CHAPTER 1

Introducing Director

If you're a multimedia developer, you've probably been hit with a request much like the following:

"We're announcing our new product at a major trade show in six weeks and we want to have an interactive kiosk for the booth. We also want to hand out CD-ROMs that highlight the product's cool new features. Oh yeah, we also need to have a Web site that goes along with it, and a version with pricing information to put on our sales reps' laptops. Can you get this done for us?"

Welcome to the fast-paced world of multimedia authoring. The preceding example may be a little extreme, but if you've been in this industry for any length of time, you've probably had a client ask you to do something similar. If you're new to multimedia development, don't be surprised if a client or your employer asks you to pull off something along these same lines.

In today's world, multimedia applications have to work on multiple computer platforms, and they have to run on different media, such as on DVDs, CD-ROMs, or the Web. To be successful, you have to create several versions of your multimedia applications to leverage the features and to adapt to the drawbacks of each particular playback medium.

Director makes this process easier (and may help you get at least a couple hours of sleep each night) by enabling you to create sophisticated multimedia applications in a single authoring environment and to output separate versions of your application that are optimized for different computer platforms and playback media.

Understanding How Director Works

For many years now, Macromedia Director has served as a catalyst for many people to learn the art of programming. It's

a unique product — easy and intuitive enough for many people to create a reasonably impressive application the first time they sit down at the computer and use the program, yet powerful enough to let developers put together sophisticated multimedia applications with 3D interfaces, database access, and Internet connectivity. Director is heavily graphics oriented, making it an ideal tool for graphic designers, animators, and illustrators. But it also includes scripting capabilities that give you precise control over every aspect of the program. Director is the ultimate left-brain/right-brain tool.

Director accomplishes all this by borrowing from a metaphor that's remarkably well-suited to the creation of multimedia content: the world of film and animation. When you author multimedia productions in Director — just as when you direct a film — you integrate the sounds and images, movements across the stage, transitions, pacing, and special effects that make up your movie. In Director, even the terminology resembles the theatrical world. A Director file is called a *movie.* The window where the final animation or interactive application is displayed is called the *Stage.* The actors in a movie, called *sprites* in Director, have distinct behaviors generated by scripts. The various resources used in the program are collectively known as the *cast members.* The overall positions and choreography of the sprites can be viewed and controlled with the *Score*. Just like traditional cel animation, the sprites are drawn on the Stage by using various inks. Figure 1-1 shows an example of a Director movie with the Stage, the Score, and various cast members visible.

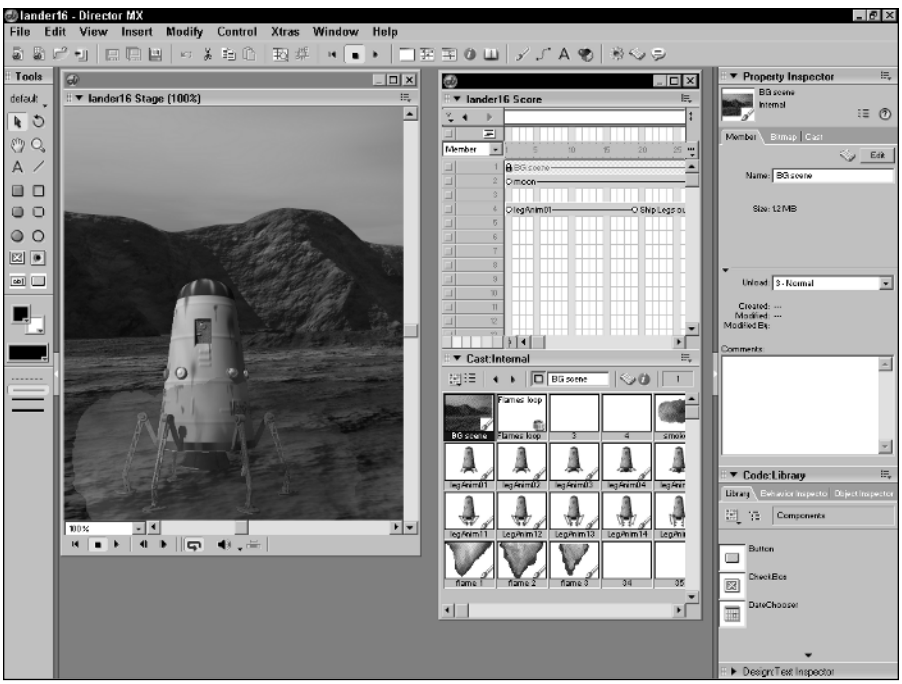


Figure 1-1: Director uses various elements to make up a movie.

What's New in Director MX 2004

You'll find a number of interesting and useful changes in Director MX 2004. Many of these changes were designed to make working within Director easier; a number of other changes make it easier to share content between several different Macromedia MX 2004 applications. None of the new features change Director so radically that existing Director users will face a steep learning curve; instead, existing users will find that Director MX 2004 simply makes life as a Director user more enjoyable.

Table 1-1 outlines the new features in Director MX 2004.

Table 1-1
New Features and Improvements in Director MX 2004

Feature	***What's New or Improved***
DVD-Video	You can now embed, control, and play back DVD-Video content inside Director movies.
Macromedia server technologies integration	You can now integrate Director with Macromedia server technologies, such as Macromedia ColdFusion MX 6.1 and Macromedia Flash Communication Server MX.
Macromedia Studio MX 2004 integration	You can use content from other Macromedia Studio MX 2004 products, such as Macromedia Flash MX 2004 and Macromedia Fireworks MX 2004, in your Director movies. In addition, Director now shares a similar interface with those products.
Named sprites and channels	Sprites and channels can now have custom names, and absolute references to sprites are no longer necessary. This feature means that you can move sprites on the Score without worrying about broken scripts.
Pre-built components	You can now use pre-built Macromedia Flash MX 2004 components in your Director movies. You can drop components, such as calendars and user-interface elements, into movies to cut the time that it takes to develop interactive features.
Publishing to Mac and Windows in one step	After you complete a movie, you can now publish across platforms in one step, creating either stand-alone applications (projectors) or Web-based Shockwave content that runs on both Mac and Windows.
Reference panel	A new reference help panel is now available in Director to simplify getting help with using Director, behaviors, Xtra extensions, and application programming interfaces (APIs) for both Lingo and JavaScript syntax.
Scripting in JavaScript syntax	Director now supports scripting in JavaScript syntax, in addition to Lingo.
Workspace customization	You can arrange your workspace in multiple configurations and save each workspace for later use.

Most older Director movies will continue to work in Director MX 2004, although they must first be opened and then saved in Director MX 2004 format if you want to take advantage of some of the new features such as JavaScript syntax. In a few cases, you may find that really old Director movies (such as those created prior to Director 5) cannot be opened by Director MX 2004, but anything that old is probably due for replacement anyway.

Getting to Know the Director Interface

Doing a production, whether theatrical or multimedia, demands that you become familiar with its framework. A traditional theater is more than just a stage. A good director needs to understand the theater's acoustics and lighting, what kind of backstage facilities are available, how many people can be seated, what the view looks like from every seat, and even details such as how the curtains will open and close.

Multimedia is much the same: Your theater, in this case, is Director, and its supporting structures are the dialog boxes, panels, menu items, and other elements that make up the program itself. You need to get to know Director before you start building your own world with it.

Director is a fairly complex program. Although using any of its features is not difficult, there are plenty of features to use. Indeed, most of the first part of this book focuses on the various dialog boxes and panels that Director uses. This complexity is the result of Director's role as an *integrating* program. Its primary purpose is to bring a number of different kinds of elements together into one package. Each element has its own particular characteristics that require special handling.

When Director is first launched, it remembers the last panels that were open in the preceding session. If you want to return to the original set that appeared when you first opened Director, choose Window ➪ Panel Sets ➪ Default.

The Score panel

The Score panel (often referred to simply as the Score), shown in Figure 1-2, is analogous to an animator's score sheet — it displays, from left to right, the time in the movie as measured in frames. Frames can best be described as the individual views of the movie as it changes over time. They are roughly similar to the frames of a filmstrip, where one frame may differ just slightly from the preceding frame (this can be somewhat deceptive due to the introduction of interactivity into the movie). Typically, a movie has 15 to 30 frames per second, although this rate — known as the *tempo* — can vary dramatically, from 1 frame per second to 999 frames per second.

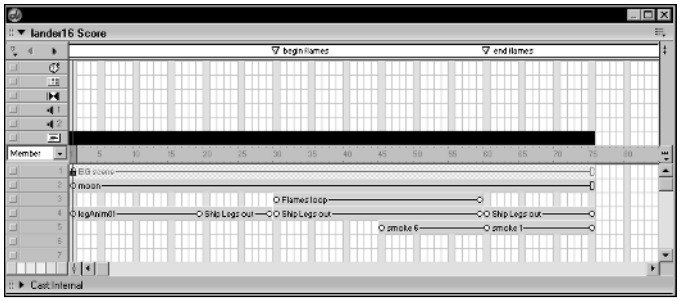


Figure 1-2: The Score is Director's cockpit, showing where all the sprites are at a given time and providing detailed information about their current state.

The Score is divided into up into 1,000 *sprite channels.* The 1,000 numbered channels are for graphic and text *sprites;* they show the position of each element and their relationships to one another on the Stage at each frame of the movie. Five other channels control the tempo, palette, sound, and transition, as well as instructions that control the sprites (called a *script*), which are applied to that particular frame of the movie. Think of a sprite as a cast member that has been brought on the Stage to perform a specific task; each sprite occupies a sprite channel. A sprite channel is very similar to the cels used in traditional animation. You can stack up many layers of cels on the Stage to create a multilayered animation: the sky, distant mountains, a house, a character in front of the house, and so on. Each of these elements can be moved or switched to a different graphic, but they roughly correspond to discrete sets of objects.

Sprites are drawn in the order in which they appear in the Score. A sprite in sprite channel 1 (let's call it the sky sprite) will appear behind the far mountains in sprite channel 2, which will appear behind the near mountains in sprite channel 3, and so forth.

You can change the order in which the sprites are drawn on the Stage by using Director's scripting language. This technique is covered in Chapter 16.

Sprites make up a significant part of Director's mechanics and are discussed in detail in Chapter 3.

The Cast panel

The Cast panel, shown in Figure 1-3, contains the actual graphics and text that are used by each of the sprites, as well as sounds, digital video, transitions, scripts, and any other resources that are used by Director. Each resource is known as a *cast member.*

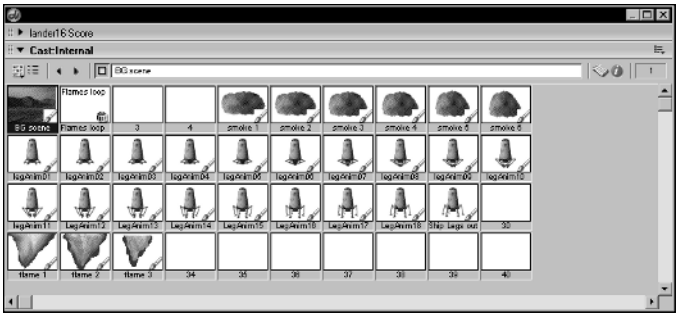


Figure 1-3: The Cast panel contains the various elements that you use to make up your movie.

By default, the Cast panel automatically *docks* at the bottom edge of the Score panel. Drag the *Gripper* (the two columns of dots at the left edge of each panel's title bar) to dock or undock panels.

One way to think of the distinction between the cast members and sprites is to return to the theatrical metaphor. To put on a theatrical presentation, you need to have actors to play the roles of the characters, technicians to control the lighting, sound, and special effects to enhance the production. The sprite is the role or function that the actor or backstage technician will perform. The cast members are the actors and technicians that will perform the tasks needed to put on the production. In technical terms, a sprite is an *instance* of a cast member.

The Cast and cast members are discussed in greater detail in Chapter 2.

The other panels

Director includes many other panels that you use as you create and edit your movies. For example, Director includes a bitmap graphics editor called the Paint panel. It has been optimized for creating animation, but it's not as powerful for creating realistic graphics as other image-editing programs such as Macromedia Fireworks. Another editor, the Vector Shape panel, enables you to create Bézier-based vector graphics. These graphic editors get a thorough examination in Chapter 2.

Macromedia is somewhat inconsistent in its naming scheme. You may see the terms *panel, palette,* or even *window* used to describe the various windows that you use in Director. Don't allow this to confuse you. All these objects function similarly no matter what they're called.

Because text is so important in multimedia, Director can actually edit text in two different ways, as well as use externally generated text. The two text editors are discussed in Chapter 4.

Finally, Director supports external editors for most types of media — graphics (Chapter 2), sound (Chapter 5), and video (Chapter 6).

Figure 1-4 shows the Window menu in Director MX 2004. You use this menu to open the various panels that you use.

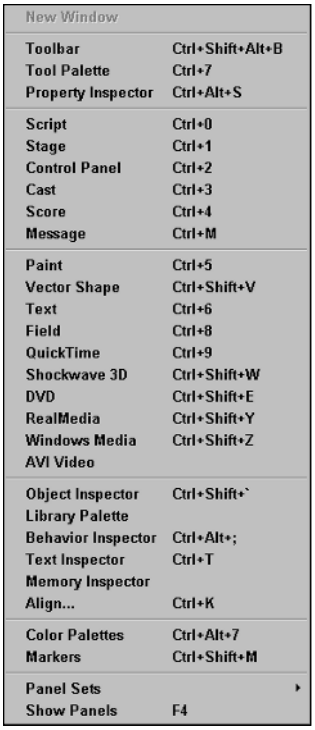


Figure 1-4: The Director Window menu provides quick access to all the panels.

The toolbar and ToolTips

One of the more useful Director tools is the toolbar, shown in Figure 1-5, which presents icon shortcuts to common functions and operations. Table 1-2 gives a quick summary of the icon shortcuts in the Director toolbar (as they appear from left to right).

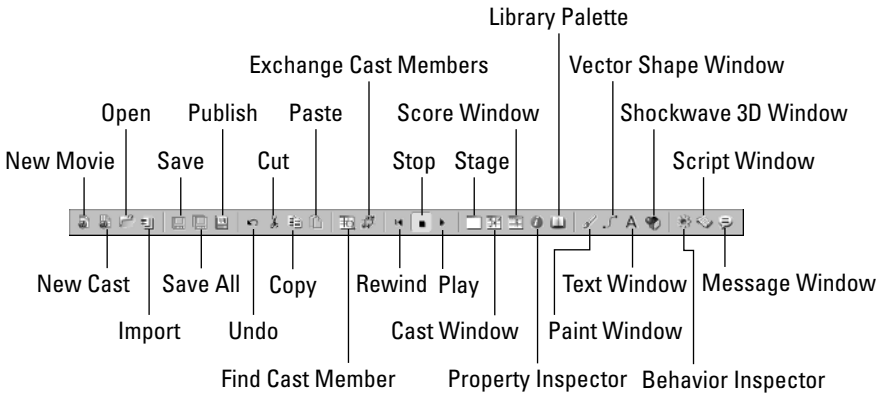


Figure 1-5: The Director toolbar provides one-click access to many commonly used commands.

Table 1-2
Director MX 2004 Toolbar

Icon	*Tool*	*Function*
	New Movie	Opens a new movie.
	New Cast	Opens a new cast library.
	Open	Opens an existing movie or cast library.
	Import	Imports media.
	Save	Saves the movie or cast library.
	Save All	Saves the movie and all the Cast windows.
	Publish	Saves the current movie as a Shockwave Movie and creates the HTML page.
	Undo	Undoes the last action.
	Cut	Cuts the selected object and places it on the Clipboard.

Icon	*Tool*	*Function*
	Copy	Copies the selected object and places it on the Clipboard.
	Paste	Pastes the object on the Clipboard into the selected space.
	Find Cast Member	Lets you locate a specific cast member quickly.
	Exchange Cast Members	Swaps the cast member on the Stage for the selected one.
	Rewind	Moves to the first frame of the movie.
	Stop	Stops the movie if it is currently playing.
	Play	Plays the movie if it is currently stopped.
	Stage	Opens the Stage.
	Cast Window	Opens the Cast window.
	Score Window	Opens the Score window.
	Property Inspector	Opens the Property Inspector window.
	Library Palette	Opens the Library palette.
	Paint Window	Opens the Paint window.
	Vector Shape Window	Opens the Vector Shape window.
	Text Window	Opens the Text window.
	Shockwave 3D Window	Opens the Shockwave 3D window.
	Behavior Inspector	Opens the Behavior Inspector.
	Script Window	Opens the currently selected script, or opens a new script if one isn't selected.
	Message Window	Opens the Message window.

Don't worry, you don't have to memorize all these toolbar icons right away. Director makes use of another Windows convention: *ToolTips.* When you place your mouse pointer over an icon, button, or similar interface element for more than half a second, Director displays a small text box that contains a one- or two-word description of the item.

The Tool palette

Many of the tools you are likely to use the most are assembled in a conveniently arranged package known as the Tool palette (see Figure 1-6). Use these tools to quickly add text, buttons, fields, lines, basic (vector) shapes, and pattern fills, and to change the foreground and background colors. You can also rotate and skew text, as well as rotate and skew vector shapes. Turn the Tool palette on and off by choosing Window ➪ Tool Palette.

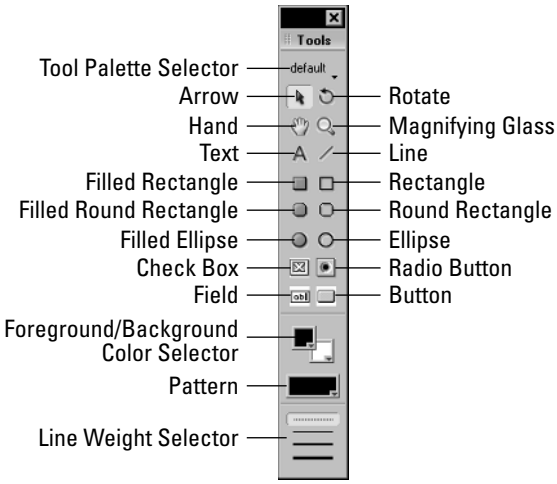
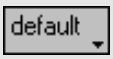


Figure 1-6: The floating Tool palette gives quick access to a handy collection of often-used tools.

See Table 1-3 for a summary of functions available in the Tool palette.

Table 1-3
Floating Tool Palette Functions

Icon	*Tool*	*Function*
	Tool Palette Selector	Enables the selection of different Tool palettes.
	Arrow	Enables the selection of objects (active by default when the Tool palette is opened).
	Rotate	Rotates and skews text and vector graphics.
	Hand	Moves the Canvas left, right, up, and down.
	Magnifying Glass	Zooms the Stage in and out.
	Text	Inserts text directly on the Stage.
	Line	Draws straight lines directly on the Stage.
	Filled Rectangle	Draws a rectangle filled with the selected foreground color.
	Rectangle	Draws an empty (unfilled) rectangle on the Stage. (The border color is the foreground color selected in the Tool palette.)
	Filled Round Rectangle	Draws a rectangle with rounded corners, filled with the selected foreground color.
	Round Rectangle	Draws an empty (unfilled) rectangle with rounded corners. (The border of the rounded rectangle is the selected foreground color.)
	Filled Ellipse	Draws circles and elliptical shapes, filled with the selected foreground color, on the Stage.
	Ellipse	Draws empty circles and elliptical shapes. (The border of the ellipse is the selected foreground color.)
	Check Box	Adds a check-box-style button.
	Radio Button	Creates a radio button.
	Field	Creates editable text fields on the Stage.

Continued

Table 1-3 *(continued)*

Icon	*Tool*	*Function*
	Push Button	Creates a customizable push-style button on the Stage. (The size of the button is dependent on the amount and size of the text entered in the button.)
	Foreground/ Background Color Selector	Allows selection of the foreground and background colors. (The foreground is the top-left color chip; the background is the bottom-right color chip. Clicking either color chip opens the Color palette of color choices.)
	Pattern	Selects the pattern fill to be used with the Tool palette's filled shapes. (Foreground and background colors of the pattern are selected in the Foreground/Background Color Selector.)
	Line Weight Selector	Selects the line weight to be used by the Tool palette's various drawing tools. (Choose from No Line, One Pixel Line, Two Pixel Line, and Three Pixel Line.)

The Library palette

The Library palette, shown in Figure 1-7, contains behaviors and other useful objects that are stored independently of the movie. In this case we have opened the Library palette window to show the broad selection of object types you can find in the Library palette. When an object or behavior from the Library palette is used in a Director movie, it becomes a new cast member in that movie, which then can be edited without affecting the original object contained in the Library palette. Display the Library palette by choosing Window ➪ Library Palette.

The Library palette is basically just a collection of Cast windows, so you can add anything to the Library palette that can be contained in a Cast window. This can be very useful for any commonly used artwork, as well as for behaviors that you don't want to be edited accidentally. To add your own elements to the Library palette, create a new, unlinked Cast window that contains behaviors and graphics, save it, and then drag the Cast file into the folder called LIBS, which is found in the Director application folder.

The Library palette is discussed in detail in Chapters 7 and 8.

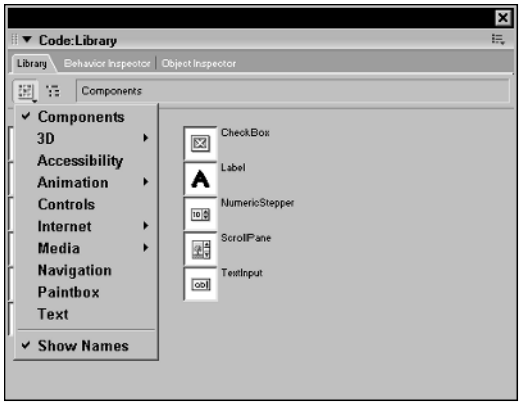


Figure 1-7: The Library palette contains Director's powerful built-in behaviors and other objects you can use in your movies.

Inspectors

You use inspectors to view and modify the attributes of text cast members, sprites, and behaviors (scripts). For example, Figure 1-8 shows the Property Inspector.

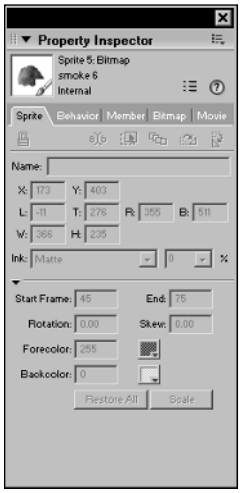


Figure 1-8: Director MX 2004's Property Inspector gives you almost infinite control over the individual elements contained in your movies.

There are four types of inspectors in Director; each performs a specific task:

- **Property Inspector:** Use the Property Inspector to display the current properties of any selected element, including the Stage, as well as the active movie. You can adjust any available properties of nearly every element in your movie by using this window.
- **Behavior Inspector:** Use the Behavior Inspector to create new behaviors (scripts) and modify existing ones.
- **Text Inspector:** Use the Text Inspector to format text and add hypertext links.
- **Memory Inspector:** The Memory Inspector displays the amount of memory (RAM) that is being used by the Director application and the elements contained in the movie.

The various aspects of each Inspector are discussed in later chapters that relate to their functions.

Pop-up menus

Another trick in the Director MX 2004–interface arsenal is the deployment of those handy context-sensitive pop-up menus (see Figure 1-9). You can activate pop-up menus for most elements in Director, including cast members, sprites, behaviors, scripts, and even the toolbar. A pop-up menu contains operations that are only appropriate for the selected item. The contents of contextual menus vary from item to item. They are intended to provide a list of operations or commands that you can perform on that item, in the current context of the software.

Figure 1-9: Right-click with the mouse on an element to activate a pop-up menu that contains operations appropriate for the selected item.

On a Macintosh mouse that lacks the essential right mouse button, you bring pop-up contextual menus to life by holding down the Ctrl key and clicking the mouse button over an interface element or object.

The menu bar

Director uses a fairly complicated set of menus, submenus, and related dialog boxes, in an arrangement that is consistent with Macromedia's user-interface guidelines across its product line. The idea, of course, is that someone familiar with other Macromedia products, such as Fireworks or Flash, can adapt to Director fairly quickly.

This book discusses menus and their content as they become relevant. Table 1-4 summarizes the content of each menu in the menu bar.

Table 1-4
The Director Menus

Menu Name	***Functions Handled***
File	Opening, saving, and printing of files. Creating projectors (run-time versions of your movies), Shockwave movies, and Java applets. Setting preferences, previewing in a browser, and terminating the program.
Edit	Clipboard operations (cut, copy, paste) and various kinds of selection. Searching and replacing text. Launching external resource editors.
View	Offers various ways of looking at the Score (the window that controls where animation sprites are placed). Also controls onion-skinning in the Paint window.
Insert	Insertion and deletion of keyframes and animation frames into the Score. Serves as an alternate way of inserting media cast members into the Cast window (the library of resources that Director uses).
Modify	Changing properties for the movie, individual cast members (resources), sprites, and the Score. Also provides a means of editing text in a text field, modifying scripts (interpreted code that is attached to sprites or other interface elements and that executes when designated events occur), rearranging the order of cast members on the Stage, and converting cast members to different bit depths.
Control	Playback of Director, moving from frame to frame, setting volume, handling sprite recording, debugging features, and recompiling scripts.
Xtras	Gives information and access to Xtras (Director plug-ins) and graphic filter Xtras. Protecting and updating older versions of Director movies, and importing PowerPoint files.
Window	Calls up any of the control windows used in Director, such as the Score, the Cast window, the Bitmap editor, the Library palette, Text Inspectors, and others.
Help	Accesses Director Help, which provides a detailed help and indexing system for all sorts of Director and scripting problems. Also calls up Help tutorials. Accesses registration information and links to Macromedia's Web site.

Docking options

With the great abundance of panels you find in Director MX 2004, it becomes very important to have a means of organizing those panels so that you can work more efficiently. One method of accomplishing this goal is to use the docking options that are available. For example, earlier you learned that the Score and Cast panels are automatically docked in the default panel layout. Because you often use these two panels in association with each other, this docking arrangement is very convenient.

The Director panels fall into two general groups: *document windows* and *tool windows.* You can dock together panels that are of the same type, but you cannot dock ones that are not of the same type. So, for example, you can dock the Cast and the Stage or the Behavior Inspector and the Property Inspector, but you cannot dock the Stage and the Property Inspector together. You can also dock Movie in a Window (MIAW) in Director MX 2004. See Chapter 24 for more information on MIAWs.

You can save your favorite panel layouts by choosing Window ➪ Panel Sets ➪ Save Panel Layout.

Each Director panel also has an *expander arrow* just to the left of the panel's name in the title bar. You can click the expander arrow to expand or collapse the panel as needed. When the panel is expanded, the expander arrow points downward. When the panel is collapsed, the expander arrow points to the right.

Using External Resources

For a multimedia program to be truly useful, it has to have some way of adding functionality whenever new technology comes on the scene. With Director 5, Macromedia realized this necessity, abandoning the rather haphazard Xobjects, which relied principally upon a ten-year-old Macintosh programming specification that was almost universally ignored. Instead, some serious work was invested in developing an open architecture. This architecture enabled developers to create new support programs called Xtras, which added significantly to Director's capabilities.

Xtras are analogous to plug-ins for browsers and for programs such as Adobe Photoshop. Some Xtras — such as the fileIO Xtra, which adds file reading and writing capabilities — are produced by Macromedia itself. Third-party software designers produce others. Some of these are for adding functionality to Director, while others are designed to open up access to system capabilities.

You access cast members that are created by Xtras, such as fonts and animated GIFs, by choosing Insert ➪ Media Element. These cast members are then imported into the Cast window and are nearly identical to other cast members. You can set their properties with standard dialog boxes, and open external media editors for editing.

Adding Xtras to your system

The same folder that holds your Director program contains a folder, or directory, called Xtras. This folder is the repository for every Xtra in use by the program. If you want to add a new Xtra (or remove a troublesome one), then you simply need to add (or remove) the file that contains the Xtra. When Director starts up, it inventories every Xtra it finds in the Xtras folder or in subfolders of that folder; and if Director can use the Xtra, it registers the Xtra internally.

Director MX 2004 includes an option that enables end users to download Xtras used in the movie that are not installed on their system via the Internet from a secure server. This capability enables movies to be smaller by allowing Xtras to be downloaded independently of the movie.

Using Xtras

When you create your own applications, you must distribute these Xtras as well. As long as the Xtras folder is in the same directory as the application, all the Xtras contained within it will be added.

How you invoke an Xtra depends on its type. For example, you access a Photoshop filter by choosing Xtras ➪ Filter Bitmap, which then lists all the available filters currently in the Xtras folder. Many other Xtras are added using the Scripting Xtras button in the Script panel. Xtras are covered in several chapters throughout this book where they're relevant.

Working with Cast Libraries

A Director movie can have, practically speaking, any number of cast libraries open at any given time, making it possible to have one library that exclusively contains common bitmaps (such as navigational elements); a second library that contains nothing but behaviors and utility code; a third library that has only sounds; and so on. Keep in mind that there's nothing stopping you from mixing these resources together.

You can link cast libraries to a movie by choosing Modify ➪ Movie ➪ Casts. Having a linked file of any sort means that the information about that file is kept in a separate file rather than within the Director movie itself. For example, if you linked a bitmap image, every time Director started up it would load that image from the disk, rather than from its own internal resources. This approach has the advantage of making it easier to work with *dynamic files,* or pictures that change on a regular basis. The disadvantage comes from the location of the file; the picture (or other resource) isn't already contained in the movie, so it has to be processed into a Director cast member. Depending on the size and type of the image, this process can involve an appreciable wait.

For more details on bitmap images, cast libraries, and resource linking, see Chapters 2, 3, and 6, respectively.

Understanding Director's Help System

A program as complex and feature-rich as Director cannot be learned in a day. There are hundreds of commands, properties, keywords, and related terms used just by Director's scripting languages Lingo and JavaScript syntax, not to mention the dozens of menu commands, dialog boxes, and other related bits of the Director interface. With its new behaviors and other improvements, Director is now easier to use than ever before — but that doesn't mean that it won't seem overwhelming to even seasoned users.

Fortunately, the designers of Director have provided assistance with the program's complexity in the form of a remarkably comprehensive help system. This system can aid everyone from beginners to advanced professionals.

You access the help system by choosing Help ➪ Director Help or by pressing the F1 key. From here, you can go get help on most basic concepts in Director, including Lingo scripting and incorporating Director movies into Web pages.

Getting a second opinion (or third or fourth)

Macromedia's Web site is fairly comprehensive, but it's only a small part of the total collection of Web sites, mailing lists, newsgroups, and newsletters available to the Director developer. Many of these sites include downloadable Xtras, tips and techniques, and working examples. Of equal importance, these Internet resources also facilitate your connections with other Director users, an especially welcome capability when you're in the middle of a project and discover that you don't know how to get past a thorny problem.

The programming faculty at Maricopa Community College in Arizona maintains one of the most exhaustive sites devoted to Director and Authorware, at `www.mcli.dist.maricopa.edu/director`. The college also maintains the Direct-L mailing list, which is an ongoing e-mail list where developers talk over problems and quirky happenings and discuss getting together at conferences and conventions. Check the Web site itself for details if you want to subscribe. We recommend getting the Digest, but bear in mind that the list is very busy and can easily generate a thousand messages in a few days.

The Director Online Users Group (DOUG) at `www.director-online.com`, produced by Patrick McClellen and Zac Beldo, is a very comprehensive Web site for all things Director. This site is full of tips and tricks, utilities, and shareware, as well as links to make searching other Director resources a lot easier.

Developer Dispatch has an extensive site with news, forums, and resources for both Director and Flash developers. You can find this site at `http://developerdispatch.com`.

You can find online help with Director by choosing Help ➪ Director Support Center. This will open the Director Support Center Web site in your browser so that you can find technical notes, examples, and tutorials.

Summary

Director is the most comprehensive multimedia authoring tool on the market today. It enables you to create sophisticated multimedia applications for virtually every medium that exists to deliver interactive content. You use Director to create and combine all the elements commonly used in multimedia applications — text, graphics, animation, sound, and video — and then add interactivity and multiuser functionality with its powerful scripting languages (Lingo and JavaScript syntax).

Before moving on to Chapter 2, review some of the things that were covered in this chapter:

- **Director uses a theatrical metaphor for its interface.** A Director file is called a *movie,* the window that the movie plays in is called the *Stage,* resources used in a movie are called *cast members, sprites* on the Stage are choreographed using the *Score,* and commands that tell the sprites what to do are called *scripts.*
- **Nearly every function in Director has a floating window associated with it.** This includes bitmap editing (the Paint panel), Bézier vector graphics (the Vector Shape panel), text creation (the Text panel and the Field panel), shapes (the Tool Palette), sprites (the Score), and navigation (the Control Panel).
- **Director is truly a right-brain/left-brain application.** It combines a graphical interface that is understandable to graphic artists and animators with a powerful scripting language that enables programmers to create incredibly complex applications.
- **Xtras are individual components (like plug-ins) that add extra functionality to the program.** They are created by Macromedia and third-party developers.
- **Director has a context-sensitive help system as well as a comprehensive Web site that make it easier to learn how to use the program and to keep current with the most recent features.** ToolTips is another feature that makes Director more understandable by giving a brief description of an item while the mouse cursor pauses over it.

Chapter 2 discusses working with graphics in Director.

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