Using Sound

Sounds add another dimension — an important one — to Director movies. Aside from putting dazzle into your movie, sounds fulfill a key concept of multimedia: to provide information in a format that maximizes the impact of the presentation. Multimedia is a multisensual method of relaying information to an audience. Whether you are creating a simple animated cartoon sequence or an elaborate interactive application, you essentially are teaching your audience about the topic of your movie. The mechanisms of learning are complex, but one simple axiom is always true: The more ways you present information, the better your chance of reaching your audience with positive results.

Director supports a variety of digitized sound file formats that you can use to enhance your movies. In this chapter, you learn how to choose a sound format. You also learn the basics of importing and editing sounds for Director movies. When you understand sound theory and how Director deals with sound files, you have taken an important step toward using sound effectively with your audience in mind.

Sound Basics

Sounds can take a movie from the mundane to the spectacular. They can inform, guide, and stimulate the interest of the user. Understanding Director sound basics provides the foundation you need for using sounds creatively and efficiently in your movies:

Two key concepts should be behind every audio decision you make when working with Director and sounds:

❖ The first concept is to remember your audience. A sound should enhance the movie while balancing the needs and resources of the user.

✦ The second concept is actually more than that; it's a law. Two types of files can bring a computer to its knees in nearly the blink of an eye: complex graphics files and sound files. Sound files can be huge, requiring significant resources to store and play them. Therefore, the law is to choose and edit sounds carefully, to balance creativity and file size.

This section discusses importing sounds. It also discusses the difference between internal and external sounds, helps you choose among sound formats, and explains how you can edit sounds externally.

Importing sounds

As the author of a Director movie, you need to make a number of decisions regarding a series of issues that affect the final movie. One issue, as already mentioned, is your audience. The audience is especially critical if your movie will contain sounds. Your audience may not have the system resources that you have, and thus balancing file size and quality factors with the goals of your movie becomes essential to the movie's success.

In selecting sounds for your project, you need to consider three factors: file format, sampling rate, and file compression. If you are developing a movie designed for both PC and Macintosh platforms, you can save a significant amount of time if you consider file format *before* creating the movie. Choosing a sound format supported by both platforms is one way of ensuring that you don't need to create the movie twice. As your movies grow in size, finding individual sprites and cast members when you want them can become a tedious task. It's easy to miss a single cast member and cause your movie to fail, especially if you must swap a number of cast members to conform to a specific platform. When you choose a sound for use in a Director movie, you should also be aware of the sampling rate and file compression.

The basics of importing a sound file into Director are the same regardless of the sound format you choose. When you import a sound file into Director, it becomes a cast member that you can place in the Effects section of the Score. Unlike other types of cast members, sound cast members aren't placed on the Stage.

Importing a Sound File into Director

On the CD-ROM

The companion CD-ROM has several sound files that you can import into your movie and that you can use for the exercises in this chapter. They are found in the EXERCISE:CH05:AUDIO (EXERCISE\CH05\AUDIO) folder. This collection of sounds, generously provided by Jay Shaffer (copyright 2000 Zenapse), was downloaded from the Zenapse Web site at http://www.zenten.com/zenten.

1. Choose File ➪ Import or press Command+R (Ctrl+R) to display the Import Files dialog box (see Figure 5-1).
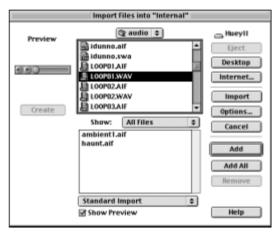
Figure 5-1: Use the Import Files dialog box to select sound files and add them as cast members.

2. Choose the folder that contains the sound file that you want to import into Director, and then select the file. You can select multiple files by pressing the Shift key while clicking the files. Click Add to move the selected filenames into the File List.

3. Click the Media Option menu at the bottom of the window. From the pop-up list, choose Include Original Data for Editing if you want to use an external sound editor. This option enables you to quickly edit and update the sound in your movie, by launching the external editor when you double-click the cast member.

4. When you have selected all the files you want to import and added them to the File List, click the Import button to complete the operation and return to the Director window. The sound files you selected appear in the Cast window.

Using internal versus external sounds

Internal and external sounds are stored differently, and managed differently by Director as well. When you import a sound into Director, it's placed in the cast and considered an *internal sound*. (The cast member can be either an internal or external cast.) The sound information is saved with the cast or movie, which also increases the file size of the movie. *External sounds*, on the other hand, are linked by Director, which enables you to store the sound file separately from the movie, thereby reducing the movie's file size.

OLE and sound files: A bad match

Director supports OLE functions. OLE (Object Linking and Embedding) is a difficult concept for many people, but it's not as complicated as it seems. OLE enables you to easily share and edit elements between two OLE-compliant applications, without having to worry about import and export filters. The shared objects are transferred via the Windows Clipboard, from one application (known as the *server* application) to another application (the *client* application). OLE is primarily a Windows function, although a Mac OLE SDK (Software Developers Kit) exists and can be used to add OLE functions to Macintosh applications.

When you use OLE, you can choose to either *link* or *embed* the object in the client application. Linking the element means that the element is stored separately from its associated document. Every time you open the associated document, the application searches for the object and moves it into the document. So, if you change the object, it will be updated when it appears in the client application. Embedding an object means it's stored with the receiving document and isn't updated each time you open that document. Both linking and embedding enable you to quickly edit the object and return to your document.

It's important to understand that OLE is designed to transfer text and graphics — not sounds — between applications. Director sees every OLE object, text and graphics both, in terms of a bitmap. OLE is not intended for the transfer of sound files, and sounds may become corrupted if this method is used to place them in documents. Some OLE-compliant graphics applications include sound editors, but you should never use OLE to place these files.

Tip   Consider storing large sound files in linked external casts. Doing so enables the sound to stream and reduces the file size of your movie.

Director preloads internal sounds into RAM before playing them. Although this works well for small sound files such as beeps, storing larger music sound files internally can cause a lag in the movie. External sound files are streamed, which means that they start playing while the rest of the file is loading. The drawback to external sound files is that if you move the sound file to another location, the link is broken and must be reestablished before the sound will play in your movie.

Tip   Creating a folder to contain all the elements of your movie can save you a lot of grief when it's time to output the movie. When files are stored using this method, all the files required for the movie are in the same location, which reduces the risk of losing a critical file. This storage method also reduces the amount of time it takes for Director to search for a specific file.

Choosing a sound format

Another audience issue when you're working with sound files concerns resources. Sound file sizes typically range from large to humongous. These large files can bloat your movie, causing longer load times. And if the end-user has a system with limited resources, these files can cause the movie to crash. The choice of file format is, therefore, an important one.

Director supports AIFF (Audio Interchange File Format) and WAV (Waveform Audio File) sounds, AU (Sun Audio), MP3 (MPEG 1 layer 3), SWA (Shockwave Audio), QuickTime Audio for Windows and the Macintosh, as well as Macintosh System 7 sounds. Director also supports RMF (Rich Music Format) files using the Beatnik Xtra by Headspace, although the files cannot be imported into the Cast window and must be controlled with Lingo. Use the following information to choose a sound format:

◆ **WAV Files:** WAV sound files are primarily Windows files, although they can be imported on the Macintosh platform also. Director supports WAV files compressed with IMA-ADPCM compression (Interactive Multimedia Association — Adaptive Differential Pulse Code Modulation). Be aware, however, that any compressed file must be decompressed (expanded) before it can be used. Compressed files are good for storage purposes, but they can take longer to load.

◆ **AIFF Files:** Although they don't support compression, AIFF files have the advantage of being multiplatform. Both PCs and Macintosh machines can play AIFF sound files. This format is not a native format for the PC, but Director and a variety of other programs support AIFF on the PC without the use of external software.

◆ **AU Files:** This is a common sound format that is used on Unix workstations. Unless you are building scientific applications, you probably will not encounter this format.

◆ **MP3 Files:** Director supports files that are compressed using the MPEG 1 layer 3 compression. MP3 compression requires a lot of processor time to decompress. The MP3 format has exploded onto the scene within the last year, and there are now many sources for MP3 audio on the Internet.

Caution

Just because an MP3 file is available for listening, does not mean that you have the right to use it in your multimedia application. Make sure that you have the author's permission before using any MP3 audio files.

◆ **QuickTime Audio:** Digital QuickTime movies that contain only audio can be used in Director. They are imported and treated as any other QuickTime digital video cast member. To use QuickTime audio in your movies, QuickTime extensions must be present on the computer playing the audio file. Chapter 6 covers QuickTime digital video in detail.

✦ **Macintosh System 7 Files:** If you are creating your movie on a Macintosh, you can record sounds from within Director by choosing Insert ➪ Media Element ➪ Sound. You need to have an audio input or microphone connected to your Macintosh. This feature is for Macintosh only, and it is not supported in the Windows version of Director.

✦ **Shockwave Audio (SWA):** Shockwave Audio files can be compressed up to a ratio of 176:1, and they can be streamed as well. You first need to use Director to create Shockwave Audio files from another type of audio file. You then can import or link the Shockwave Audio files to your movies. Creating Shockwave Audio files is covered in the "Working with Sound Xtras" section of this chapter.

✦ **Rich Music Format (RMF):** Using the Beatnik Xtra and Lingo, you can incorporate RMF files into your movie. RMF files take up very little disk space, yet they deliver outstanding audio quality. Rich Music Format files play back on both the Windows and Macintosh platforms as long as the Beatnik Xtra is installed on the user's system or delivered with the movie. The drawback to using RMF files is that they can't be imported into the Cast window and used in the sound channel like other audio files. Considering the small file size and amazing sound quality that this format provides, it's worth taking the time to learn how to use RMF files. Chapter 18 explores Beatnik Xtra in more detail.

Regardless of the chosen format, you need the assistance of a good sound editor to adjust the length and effects within your sound file. Optimizing sounds within your sound editor can help keep the file size small without compromising the quality of your movie.

Editing sounds externally

Director doesn't provide the capability to edit sounds within the program. Director does enable you to specify an audio-editing application in the program's preferences, however. After you've specified an application, you can edit a selected sound cast member by choosing Edit ➪ Launch External Editor or by double-clicking the cast member in the Cast window.

Specifying an External Sound Editor

1. Choose File ➪ Preferences ➪ Editors to display the Editors Preferences dialog box (see Figure 5-2).

2. Scroll through the list to choose the type of sound file for which you want to select an editor. In this example, the WAVE file type is selected.
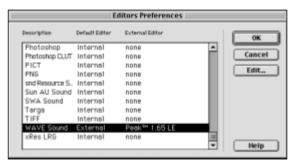
Figure 5-2: The Editors Preferences dialog box enables you to select an external editor for your sound files.

3. Click the Edit button. The next dialog box displayed reflects your choice of file type in the title bar; in this example, you see the Selected Editor for WAVE Sound dialog box (see Figure 5-3).
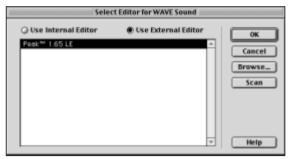

Figure 5-3: The Select Editor for WAVE Sound dialog box enables you to specify the application to use for editing your sound files.

4. Click the Browse button and then locate the audio-editing application on your hard drive. Select it, and it appears in the list window. Click Open to accept this choice. Click OK to close the Select Editor dialog box and return to the Editors Preferences dialog box.

5. If you want to select more than one sound-editing application, repeat Steps 2 through 4. If you select more than one application at this time, you will have to specify which one you want to be the active editor for your movie by high-lighting the name. When you are satisfied with the settings, click OK to return to Director's main window.

Choosing a sound-editing application provides you with a quick bridge for editing your sound files. Instead of exiting Director and opening another program, you can simply launch the external editor from within Director. In addition, the changes you make are automatically incorporated into your movie, which reduces the need to delete and reimport cast members.

Note   The Director 8 Studio includes a sound-editing program. If you are using the Windows version, the sound-editing program is Sonic Foundry's Sound Forge XP4. The Macintosh version uses BIAS Peak LE as its sound editor.

Sampling rates, recording modes, and other issues

Understanding a bit about a sound's file size and quality will help you when you're using an audio-editing application to process audio files for your movies. Factors that affect the size of a sound file are the sampling rate, recording mode (stereo or mono), bit depth, and compression method. It's a good idea to choose the highest sampling rate possible when recording the original audio, and then sample it down later on in the editing process.

The *sampling rate* is the frequency at which a sound is converted to digital format. A sampling rate of 44.1kHz, for example, means that the sound is sampled 44,100 times each second the sound lasts. In most cases, a sampling rate of 11.025kHz is good for voice recording, and 22.05kHz is fine for music-quality recording. Higher sampling rates result in a better recording. If you want to have a CD-quality recording, use a 44.1kHz sampling rate.

Tip   Not all of the audio used in your movies needs to use the same settings. Rarely does a voiceover segment need to have CD audio quality. On the other hand, you might want a music soundtrack to be full stereo and sampled at CD quality. Carefully determining the needs for each segment of audio will help your movies sound more professional and yet stay within a reasonable file size.

Choosing mono recording mode rather than stereo is another way to yield a smaller file. Mono recording mode uses a single channel for the sampling, whereas stereo mode uses two channels to improve the quality of the sound. Figure 5-4 shows the same WAV file in both a stereo and a mono format, as represented in an audio editor.

Note   A mono audio file is half the size of a stereo file at the same sampling rate.

Sounds are frequently *resampled* from 16-bit to 8-bit to save storage space. Typically, 8-bit sounds are *lossy*, which means information is lost in the translation from a higher bit depth, resulting in a poorer sound quality. If your sound editor supports the removal of silent bits of information and dynamic compression, you can edit a

16-bit file prior to converting it to 8-bit. This editing improves the quality of the sound when it's resampled to 8-bit. (For more information, see the documentation for your sound editor.)

Mono (one channel)

Stereo (two channels)

Figure 5-4: Stereo and mono sounds represented in an audio editor

Tip You might find that 8-bit samples are noisier than 16-bit samples. You can get better quality if you lower the sampling rate from 22.5 kHz to 11.25 kHz and use a 16-bit sample, than if you use an 8-bit sound sampled at 22.5 kHz — even though the file size is approximately the same.

Table 5-1 compares the file sizes that result when applying various sampling rates and recording modes to a sound file in the humongous range. I chose a 74-second file for comparison because the differences between the file sizes were so dramatic; most sound files aren't this long.

Looping sound enables you to give the illusion of a longer sound file without straining the resources of a computer (see "Looping Sounds," later in this chapter).

Table 5-1 File Size Comparison for Different Sampling Rates/Recording Modes				
Sampling Rate	16-Bit Stereo	16-Bit Mono	8-Bit Stereo	8-Bit Mono
44.1 kHz with compression; WAV file format	3.15MB	1.57MB	1.57MB	812K
22.5 kHz with compression; WAV file format	1.58MB	812K	812K	412K
11.25 kHz with compression; WAV file format	818K	412K	412K	376K
44.1 kHz WAV file format	12.5MB	6.29MB	6.29MB	3.14MB
22.5 kHz WAV file format	6.29MB	3.14MB	3.14MB	1.57MB
11.25 kHz WAV file format	3.14MB	1.57MB	1.57MB	805K
44.1 kHz AIFF file format (AIFF does not support compression)	17.9MB	8.95MB	8.95MB	4.47MB

Obtaining sounds for your movies

The first step in obtaining sounds for your movies is to determine the type of sound files you need. Some multimedia projects require voiceovers; others require special-effects sounds (SFX), such as a bell or thunder.

On the CD-ROM Several demos from audio providers are on the CD-ROM. One of our favorites is a demo from Rarefaction, which makes a series of music and effects CD-ROMs called A Poke in the Ear.

If your sound card supports audio input, you can record your own sounds, either by using a microphone directly connected to your sound card or by transferring sounds from tape to your computer. You can find a variety of sound sources on the World Wide Web and through companies that market sound clips. Some of these sound files are considered public domain, which means that you can use them freely. Others are protected by copyright laws and licensing agreements. If you have questions regarding these laws, the licensing information for a particular sound file, or both, contact the source before including the sound file in any project.

Tip If you are creating movies on the Macintosh, you can record sounds directly into Director by choosing Insert ⇨ Media Element ⇨ Sound. In the Macintosh Sound Recording dialog box that opens, record the sound by using the built-in microphone. Unfortunately, this feature is not available to Windows users.

With a clear idea of what you need and a little research into the available sources, you can incorporate any sound you can imagine into your project.

Tip   Audio files can quickly consume gigabytes of hard drive disk space. If you're using large amounts of audio for your movie, we suggest that you avoid recording directly to your computer. It's far better to record to high-quality tape and then transfer the sounds to your computer as you need them.

Adding and Editing Sounds

One of this book's authors was in a situation in which he had less than two days to create an animation sequence of an alien being interviewed by a reporter. Given the tight deadline, he had to create the animation of the alien talking before the voiceover was recorded. Because he couldn't add the audio track until the very last minute, having the alien's mouth move in sync with the audio would have been almost impossible to pull off successfully. To solve the problem, he had the alien talk telepathically, indicated by a forehead wrinkle that moved when the alien spoke. This technique enabled him to rough-in the animation before the voice-over track was recorded and digitized, and then make minor adjustments to the movie after the audio files were imported into Director. This trick saved a lot of time and turned out to be a very comical effect.

Sure, none of this was terribly complicated, but it required time and a little creative ingenuity. It also required knowing how to manage a sound and use sound channels after the sound was imported into the movie.

Placing sounds in the Score

After your sounds have been imported as cast members, you are ready to place them in your movie.

On the
CD-ROM   The companion CD-ROM has several sound files that you can import into your movie for this exercise. You can find them in the EXERCISE:CH05:AUDIO (EXERCISE\CH05\AUDIO) folder.

Placing a Sound Cast Member in the Score

1. Start by opening the movie into which you want to place a sound.

2. Director enables you to hide or show the Effects channels in the Score (by default, they're hidden). To turn the Effects channels off and on, click the Hide/Show Effects Channels button in the Score window, as shown in Figure 5-5.
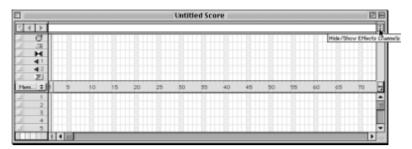
Figure 5-5: Click the Hide/Show Effects Channels button to display
or hide the effects channels.

3. **In one of the sound channels, click the location where you want the sound to start.**

> **Note**
>
> The Score displays two channels for sound. Although Windows technically supports only one, Director supports multiple sound channels and enables you to place sounds in both of the visible sound channels in the Score, which is accomplished by mixing the two sound channels together to produce a single channel on Windows-based machines. Additional channels beyond the visible two are accessible only through Lingo or via digital video.

4. **Drag the sound cast member from the Cast window to the location you selected in the Score (see Figure 5-6). When you release the mouse button, the sound cast member appears in the Score in the location you selected. Alternatively, you can drag the sound cast member to the Stage. Although Director cannot place sound members on the Stage, it automatically places the sound in the first available sound channel of the Score for the current frame, and it becomes a sound sprite.**
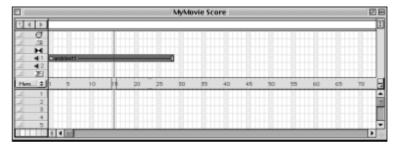

Figure 5-6: The sound cast member appears in the sound channel at
the location you specified in the Score.

When you create a new sound sprite, Director assigns it a default length (28 frames). You may need to adjust the length of an individual sprite (by extending it in the Score) to ensure that the sound plays completely. If you find that this situation occurs frequently, you may want to adjust the Span Duration amount in the Sprite Preferences dialog box (choose File ➪ Preferences ➪ Sprite), so that you aren't constantly having to change the length of sprites.

Changing the Default Length for Sprites

1. Choose File ➪ Preferences ➪ Sprite to display the Sprite Preferences dialog box (see Figure 5-7).

2. In the Span Duration section of the dialog box, enter a new value in the Frames field.

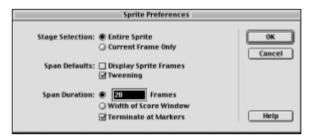3. Click OK to return to Director's main window.

Figure 5-7: Adjusting the default sprite length

Setting a default length for sprites is a good policy, but any given cast member may require more or fewer frames.

Adjusting the Length of Individual Sound Sprites

1. In the Score window, drag the last frame of the sound sprite you want to adjust. To make the sound sprite longer, drag to the right, as shown in Figure 5-8; to make the sprite shorter, drag to the left. As you drag, you can see the sound sprite extending or contracting in length.

2. Rewind the movie and play it. Continue adjusting in the same way until you are satisfied with the length of the sound.

Tip

To keep your movie compact, adjust the frame length of sprites to a sufficient length, but no more than what is required to achieve the desired effect.
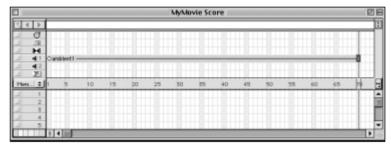
Figure 5-8: Adjust the length of a sprite by dragging the end of the sprite.

> **Note**   You can also set a tempo statement to force the movie to wait until a sound finishes playing (see "Using Cue Points in a Movie" later in this chapter).

Using channels effectively

Director doesn't limit you to playing a single sound at a time. Director displays two sound channels for your use. You can play two sounds at the same time; in addition, you can add more sound channels by using Lingo commands (see Chapter 18).

Playing multiple sounds is useful if you are creating a complex multimedia project and need to gather a variety of sounds. For example, in a movie about a jungle expedition, you might want sounds of birds, animals, people talking, and native drums. It would be difficult to pull all those sounds together into a single audio file. You *can* have all those sounds by alternating sounds in Director's two sound channels.

Look at the two sound channels in Figure 5-9. The sound sprite in channel 1 is ambient background noise (an alien spacecraft in this instance). The sound sprites in channel 2 are voice-overs that provide information about the current activity in the movie. What you can't see is the editing that coordinates the sounds in both channels. The background noise becomes softer when the sprite in channel 1 is playing; it becomes louder when channel 1 is silent.

Director doesn't have an independent capability to alter the volume of a single channel without using Lingo. The volume editing for this example was done in an external sound editor.

In addition to volume changes, you can add other mixing effects, such as echoes and fades. By carefully editing your sound files, you can customize the sounds to fit the mood or theme of your movie.

Figure 5-9: Using both sound channels, you can simultaneously play two sounds in your movie.

Managing Sounds

Adding sound to a short and simple movie is a process of simply dragging the sound cast member to the Score. The sound starts to play when the playhead reaches the beginning frame of the sound, and the sound plays to the end of its allotted number of frames. But what happens when your movies become more complex and lengthy, containing several sounds and not just one or two? Managing these sounds involves several tasks: You control when a sound plays, whether it repeats, and whether the movie pauses for the sound. Good sound management not only enhances your movie, but it also can be critical to the success of your multimedia applications.

New Feature

Director 8 introduces several new Lingo commands that expand Director's audio playback capabilities. These commands give greater control over various aspects of creating a movie, such as looping, transport, cue points, panning, and cross-fading. Chapter 18 discusses these new commands.

Using cue points in a movie

Director makes it easy to control the pace of your movie by using cue points in audio files. You use cue points to mark a position at which you want an event to occur in a digital audio or digital video file. In Windows, you can use either SoundForge XP4 or CoolEdit; on the Macintosh, you can use either BIAS Peak LE or SoundEdit 16 to place cue points in audio and digital video files.

Suppose that you want to create an animated tour of an art museum. Adding narration at each stop on the tour would enhance the movie enormously. By placing cue points in the voice-over, you can pause the playback head at a specified frame that displays an exhibit in the museum, until the voice-over has finished giving the information about that exhibit. When the cue point is reached, the movie continues to the next frame or exhibit. The cue points ensure that the timing for each scene in the movie matches the voice-over.

Incorporating Cue Points

On the CD-ROM   In this exercise, you can use the cuepoint.dir file found on the companion CD-ROM in the EXERCISE:CH05 (EXERCISE\CH05) folder.

1. Open the cuepoint.dir movie in Director. The sound file called idunno has already been imported and placed into the movie. This audio file contains four cue points that were added before importing it into the movie.

2. There are four markers in the movie. Although it's not necessary to use them, markers make it easier to determine the exact spot in the movie where you want to add the cue point (see Figure 5-10).
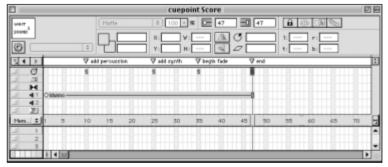

Figure 5-10: Adding markers to indicate where to add cue points makes it easier to organize your animation.

3. Double-click frame 10 — identified by a marker labeled add percussion — in the tempo channel. The Frame Properties: Tempo dialog box appears, as shown in Figure 5-11.

Figure 5-11: Specifying the pause to wait for a cue point

4. Click the Wait for Cue Point option.

5. Open the Channel list and select the sound file.

6. In the Cue Point list, select the cue point named Add percussion.

7. Repeat Steps 3 through 6 for the Add synth and Begin fade markers. The cue points in the audio file have the same name as the markers.

8. Rewind the movie and play it back with the Score window open. The playback head advances until it hits a cue point; it then waits until the audio file reaches that cue point, and then it continues to advance until it reaches another wait for cue point command.

> **Note**
>
> If the frame does not include a sound file with cue points, the only option on the Cue Point pop-up list is {No Cue Points}.

Tempo, sounds, and interactivity

Director enables you to place interactive elements, such as forms, buttons, and other effects, in your movies. It's important to remember that once a sound begins to play, it plays to the end of its allotted frames. This can cause a conflict with interactive elements, such as a sound attached to a button. Although you can't stop the sound (except through the use of Lingo), you can control the other sprites and elements of your movie.

You can avoid conflicts between sound, tempo, and interactivity by using Lingo commands to play the sounds. (Methods for using Lingo to control interactivity, sound, and animation are discussed in the Lingo portion of this book.)

Caution   It's a good idea to avoid using the same frame for a sound or digital video cast member and several other effects sprites. The sound or digital video can take control of the movie, and it's difficult to predict the order in which the other effects will play. In addition to the problem of playing order, this arrangement can cause a brief but critical hit on the resources of low-end computers. To alleviate this conflict, duplicate the frame and specify a different effect for each frame; this helps you control the playing order and manage resources — without memory or effects conflicts.

Looping sounds

You can get a lot of mileage out of very small and brief sound files. Many of the sounds around us are repetitive: the roar of thunder, the pounding of surf, footsteps, a ringing bell, the din of city traffic, a murmuring crowd. With some careful editing, together with Director's capability to loop sound, you can add sounds without significantly increasing the file size of your movie.

Director offers you two non-Lingo methods of repeating a sound. You can specify that you want just the sound to loop, or you can include the sound in a film loop.

On the CD-ROM   For the next exercise, you can import any of the audio files that begin with the word *loop* that are located on the CD-ROM in the EXERCISE:CH05:AUDIO (EXERCISE\CH05\AUDIO) folder.

Setting a Sound to Loop

1. In the Cast window, select the sound that you want to loop.

2. Click the Properties button in the Cast window to activate the Property Inspector. You may need to click on the Sound tab to activate the Sound Properties window (see Figure 5-12).
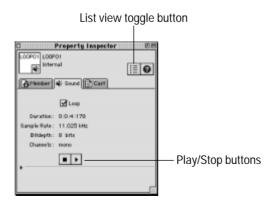

Figure 5-12: Setting a sound to loop

3. Mark the Loop check box, and click the Play button to hear the sound loop. Whenever you use this cast member in a movie, it will loop.

Note

The sound playback function is available only in the Normal View mode of the Property Inspector. If you are in List View mode, click the View Mode toggle button to switch to the Normal View mode.

Caution

If you are placing the member into a sound channel, you need to make sure that it spans enough frames to play the entire sound. Otherwise, it will sound clipped (cut off).

Looping sound is an effective means of getting the most from small sound files. If your sound is coordinated with a specific animation sequence, consider including the sound in a film loop with the animation. In the next exercise, you add a sound file to a graphic animation sequence created by using the Cast to Time command to create a film loop that contains both graphics and audio.

Cross-
Reference

Chapter 3 discusses using the Cast to Time command for animating and creating film loops.

Including a Sound in a Film Loop

On the
CD-ROM

Use the movie called orb.dir on the CD-ROM for the following EXERCISE:CH05 (EXERCISE\CH05).

1. Open the orb.dir movie in Director, and then open the Cast window by choosing Window ➪ Cast or by pressing Command+3 (Ctrl+3).

2. Select the cast member named Drone sound and drag it into sound channel 1 of the Score window so that it begins in frame 1. Then click the tail of the sprite and drag it to frame 10 (see Figure 5-13).
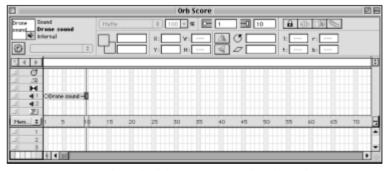

Figure 5-13: Drag the tail of the Drone sound sprite to frame 10.

   3. In the Cast window, click the cast member named orb01, and then hold down
   the Shift key and click the cast member named orb10. Choose Modify ➪ Cast
   to Time to insert the cast members into the movie as a single sprite.

   4. In the Score window, make sure the orb01 sprite starts in frame 1. If it does
   not start in frame 1, drag the sprite so that it begins in frame 1, click the drone
   sound sprite in sound channel 1, and then press the Shift key and select the
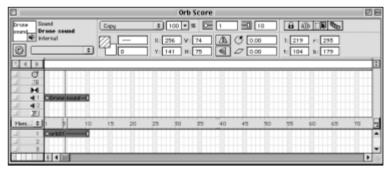   orb sprite in sprite channel, 1 as shown in Figure 5-14.

Figure 5-14: Select the sound and sprites that you want to use for
the film loop.

   5. Choose Insert ➪ Film Loop to create the film loop. Give the film loop a mean-
   ingful name, and then click OK; the loop appears in the Cast window. After
   you've created the film loop, you can delete the selected sprites from the
   Score (but not from the cast).

   6. Drag the film loop from the Cast window to the Score and place it in a sprite
   channel.

   7. Open the Control Panel by choosing Window ➪ Control Panel or by pressing
   Command+2 (Ctrl+2). Set the playback to loop. Rewind your movie and play it.

   8. You can add keyframes and tween the film loop to have the sprite move
   around the Stage. (If you are unfamiliar with these techniques, refer to
   Chapter 3 for detailed instructions.)

Tip   You can't create a film loop with only sounds. You must include other sprites or
the Loop option will be unavailable. However, you can create a shape with the
Floating Tool Palette that has no fill or outline and use it as the sprite.

Back doors to sounds

Earlier in this chapter, we stated that without Lingo you are restricted to using the two visible sound channels to play one sound each. That's not exactly true. You can trick Director into playing more sounds — by using film loops that contain a different sound in each loop. This technique enables you to have a unique sound in each film loop, and one in each of the sound channels.

The only limitation to this trick is the availability of resources. In fact, this "back door" technique is problematic for systems with limited resources. If you include a digital video in a film loop, the sound attached to the video is disabled. The animation, however, isn't disabled.

Setting the volume for a movie

Director enables you to set the volume for your movie and save the volume settings both with the file and when the movie goes to distribution. As mentioned earlier in this chapter, you can't control the volume of individual elements such as sounds or digital videos within your movie without using Lingo or a behavior.

Cross-Reference

Chapter 18 discusses controlling sound with Lingo.

When you set the volume of a movie, it's important to remember that computers respond differently to volume settings. You cannot determine the volume levels that are set for a user's computer. It's a good idea to set the volume settings in the medium range, and to assume that users will adjust the volume to suit their computers and their individual tastes.

You can set the volume of your movie by using the Control Panel or the Volume command:

◆ If you choose Control ⇨ Volume, select a volume level from the pop-up menu.

◆ If you use the Control Panel, click the Volume button and choose a volume level from the pop-up menu (see Figure 5-15).

Tip

When choosing a volume level, it's a good idea to take into account any sound editing that you've done. The idea is to keep the median sound level consistent (with the exception of fades and effects). Your movie will have less impact if the volume is constantly changing.
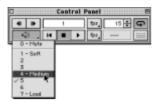
Figure 5-15: Click the Control Panel's Volume button to select a volume for your movie.

Working with Sound Xtras

If you read Chapter 1, you already know a little about Xtras — small plug-in applications or scripts that enhance movies and expedite production by performing a series of tasks related to the selected sprite, frame, cast member, or movie. Xtras may come from a third-party developer or from Macromedia. Director includes a variety of Xtras for your use, such as Behaviors, Shockwave Audio (SWA), and Beatnik Lite. If you are a programmer, you can also develop your own Xtras for use with your movies.

Cross-Reference For more coverage of Xtras, see Chapter 26.

Using Shockwave Audio (SWA)

Director's built-in compression method for audio is called Shockwave Audio (SWA). The SWA Xtra compresses both internal and external sound files, yielding much smaller file sizes than other compression routines.

Caution Shockwave Audio will not compress MP3 or SWA files.

You can use Shockwave Audio to compress sound files to be used for the Internet and on disk:

◆ External sound files can be streamed. Streaming means that the sound file begins to play as it is downloading. Users don't have to wait for the entire file to load before hearing sound. Streaming can be critical to the success of a Director project on the Internet, where you need to be conscious of file sizes and download times. Shockwave Audio will not stream sounds compressed at values lower than 16Kbps (kilobits per second).

◆ Although internal sounds can't be streamed, you can still enjoy a good rate of compression without degradation of quality. When you specify Shockwave Audio settings for internal sounds, all of the sounds are compressed. You can't compress some sound files and not others.

Shockwave Audio works only with compressed Director movies. Although you can specify compression settings at any time during the creation process, they actually don't take effect until you compress the movie by creating a projector or a Shockwave movie, or by using the Update Movies command.

Note When you distribute a movie compressed using Shockwave Audio, you must include the Xtras to decompress and play the sound. Generally, this is automatic, but it's a good idea to make sure that you distribute all the associated files with your movie.

Understanding Shockwave compression

Shockwave Audio enables you to compress sound files up to a 176:1 ratio, which creates a much smaller file than other sound formats. The bit-rate scheme used by SWA is not related to the bit rate used to sample sound files; instead, it is related to the speed of transmission. Therefore, the higher the compression rate, the faster the download, the decompression, and the playing of the sound.

Remember that some degradation of the sound quality occurs, as it does with most compression. SWA technology, however, changes the file as little as possible to achieve the desired compression. It's a good idea to try a variety of compression values and check the quality of the sound. Then choose the best quality that balances the type of sound, movie, and distribution you intend to use. For example, a voice-over doesn't require the same quality needed for music, and it can be compressed safely at a lower rate, between 8Kbps and 16Kbps transfer rate.

Table 5-2 shows the optimum compression ranges for Internet use. These rates are not for the user, but rather on the server end, for delivery.

Table 5-2 Optimum Shockwave Audio Compression Ranges		
Delivery System	*Compression Bit Rate*	*Quality Capability*
T1	64 Kbps to 128 Kbps	Extremely high quality
ISDN or CD-ROM	32 Kbps to 56 Kbps	FM stereo to CD quality
28.8 modem	16 Kbps	FM mono or AM quality
14.4 modem	8 Kbps	Telephone quality

Note Director automatically converts any file with a compression rate below 48Kbps to *monaural*.

New Feature

In the next exercise, you learn to compress the audio files in your movies, using Shockwave Audio. In previous versions of the program, this operation was located under the Xtra's menu. In Director 8, you choose File ➪ Publish Settings to find this operation.

Compressing Internal Shockwave Sound Cast Members

1. Choose File ➪ Publish Settings, and then click the Compression tab to display the Shockwave Audio settings section (see Figure 5-16).

Figure 5-16: Specifying compression settings for internal sound cast members.

2. Click the Compression Enabled check box to enable compression.

3. Click the kBits/second list box and choose the bit rate that you want to use for compression. See Table 5-2 to help determine the best bit rate for your application.

4. If you a want to convert the sound to mono from stereo, click the Convert Stereo to Mono check box to enable this conversion.

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

Cross-Reference

Other settings in the Compression tab deal with compressing the images in your movie. Chapter 8 discusses these options.

When you distribute a movie that uses Shockwave Audio Compression, you need to include the SWA Xtra with the file. You can choose to have it downloaded to the user's computer via Shockwave's automatic download capability, but it will need to be present for the compression to work.

Note

If your movie uses MP3 or SWA audio, the compression setting will not affect the audio.

Compression schemes are a bit like snowflakes in a blizzard. No two of them are identical, and there are many from which to choose. The sound industry is struggling to establish standards to provide commonality across platforms. Director supports a variety of compression types, either directly or though the use of Xtras. The best idea is to choose the type that meets your platform needs, while providing the best quality for your movie.

Compressing and Streaming External Sound Cast Members

On the CD-ROM

To practice converting WAV files to SWA and linking them as external sound files, use any of the WAV files on the companion CD-ROM in the EXERCISE:CH05:AUDIO (EXERCISE\CH05\AUDIO) folder. There is also a ready-made SWA file in the same folder, called idunno.swa.

1. Create an external Shockwave Audio file (SWA). Macintosh users can create this file using Bias Peaks LE. Windows users can use Director's conversion command by choosing Xtras ⇨ Convert WAV to SWA. The dialog box that appears enables you to specify the external sound files you want to convert (see Figure 5-17).

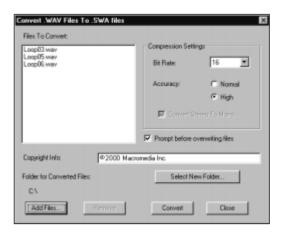**Note**

Macintosh users can skip Steps 2 through 7.

Figure 5-17: Windows users can convert WAV files to SWA files.

2. Check the bottom of the dialog box. If the Folder for Converted Files indicated is not the folder in which you want to store your files, click Select New Folder. Navigate to a folder where you want to store your files, and then click Select Folder to return to the Convert WAV Files to SWA Files dialog box. (It's a good idea to keep all associated Director files in the same directory, especially if you intend to distribute your movies on the Internet.)

3. Click the Add Files button, and then navigate to and select the files that you want to convert. To select multiple files, press the Command (Ctrl) key and click each filename to highlight it. When all desired files are selected, click the Open button.

   If the files you need to convert are not in the same folder, you might have to repeat this step more than once. Selected files are displayed in the Files To Convert list. To delete a file from the list, select it and then click the Remove button.

4. Choose the Compression Settings you want to use. (For guidance, refer to the earlier instructions for compressing internal files.)

5. When you have added all the files to be converted and you have specified the compression settings, click the Convert button to begin the conversion. A progress bar appears, and you can watch as the compression occurs.

6. When the compression is complete, click the Close button to return to Director's main window.

7. The compressed files are still external to your movie, so now you must add the sounds to your internal cast. Choose Insert ➪ Media Element ➪ Shockwave Audio.

8. When the SWA Cast Member Properties dialog box shown in Figure 5-18 appears, click the Browse button, navigate to the location where you saved the converted Shockwave Audio files, and double-click the one (or ones) you want to import. The conversion process automatically compresses the movie and changes its extension to .SWA, so look for files ending with this extension. You can use a URL (an Internet address) as the Link Address for the SWA file.

Note   For this step, you can also use the idunno.swa file that's on the CD-ROM in the EXERCISE:CH05:AUDIO (EXERCISE\CH05\AUDIO) folder.

Caution   The location or link you specify for the SWA cast member must remain the same or else a broken link occurs and the movie will fail. To reduce the possibility of broken links, store *all* linked files in the same folder.

Figure 5-18: The SWA Cast Member Properties dialog box enables you to specify the options for SWA cast member Xtras.

9. Specify a sound channel. The default is Any, which enables Director to assign a sound channel based upon availability.

10. Choose a Preload Time from the list box. This figure represents the maximum number of seconds that can lapse prior to streaming your sound. Because slow Internet connections can affect the transfer times, it's a good idea to choose a higher value than the 5 seconds Director uses as a default.

11. Specify the volume you want to use for your sound file. It's best to choose a medium volume as a compromise for all platforms.

12. Click the Play button to preview the sound. Click OK to return to Director's main window.

13. Repeat Steps 8 through 12 for each SWA file that you want to use.

14. Place each of the SWA cast members in a sprite channel (not a sound channel), and extend the sprite to ensure that the sound plays completely.

Using linked Shockwave Audio cast members for Web-based Director movies is a way to reduce the download time. Because the audio is actually a separate file located on a server, it doesn't need to be downloaded with the movie. This feature also makes it possible to update the file independently of the rest of the movie.

The Beatnik Xtra Lite

The Beatnik Xtra — built by a company called Headspace Incorporated — is similar to their Beatnik player for Web browsers, and enables you to use RMF (Rich Music Format) audio files in your movie. The RMF file format was developed to take full advantage of the Headspace Audio Engine, a multiplatform, General MIDI-compatible, 64-voice synthesizer that features custom downloadable sample files and enables you to create very sophisticated digital audio processing effects. The Beatnik Xtra also supports most other standard audio formats, such as WAV, AIFF, and MIDI.

Rich Music Format audio files take up very little disk space, yet they provide an outstanding level of audio quality and are an ideal sound format to use for Shockwave applications. Unfortunately, RMF files cannot be imported into Director and placed in the score as a music sprite. You must use the new Lingo commands provided with Beatnik Xtra to incorporate RMF files into your movie. The up side to this is that you have a wide range of control over the sounds, and you can create very complex audio effects. Figure 5-19 illustrates an application of the Beatnik Xtra.

Cross-Reference

Chapter 18 teaches you to use the Lingo commands and behaviors for the Beatnik Xtra.

Figure 5-19: Using the Beatnik Xtra, you can create very complex audio effects.

Using Sound Behaviors

Director enables you to alter the behavior of your movies by using Lingo scripting. The trade-off is that Lingo is a complex scripting language. If you aren't familiar with programming or scripting languages, adding Lingo scripts to your movies can be daunting. In response to this challenge, Director uses *behaviors.* Behaviors are cast members added to sprites and frames of your movie to easily provide interactive functionality without complex scripting. You can find the built-in behaviors that come with Director in the Library Palette.

New
Feature

Director 8 includes four new sound behaviors—Pause Sound, Stop Sound, Channel Volume Slider, and Channel Pan Slider—that take advantage of the new sound capabilities added in this version of the program.

Director includes six built-in behaviors in the sound category. Each requires that you provide parameters, such as the name of a sound, the channel assignment, and the event that you want to use to start the behavior. Table 5-3 lists the behaviors and describes the usage and parameters that you can apply.

<table>
<tr><td colspan="3" align="center">Table 5-3
Director's Built-in Sound Behaviors</td></tr>
</table>

Behavior	*Description*	*Parameters*
Play Sound	Used on the Stage, Score, or a sprite to play an assigned audio file.	*Sound to play* Defines the cast member used by the behavior *Sound channel* Choose which channel to use for playback *When to play sound* The event that triggers the sound *Preload sound* When to load the sound into memory before playing *Seconds to preload* Determines how many seconds of the sound are preloaded *Number of loops* Sets how many times the sound plays (0 = forever)
Pause Sound	Used on the Stage, Score, or a sprite to pause the sound in a defined channel.	*Sound channel* Assign which sound channel to pause *When to pause sound* Set the event that triggers the pause
Stop Sound	Used on the Stage, Score, or a sprite to stop the sound in a defined channel.	*Sound channel* Assign which sound channel to pause *When to stop sound* Set the event that triggers the pause
Sound Beep	Causes the system beep to play when a sprite that has the behavior applied to it is clicked.	None
Channel Volume Slider	Apply this behavior to a graphic sprite to turn it into a slider that controls the volume of the sound being played.	*Sound channel* Define which sound channel this slider controls *Constraining sprite* Assigns a sprite that determines direction and distance of slider movement (a setting of 0 uses the Stage for the constraint) *Initial sound volume* Sets the volume level for the chosen sound channel when the slider first appears

Continued

Table 5-3 *(continued)*		
Behavior	*Description*	*Parameters*
Channel Pan Slider	Apply this behavior to a graphic sprite to turn it into a slider that controls the pan from left to right of the sound being played.	*Sound channel* Define which sound channel this slider controls *Constraining sprite* Assigns a sprite that determines direction and distance of slider movement (a setting of 0 uses the Stage for the constraint) *Initial sound pan* Sets the initial pan setting for the chosen sound channel when the slider first appears

When you add a behavior from the Library Palette to a sprite or frame, the behavior is copied to the internal cast, to prevent the master behavior from being accidentally overwritten. Included in the Library Palette are a series of behaviors related to sound. For example, consider a movie that displays a series of musical instruments. By adding a behavior to each of the instrument sprites, you can play a sound file that makes the sound of that instrument when an event occurs. In the case of the instruments, you might want the sound to play when the user clicks the instrument. To display the Library Palette, choose Window ➪ Library Palette, and then display the sound behaviors (shown in Figure 5-20) by clicking the Library List button in the upper-left corner of the palette. Then choose Media ➪ Sound.

Cross-Reference   Director's behaviors and how to work with them are discussed in detail in Chapter 7.

Figure 5-20: Director's built-in sound behaviors are located in the Library Palette.

Summary

Sound enhances your movies, and it adds the professional finishing touch to make your movie a success. By understanding sound basics, you can easily add sounds to your movies. In this chapter, you learned how to:

✦ Choose sound file formats that meet your platform's authoring needs.

✦ Add sound to your movie and control it with tempo settings.

✦ Link larger sound files as external files. Place smaller sound files in the internal cast.

✦ Get the most out of sounds through repetition by using looping and by duplicating small sound files.

✦ Store Director files and linked files in the same location to prevent broken links and to improve loading time.

✦ Use behaviors to give sounds interactive functionality.

✦ Employ the Shockwave Audio Xtra to get the maximum compression for your sound files, and to use streaming audio.

✦ Use sound cue points to control the pace of your movie.

Chapter 6 teaches you to incorporate digital video into your movies.

✦   ✦   ✦