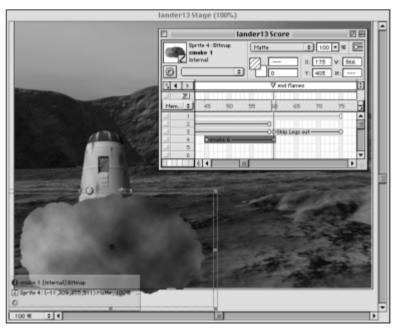

Figure 3-33: Position the smoke sprite over the bottom of the rocket.

8. Select the smoke sprite by clicking the middle of the sprite, and then choose Modify ➪ Reverse Sequence.

9. Rewind the movie and play it back. The smoke now grows larger as the rocket approaches it.

10. Save the movie as LANDER14.DIR.

Smoke is not really a solid mass and therefore would slowly disappear after the rocket has touched down. You can accomplish this effect by tweening the blend (transparency) settings of the sprite to create the illusion that the smoke is transparent and slowly fades away.

Drawing Sprites with Blends and Inks

One attribute added to Director in version 4.0 was the Blend property for sprites. This capability blends the foreground sprite and the background image together, and can be set to any value between 0 (where only the background shows) to 100 (where the sprite is completely opaque).

Creating fade effects

You can set a sprite's transparency to any value from 0 (the sprite is completely transparent) to 100 (the sprite is opaque) by using the blend settings in the Score window or the Property Inspector. Any value between 0 and 100 gives the sprite some level of transparency. The blend setting of a sprite can be tweened the same as any other property of the sprite, which serves as the basis for any number of special effects.
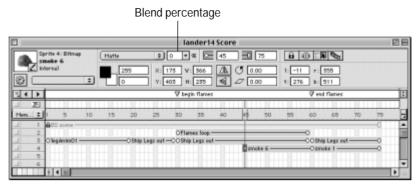
Tweening the Blend of a Sprite

1. Open the LANDER14.DIR file in Director, and then open the Score window.

2. Click the keyframe in frame 60 of the smoke sprite in channel 4, and then hold down the Option (Alt) key and drag the keyframe to frame 75. This creates a copy of the keyframe that's in frame 60 and places it in frame 75.

3. Click the first keyframe in frame 45 of the smoke sprite in channel 4. Set the blend of the smoke sprite be completely transparent by typing **0** in the blend percentage field located near the top of the Score window (see Figure 3-34).

Note   If the Sprite toolbar is not visible in the Score window, activate it by Option+clicking (Alt+clicking) anywhere in the Score Window (except the sprite channel cells), and then choosing the Sprite Toolbar option.

Note   You can also set the blend setting of a sprite while it is selected on the Stage by using the Property Inspector. Open the Property Inspector by choosing Window ⇨ Inspectors ⇨ Property Inspector, or by pressing Command+Option+S (Crtl+Alt+S), and then click on the Sprite tab if it is not the tab currently displayed.

Blend percentage

Figure 3-34: Setting the sprite's blend percentage to 0 makes the sprite completely transparent.

4. Click the second keyframe in frame 60 of the smoke sprite in channel 4. Set the blend of the smoke sprite to 80 by selecting 80 from the blend percentage pop-up menu in the Score window.

5. Click the last keyframe, located in frame 75 of the smoke sprite, and type **0** into the blend percentage field. The smoke now fades in and then slowly fades out after the rocket has landed, as shown in Figure 3-35.

Figure 3-35: Tweening the blend of a sprite creates the illusion of a sprite fading in and out.

6. Save the movie as LANDER15.DIR, rewind the movie, and play it to see how the smoke fades in and out of the scene.

Caution   Rendering faded blends to screen is resource intensive because each pixel must be calculated individually. On machines with limited resources, this sort of expenditure can be problematic. You can reduce the impact on resources by limiting the frame span of the effect.

You've almost finished creating the landing sequence. If you looked at the movie LANDER16.DIR at the beginning of this chapter, you saw a moon sitting on the horizon that appeared to be faded into the atmosphere. The moon effect was created by using the Mask ink effect that was enhanced in Director 7 to enable you to use a grayscale or color bitmap cast member as a mask. The Mask ink effect is but one of many different ink effects that you can use in your movies to add dramatic special effects.

Sprite ink effects

Throughout the exercises in this chapter, you've been directed to apply an ink to selected sprites in the Score window, but very little has been said about the inks themselves. Similar to cast member inks that you apply in the Paint window, sprite inks tell Director how you want a sprite displayed in relationship to other sprites beneath it.

When you first place a sprite in the Score window, for example, by default Director displays the sprite using a Copy ink. Copy ink is totally opaque and is suited to rectangular shapes. If the shape is irregular and doesn't have an alpha channel, a white rectangle appears in the background behind colored portions of the sprite. Earlier in this chapter, when you moved the flames to the Score, you selected a Matte ink to turn the background behind the colored portion of the sprite transparent. Director provides a variety of other inks that are useful for creating various effects in your movies. Each of the inks has attributes that make it suitable for a specific purpose (see Table 3-2).

When working with inks, it's important to remember that some inks are more costly than others in terms of resource consumption. The amount of memory required to render an ink on the screen depends upon the effect and how many pixels must be individually computed for the rendering. Consequently, some inks render faster than others. On a high-end computer with substantial resources, the difference between one ink and another ink may not be noticeable, but on a computer with limited resources, the difference may be prohibitive. It's critical to consider the resource impact of any inks you apply in your movies.

Note   Like most operations in Director, it's possible to use Lingo to change the ink of a sprite. Lingo uses the number listed in Table 3-2 to refer to the ink.

<div align="center">

Table 3-2
Sprite Inks and Their Effects

</div>

Ink Name	Description	Ink Number
Copy	Copies the contents of the cast member to the Stage, including the bounding rectangle. This is the fastest ink to render, but it requires that you match your elements with the background *exactly.*	0
Matte	For an irregularly shaped cast member, this ink finds the boundary of the shape and then masks off everything outside that boundary (the area of the image where non-white pixels begin). Thus, anything inside the boundary is drawn, and anything outside of that boundary is transparent and shows whatever is behind the sprite. This is the only ink that can alter the way Director handles mouse clicks on a sprite.	8
Background Transparent	If a pixel in the cast member has the background color (the bottom swatch in the Tool Palette), then it becomes transparent; any other color remains opaque. This is easily one of the most useful inks, especially for irregular shapes with "holes."	36
Transparent	White pixels become transparent, but black pixels remain black. Useful primarily with 1-bit graphics.	1
Reverse	White pixels become transparent, and black pixels show the complementary color of the background pixel beneath it. Useful primarily with 1-bit graphics.	2
Ghost	Any black pixel becomes white, and any white pixel becomes transparent. Useful primarily with 1-bit graphics.	3
Not Copy	Works like the Copy ink, except that each pixel is the complementary color of the original graphic (for example, white becomes black, red becomes cyan, and so forth).	4
Not Transparent	Every white pixel maps to black, and every black pixel becomes transparent. Useful primarily with 1-bit graphics.	5
Not Ghost	Takes the complement of the Ghost ink; white becomes black and black becomes transparent.	7
Not Reverse	Maps every white pixel to the complement of the background pixel, and every black pixel becomes transparent. Useful primarily with 1-bit graphics.	6

Continued

Ink Name	Description	Ink Number
	Table 3-2 *(continued)*	
Mask	Uses a separate cast member to define the parts of the sprite that are transparent. The cast member that defines the mask must be located in the Cast window immediately after the cast member to which the ink effect is being applied. The mask cast member can be a 1-bit black and white, grayscale, or 32-bit color bitmap.	9
Blend	Beginning in Director 7, the Blend ink became identical to the Matte ink. It is outdated; although it still works, there is no longer any need to use it.	32
Darkest	Compares the RGB color values of foreground and background pixels, and uses the darkest pixel of the two colors.	39
Lightest	Compares the RGB color values of foreground and background pixels, and uses the lightest pixel of the two colors.	37
Add Pin	All colors are made up of red, green, and blue components (see Chapter 2). The Add Pin ink adds the color of each pixel in the graphic to the color of each pixel in the background; if the value exceeds 100 percent for each component, then the color is leveled off at 100 percent. This lightens a graphic.	33
Add	Unlike Add Pin, the Add ink takes the sum of the foreground and background colors so that if any component exceeds 100 percent, the darkest color is substituted.	34
Subtract	Subtracts the foreground color from the background color. Unlike Subtract Pin, Subtract doesn't bottom out at 0, but rather cycles back up from the lightest values.	38
Subtract Pin	Subtract Pin subtracts the foreground color from the background color, leveling out at 0 if the result is less than that. This is useful for darkening a graphic.	35
Darken	Darken uses the background color of a sprite as a color filter that tints the sprite. The foreground and background colors need to be set to colors other than the default for the ink to have any effect on the sprite.	40
Lighten	Lighten makes the sprite appear lighter as the background color gets darker. Darker background colors lighten the tint of the sprite, and lighter background colors darken the tint. As with the Darken ink, the foreground and background colors need to be set to colors other than the default for the ink to have any effect on the sprite.	41

The best way to learn how ink effects work is to experiment with them. It's very difficult to predict how most of the ink effects work until you try them out. Ink effects react differently depending on the color depth of the sprite, the foreground and background colors of the sprite, and the color of sprites and background elements that are behind the sprite to which you are applying the ink effect.

Tip   You can get an idea of how each ink effect will look by checking out the Ink Effect chart found in the color insert of this book.

The Mask ink effect is one of the more useful inks in Director. You can use it as an alpha channel to create antialiased edges for 8-bit cast members, thus eliminating the halo problems discussed in Chapter 2. If the cast member being used for the mask is a 32-bit color bitmap, the colors in the image tint the cast member to which the Mask ink effect is applied. Use a 1-bit cast member if antialiasing is not a concern but file size is.

Using the Mask Ink Effect

1. Open LANDER15.DIR in Director if you have not already done so. Press Command+4 (Ctrl+4) to open the Score window, and then click frame 1 in sprite channel 5.

2. Open the Cast window by pressing Command+3 (Ctrl+3), and then select the cast member named moon and place it on the right side of the Stage, near the top of the mountains, as shown in Figure 3-36.

Figure 3-36: Place the moon near the top of the mountains.

3. Click anywhere in the moon sprite to select it, and then apply the Mask ink effect from the Ink Effect pop-up menu or from the Sprite Inspector. You may want to adjust the position of the moon after applying the ink.

Caution

The Mask ink effect uses the cast member that is located directly after the cast member that the sprite that has the ink effect applied to it is referencing. Make sure that the cast member that serves as a mask for the Mask ink effect is actually in the cast member slot directly after the cast member that will use the mask.

4. In the Score window, select the tail of the moon sprite in frame 28 and drag it to frame 75 to tween the sprite across the entire scene.

5. Because the moon sprite is currently in front of the rocket sprite, you need to move it behind the rocket sprite so that the rocket doesn't appear to fly behind the moon. Select the moon sprite, and then choose Modify ▷ Arrange ▷ Move Backward, or press Command+down arrow (Ctrl+down arrow). This command moves the sprite to channel 4 (see Figure 3-37).

6. Repeat Step 5 two more times to move the moon sprite to channel 2.

7. Save the movie as LANDER16.DIR, and then rewind and play the movie.

Figure 3-37: Move the sprite to a different sprite channel by using the Arrange command.

By now you should be familiar with the many ways that you can manipulate sprites with Director. If you are new to Director, all the steps needed to create this anima-tion sequence may seem a bit overwhelming at first, but with a little practice, you

should be able to put together a sequence like this in 15 to 20 minutes. That's less time than it took to render the 3D background graphic that was used for the exercises in this chapter.

One of the main reasons that Director is such a complex program is that there are usually several methods that you can use to accomplish the same task. Two other methods of adding multiple sprites to the Stage and animating them have to be covered in this chapter: step recording and real-time recording.

Using Step and Real-Time Recording

The Cast to Time command is not the only method in Director for animating sprites. You also can use Step Recording or Real-Time Recording to animate the rocket. Each of these animation methods has advantages and disadvantages when compared to Cast to Time.

✦ Step Recording is the most precise method of animating a sprite. The sprite is animated one frame at a time, and you have total control over the placement in each frame. It's a time-consuming procedure, however, if you have to reposition a sprite across a large span of frames.

✦ Real-Time Recording is useful for quickly creating a rough path for your sprite to follow, but it lacks the precision of either Cast to Time or Step Recording.

Animating with the Step Recording command

Step Recording offers precision that's unavailable with the Cast to Time command or the Real-Time Recording option (explained shortly). Step Recording is useful for creating an animation in which the sprite needs to follow an irregular or precise path. When you are using Step Recording to animate a sprite, you can stretch the sprite, exchange cast members, or change any of the sprite's properties, such as its ink property.
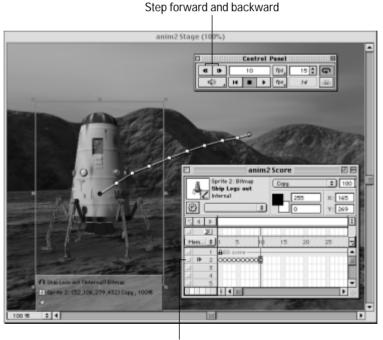
If you move the sprite by any method other than moving its position, the recording process stops. This means that you can't rewind or play your movie while in Step Recording mode, unless you have finished recording the sprite's motion. In addition, moving the playback ahead or moving back a frame also stops the recording process.

On the CD-ROM

In this exercise and the next, you can practice recording an animation by using the ANIM2.DIR movie. Just drag any of the images of the rocket to the Stage. The ANIM2.DIR movie is on the CD-ROM in the EXERCISE:CH03 (EXERCISE\CH03) folder.

Using Step Recording

1. Open the Control Panel by choosing Window ➪ Control Panel. The Control Panel enables you to step through your animation one frame at a time.

2. Hold down the Option (Alt) key and drag the cast member that you want to use into the Score. This action places a single frame of the sprite into the Score.

3. Position the sprite on the Stage at the location where you want the recording to begin.

4. Choose Control ➪ Step Recording. The recording indicator (a red, right-triangle icon) appears next to the channels in which you are recording sprite movement (see Figure 3-38).

Step forward and backward

Step recording indicator

Figure 3-38: Create a step animation sequence by stepping the movie forward and then moving the selected sprite.

5. Click the Step Forward button on the Control Panel to move to the next frame of the animation. If you reach the end of the movie, Director extends the sprites into a new frame so that you can continue to record the motion.

6. Drag the sprites to reposition them. You can also use the Tweak command: Either choose Modify ➪ Tweak or press Command+Shift+K (Ctrl+Shift+K) and enter a number in the X or Y offset. Alternatively, use the keyboard arrow keys to move the sprites as desired.

7. Repeat Steps 5 and 6 until you've completed recording the sequence. As you record the sequence, the motion paths of the sprites appear on the Stage, indicating the changes you've made (as shown earlier in Figure 3-38).

8. To stop recording the animation, choose Control ➪ Step Recording again. You can also stop the movie by rewinding it or by selecting a new frame in the Score.

If you need to stop recording, it's easy to resume. Select the last frames of the recorded sprites, and then choose Control ➪ Step Recording again. Pausing and restarting is useful for adding or removing sprites from the recording process, or for testing your animation.

Animating with the Real-Time Recording command

When you create a Real-Time Recording of an animation, Director records the motion of the sprite as it's being moved across the Stage. Real-Time Recording is thus as steady as your hand. For this method to work well, you need to be able to move the sprite smoothly at a consistent pace.

Because of these restrictions, Real-Time Recording is best suited to creating rough motion paths that you intend to refine later. When using Real-Time Recording, it's a good idea to slow the frame rate of your movie in the Control Panel to a rate slower than you anticipate using as the playback speed. This adjustment helps you better control the movement of the sprite on Stage. You can also specify the number of frames you want to record by selecting the frames in the Score window and then clicking the Selected Frames Only button in the Control Panel. If you don't specify Selected Frames Only, the recording continues as long as you hold down the mouse button.
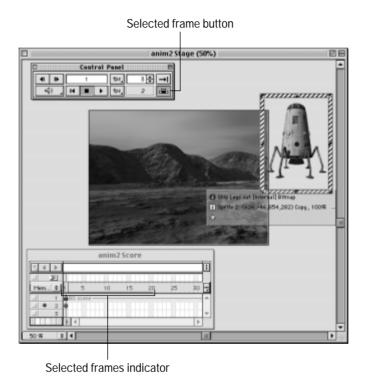
Tip   Obtaining smooth results in Real-Time Recording is easier if you use a digitizer tablet, such as those made by Wacom, instead of a mouse.

Using Real-time Recording

1. Open the Control Panel by choosing Window ➪ Control Panel. Reset the frame rate to a slow speed, such as 5 fps, or click the Selected Frames Only button if you want to record a limited number of frames.

2. Open the Cast window and select the cast member you want to animate. Option+drag the cast member to an empty channel in the Score window so that it occupies only one frame in the Score.

3. With the sprite selected in the Score window, choose Control ⇨ Real-Time Recording. The sprite appears on Stage with a heavy red, rectangular bounding box, and a red dot appears beside the recording channel in the Score window (see Figure 3-39).

Selected frame button

Selected frames indicator

Figure 3-39: When Real-Time Recording is active, you see a heavy (red on your screen) bounding box on the Stage and a dot beside the channel number.

4. Drag the sprite across the Stage to describe the desired path. Note that recording begins the moment you click the sprite on the Stage, so be prepared to move the sprite as soon as you select it on the Stage.
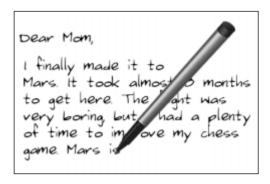
Tip

If you want the sprite to begin its animation off the Stage, zoom the Stage to 50%. This technique will enable you to position the sprite off the Stage, yet still be able to click on it when you begin the Real-Time Recording.

5. When you're ready, release the mouse button to stop recording the sprite's movement. The path you've created appears on the Stage, and the animation sequence appears in the Score window (see Figure 3-40).

Figure 3-40: When you stop recording, the path you created is visible on the Stage, and the animation sequence appears in the Score window.

Real-Time Recording requires some patience and practice, but this method can give you some great effects. For instance, consider animating a pen using real-time recording with a script font and mask to simulate handwriting (see Figure 3-41).

Figure 3-41: Use Real-Time Recording to animate a pen, creating the effect of handwriting on the Stage.

Summary

One of Director's biggest strengths is its capability to create powerful animation sequences using sprites. Being able to quickly switch between the Stage, Cast, and Score windows enables you to put together complex animation sequences in a very short amount of time. Adding ink and blend effects provides another layer of possibilities to the type of special effects that you can use in your animations.

Some of the things you learned in this chapter are:

- ◆ A sprite is a copy of a cast member after it's placed on the Stage and in the Score.
- ◆ A sprite is a self-contained object with a definite life span that can be extended or shortened by dragging the end of the sprite in the Score window.
- ◆ Director's new Property Inspector replaces most of the pop-up dialog boxes and Inspectors with one global tool to modify properties of the elements used in your movies.
- ◆ Keyframes in Director control the changes in position, transparency, size, and other contiguous sprite properties.
- ◆ Tween frames are generated by Director; they form the intermediate steps between keyframes.
- ◆ Sprites can be extended, split, joined, and edited — as whole entities and as individual frames.
- ◆ Changes in cast members generally don't form keyframes, although a cast member change may be on a keyframe.
- ◆ Film loops are a powerful tool for creating animations without having to position each cast member individually.
- ◆ The transparency of a sprite can be set through the Blend property.
- ◆ Inks control how the sprite is drawn on the screen. The most useful inks are Copy, Matte, Background Transparent, and Mask.

In the next chapter, you learn the many ways to work with text in your Director movies.

❖   ❖   ❖