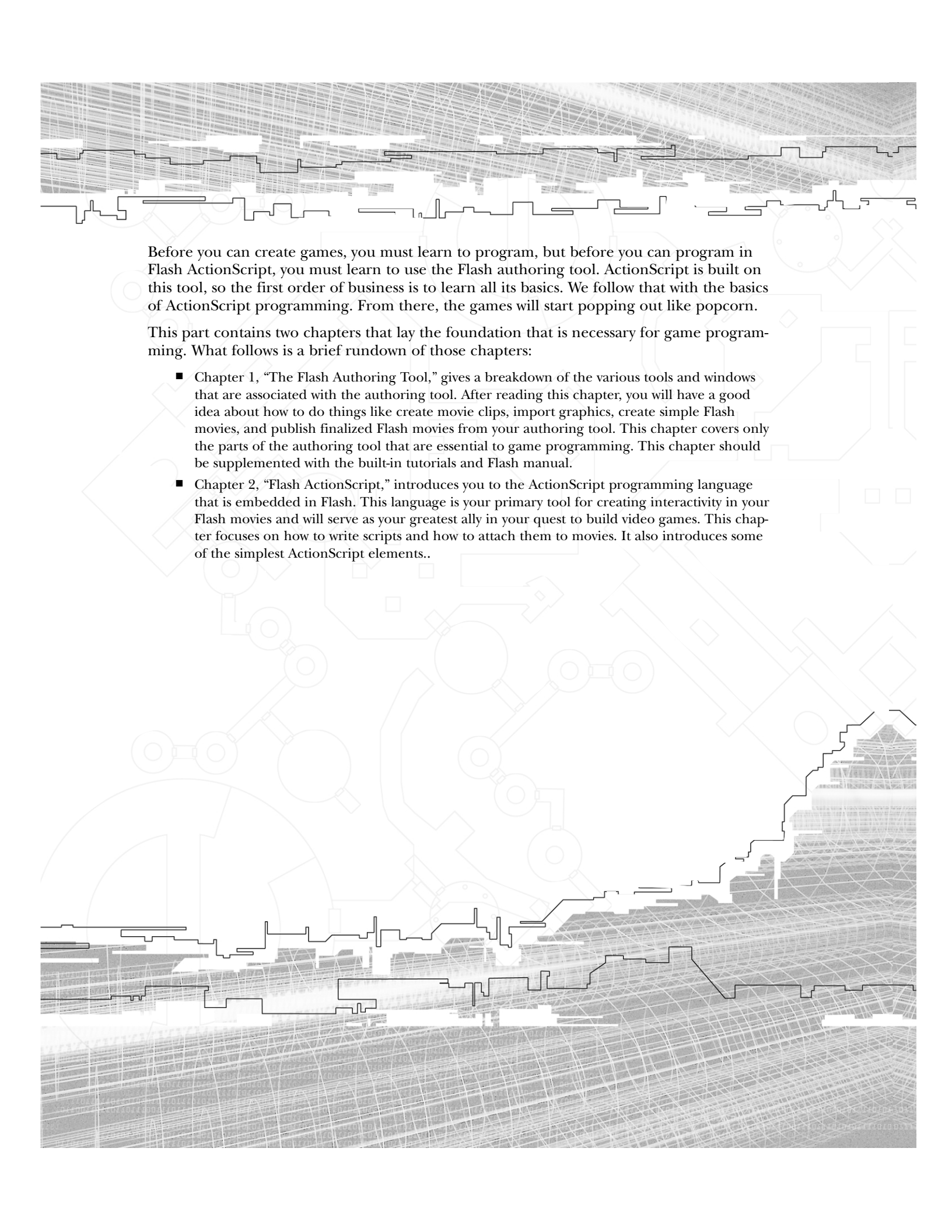




PART ONE

**GETTING
STARTED**





Before you can create games, you must learn to program, but before you can program in Flash ActionScript, you must learn to use the Flash authoring tool. ActionScript is built on this tool, so the first order of business is to learn all its basics. We follow that with the basics of ActionScript programming. From there, the games will start popping out like popcorn.

This part contains two chapters that lay the foundation that is necessary for game programming. What follows is a brief rundown of those chapters:

- Chapter 1, “The Flash Authoring Tool,” gives a breakdown of the various tools and windows that are associated with the authoring tool. After reading this chapter, you will have a good idea about how to do things like create movie clips, import graphics, create simple Flash movies, and publish finalized Flash movies from your authoring tool. This chapter covers only the parts of the authoring tool that are essential to game programming. This chapter should be supplemented with the built-in tutorials and Flash manual.
- Chapter 2, “Flash ActionScript,” introduces you to the ActionScript programming language that is embedded in Flash. This language is your primary tool for creating interactivity in your Flash movies and will serve as your greatest ally in your quest to build video games. This chapter focuses on how to write scripts and how to attach them to movies. It also introduces some of the simplest ActionScript elements..



CHAPTER I

THE FLASH AUTHORING TOOL

4 1. The Flash Authoring Tool

We are now ready to delve into the authoring tool and talk about what it does and how to navigate in it. If you have not done so already, open Flash MX. If you have never opened Flash before, you'll see a screen that asks you about your default panel layout. Go ahead and cancel out of this screen.

You'll notice several windows open on your screen, and if you're like me, you might be saying "Wow, that's a lot of stuff!" But never fear—it's actually quite simple, and you'll soon have a clear idea of what all those windows are about and what they can do for you. By the end of this chapter, you should have no problem creating simple movies in Flash. You won't have much interactivity with the user, but that will come later. For now, let's look at our new tool.

Interface

The Flash authoring tool is broken down into panels. Different actions that you want to perform are available in different panels, and each panel has a series of actions that you can perform inside it. These panels help to group similar actions together. For example, Figure 1.1 shows the Color Mixer. It lets you alter the colors of certain pieces of art in your movie. It has a color selector that you can pick colors from as well as a numerical input that you can use to specify the exact Red Green Blue (RGB) values that you want.

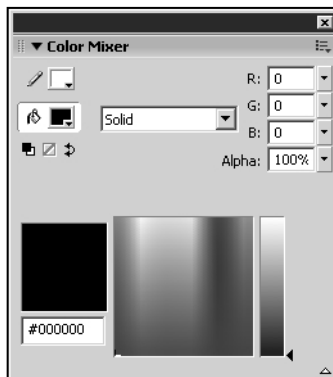


Figure 1.1

The Color Mixer panel allows you to change the color of things.

One thing that is important to note is that all of these panels can be moved around. If you drag the panels by the upper-left corner of their title bar, you can position them anywhere you like, even outside of the authoring tool's window. If you have multiple monitors attached to your computer like I do, you can actually drag some of the panels onto your other monitor to free up some space.

In addition to dragging panels around, you can collapse them, as in Figure 1.2. Clicking on the title bar of a panel collapses that panel. To reopen a panel, you simply click the title bar again. This allows you to free up space by collapsing panels you don't need.

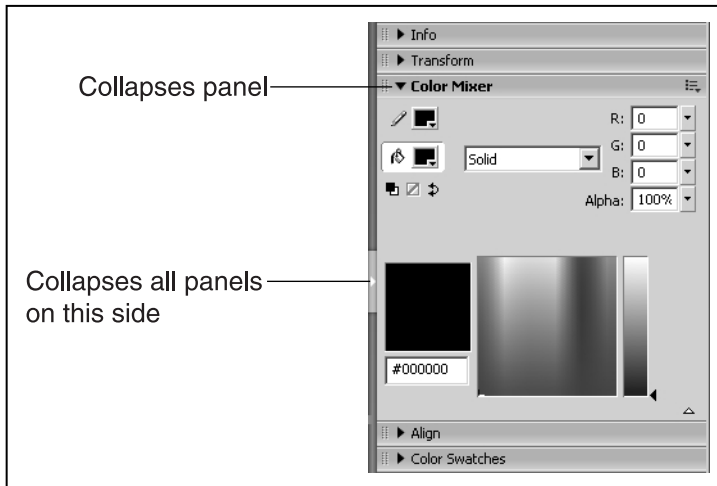


Figure 1.2

Panels can be collapsed when they're not being used, so they don't waste desktop space.

If you find yourself in need of a collapsed panel, you simply reopen it, use it, and then collapse it again. The sheer number of panels available in Flash makes this feature indispensable. You'll find your desktop quickly clogged with panels if you don't take advantage of this collapsibility.

Finally, you can use the Window pull-down menu to add and remove panels from the Flash tool. If there is a panel that doesn't get used, consider getting rid of it completely with this pull-down menu. You can always get it back by selecting it from the Window pull-down menu again.

The layout of panels in your Flash tool is called a panel set. Panel sets can be saved. If you have spent time getting your panels positioned like you want, you should save this layout by using the Window pull-down menu and selecting Save Panel Layout. You can later load that panel set from the Window pull-down menu by selecting Panel Sets and then selecting the panel layout you saved by name. You'll find that your panels are all back where they had been when you saved them.

TIP

If you want to collapse all the panels bordering one side of the document, click on the white arrow at the edge of the group of panels to collapse the whole group.

Creating a New Movie

The first thing you need to do when you want to create a new game or Web site is to create a new movie. To do so, use the File pull-down menu and select New. A menu appears allowing you select the type of document you want to create. This menu has several templates available as well as some new choices that we will see throughout this book. For now, select the first option, Flash Document. This creates a new file with the .fla extension. This is a Flash source file, which is your primary file type for using Flash. The new movie you just created contains essentially nothing. It has no art or scripts; it's simply a blank canvas for you to create content on.

TIP

It is often more convenient to use the keyboard instead of the pull-down menus. Nearly every action in Flash can be executed with a keyboard shortcut—and generally much more quickly than with the menus. Because keyboard shortcuts differ between platform and even between developers on the same platform, I will not be giving keyboard shortcut examples in the text. Instead, I encourage you to use Flash's built in keyboard shortcut organizer. If you use the Edit pull-down menu and select Keyboard Shortcuts, you will see a dialog box that has several options. If you have trouble figuring out this feature, simply click the Help button in the lower-left corner to access the Flash documentation on the subject.

The Stage

The most important area to you is called the stage. This is a centrally located window with some scrollbars on it and a solid white background. Take a look at Figure 1.3 to identify the stage.

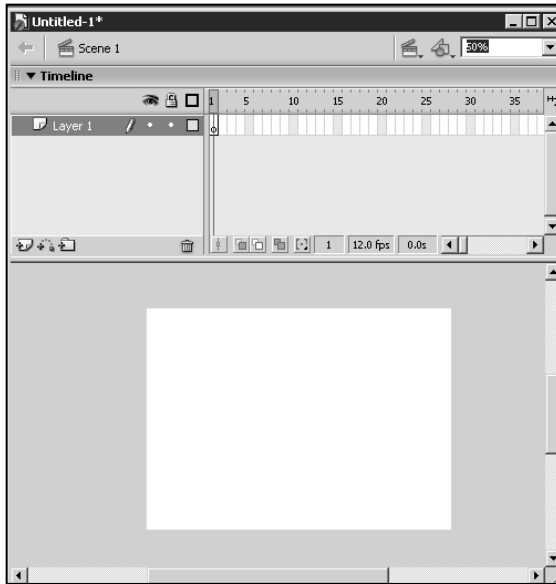


Figure 1.3

The stage is where all the action happens.

The stage is where you can actually see your creation coming to life. You can place art (when you have some available) on the stage and move it around. You can color the stage, resize it, and manipulate it in many ways, as you will see soon. For now, we have nothing to place on the stage, so we'll leave it alone. As soon as we have created some art for our movie, we'll place it on the stage. Then we can watch the magic happen.

There is a gray area surrounding the stage that represents an off-stage area. You can place objects here, but they will not be displayed in your final movie. Sometimes it's convenient to place an object offstage and then slide it in when it's time for its appearance. We'll see how to do both of these tasks very soon.

The Tools Panel

Another important panel is called the Tools panel, or Toolbox. Use the Windows pull-down menu to open this panel if it's not already visible. It's usually on the left side of the authoring tool and can be seen in Figure 1.4.

8 1. The Flash Authoring Tool

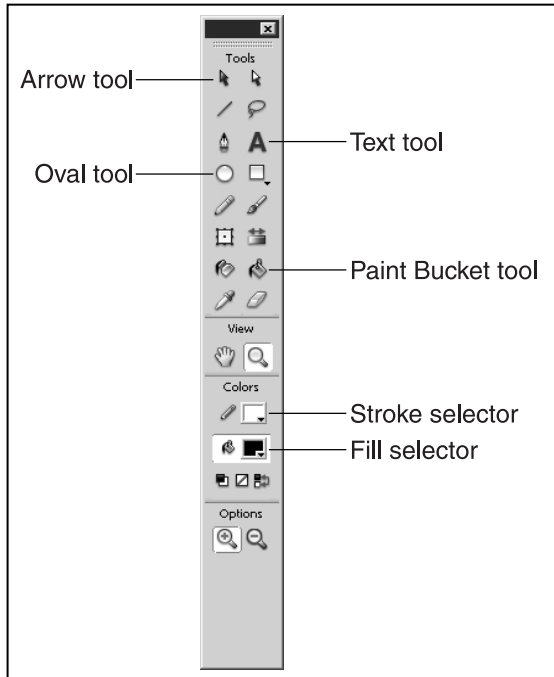


Figure 1.4

The Tools panel allows you to select and manipulate objects on the stage as well as create original art.

The Tools panel is useful for creating art within Flash, but before we do that, we need to create a new object to hold our art. Use the Insert pull-down menu and select New Symbol. You should see a dialog box as in Figure 1.5, with the name of the symbol already set to Symbol 1 and the behavior set to Movie Clip.

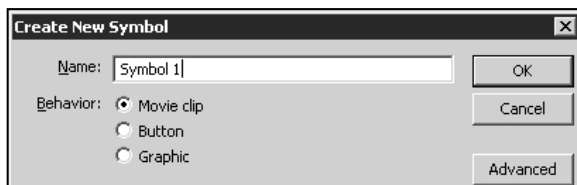


Figure 1.5

The Create New Symbol dialog box is used to create new objects and art assets.

Change the name from Symbol 1 to Ball and click OK. This action has created a new movie clip and opened it for editing. Now it's time to draw some stuff.

Look back at the Tools panel and click on the white circle with the black outline. This is the Oval tool, and it is labeled in Figure 1.4. If you move your mouse over the stage, you'll see that your pointer has turned into a crosshair. Click and drag with the mouse and create a small circle. When you release the mouse button, the circle is drawn on the stage. Now look at the top of the stage. You should see two icons with text that look like Figure 1.6.

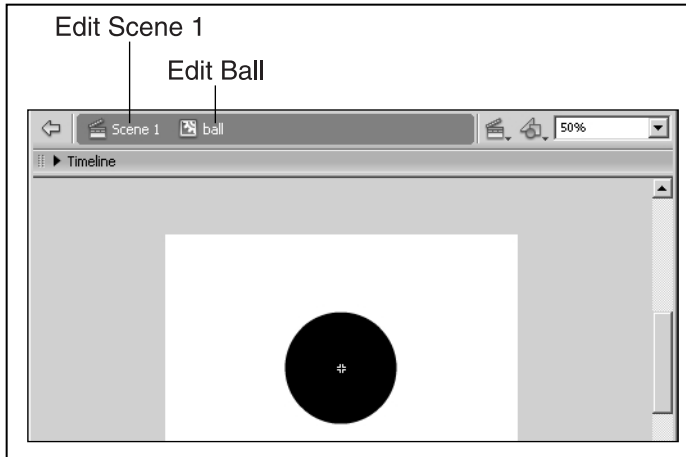


Figure 1.6

The top of the stage has icons that represent different timelines you have open for editing—in this case, Scene 1 and Ball.

The word *Ball* is in bold because you are editing it. Now click on the Scene 1 icon. This tells Flash that you want to stop editing your Ball movie clip and return to the main movie, where you were before you created the Ball movie clip.

You’ve created a movie clip called Ball that contains a black oval on a white background. The new clip has been saved for you and exists as a symbol in your library.

The Library

The library is a repository for all your art and sound. All the raw materials that you need to create games are stored and organized in the library, and you’ll quickly become familiar with its use. Use the Window pull-down menu and select Library to open the library panel.

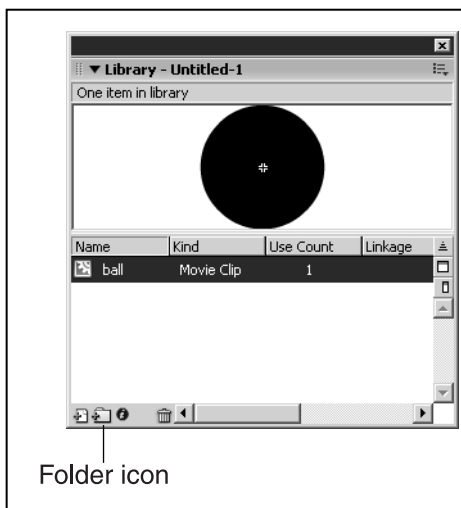


Figure 1.7

The library is a storehouse for all your Flash assets, including art, sound, movie clips, buttons, animations, and the like.

10 1. The Flash Authoring Tool

This new panel, shown in Figure 1.7, has a list of all the symbols in your movie along with an icon showing you their type. You should see the Ball movie clip as the only element in the library.

Click on the ball symbol and drag it onto the stage. This creates an instance of the ball movie clip. It's important to note that the ball we edited was a template for all possible balls instances in our movie. If we were to edit the ball symbol again and say, change the color from black to red, the ball instance on our stage would change color as well because it is only an instance of the ball symbol that exists in our library.

Go back to the Tools panel and select the black arrow in the upper-left corner. This is the Arrow tool, and it is labeled in Figure 1.4.

The Arrow tool is used to select and move stage elements around. With the Arrow tool selected, you can move your mouse over the ball on the stage. You should see the mouse pointer change to an arrow with a small 4-way arrow next to it, as in Figure 1.8.

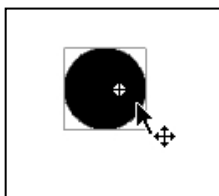


Figure 1.8

The mouse pointer changes when you are ready to drag an object on the stage.

The change in the mouse pointer is telling you that if you drag the object below your mouse, it will move. Try dragging the ball around the stage a bit.

Now drag two more instances of the ball from your library onto the stage and position them anywhere you want to on the white background. Put your mouse over one of them, right-click, and select Edit from the pop-up menu. This allows you to edit the ball movie clip again. Look back at the Tools panel and select the Paint Bucket icon. It's about halfway down on the right side of the Tools panel, and it's been labeled in Figure 1.4.

TIP

You can create folders in your library to help organize your symbols. Click the folder icon, shown in Figure 1.7, in the lower-left corner of the library to create a new folder. After giving the folder a name, you can drag and drop library elements into and out of the folder. If you click on the icon to the left of the folder's name, you can open and close the list of symbols within that folder. This allows you to more easily navigate through a long list of available symbols.

CAUTION

Be careful when you are placing movie clips on the stage. The actual stage is only the part with the white background. The gray area surrounding it is out-of-bounds; movie clips placed there will probably not appear in your final movie.

Further down the Tools panel, you should see two color selectors called Stroke and Fill color. These icons are also labeled in Figure 1.4.

Click on the lower icon, which is used to change the color of filled areas. You should now see a color selection palette with several different colors to choose from. Pick a reddish color and then click on your ball. You should see the ball's interior become red.

Now select Scene 1 from the top of the stage to go back to your main movie. Notice that all the balls are now red. That's because when you right-clicked and edited the ball, it actually opened the ball movie clip from the library for editing. Because all the balls on your stage are created from the same symbol, when you changed that symbol's color, all the balls changed to match.

Importing Graphics and Sound

In addition to creating new movie clips from scratch, you can import graphics and sound from outside sources. Flash can import from a wide variety of file formats, allowing you to create art and sound outside Flash and then bring them in with a few mouse clicks.

Our plan is to import a bitmap graphic from the CD to use in our movie. But first we must create a movie clip to import the graphic into. Select New Symbol from the Insert pull-down menu and name the symbol veggie.

Insert the CD into your drive and then use the File pull-down menu to select Import and Import to Stage. Navigate into the CD drive and then into the Chapter 1 folder. Choose the file named veggie.bmp and click OK.

You have now created a new movie clip named veggie and imported a graphic into it. Notice that the veggie.bmp file is now included in your library. The graphic you see on the stage with the gray outline is an instance of the veggie movie clip. Select Scene 1 to stop editing the veggie and return to the main movie stage. Now drag an instance of the veggie movie clip from the library onto the stage.

Make sure to drag an instance of the veggie movie clip from the library to the stage and *not* an instance of the veggie.bmp graphic. If you drag an instance of a graphic onto the stage, there is no way to control it with script; by placing it inside a movie clip and then dragging the clip onto the stage, you leave yourself the option of using script to affect it later.

In your library, different symbol types have different icons. Figure 1.9 shows each of the symbol types with the respective icons.

12 1. The Flash Authoring Tool

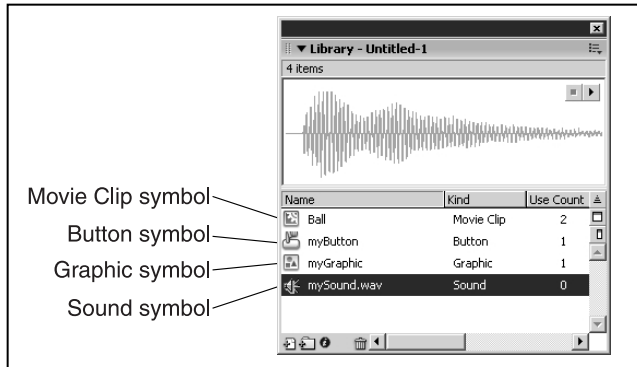


Figure 1.9

Different symbol types have different icons for easy identification.

To import sound, you would follow a similar procedure, except that you wouldn't need a movie clip to contain the sound. That's because you don't drag sound files onto the stage; instead, they stay in the library and you trigger them with ActionScript.

TIP

You should be aware that you can also import finished Flash movies into a new movie. If you create a small Flash movie and you want to use it as part of a bigger Flash movie, you can. Simply import it like any other outside element.

Text Fields

As you might expect from a program used to develop Web sites, Flash comes with some powerful tools to add text to your movies. By creating what is called a text field, you can easily add several kinds of text elements to your work. Text fields come in three types:

- **Static text.** This is text that will be displayed and will never change. After you enter this text, it stays exactly as you entered it for the life of the text field. Most text is static text.
- **Dynamic text.** This is text that can be changed over the life of the text field. Dynamic text is typically used to display dynamic information in a game. For example, a player's current score is one good use of a dynamic text field. The player's score changes as he completes tasks in the game, so the value displayed in the box must change. By using a variable, you can allow Flash to automatically update the contents of your dynamic text field when things in your game change. (You will learn about variables in Chapter 2.)
- **Input text.** This is text that the user can change while playing your game. Many times the user needs to enter some information, such as his nickname. By creating an input text field, you can give him a place to type the information. In a similar way to dynamic text, input text is associated with a variable. When the user changes the text in the input text field, your program will know about it. That way, your script can monitor what the user has entered into the input text field and act appropriately. A good example of an input text field in a game is a form for the user to enter his nickname so that you can post his name and score on a high-score board.

Because both dynamic and input text fields require the use of ActionScript and we have not covered any of that yet, I'm leaving an explanation of those types of text fields until we are ready for them. For now, let's look at the creation of static text fields.

Static Text Fields

To create a static text field, begin by selecting the Text tool from the Tools panel. This icon has the letter A on it and is labeled in Figure 1.4.

After pressing the Text tool, left-click somewhere on the stage. Now type some text into the box that has just appeared. You can resize the text field by dragging the lower-right corner. You can also reposition the text field by putting your mouse over the edge of the box so that the mouse pointer turns into the little four-way arrow that indicates a draggable object. Then drag your new text field anywhere on the stage you like.

After you are content with the text in your static text field and its position, select the Arrow tool from the Tools panel. That causes you to leave Text Entry mode on the text field and go back to being able to select different stage elements.

We should now talk about another important tool so that we can use it to change the way our text field looks. You manipulate things like text size or font type through the Properties panel.

The Properties Panel

One of the most important panels in the authoring tool is called the Properties panel. It's a short, wide panel that looks something like Figure 1.10. It's possible that your Properties panel might look somewhat different from the one in the figure. Let me explain.

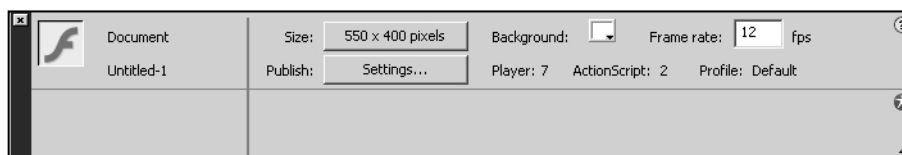


Figure 1.10
The Properties panel allows you to edit properties of anything on the stage.

TIP

Text in Flash is normally anti-aliased, meaning that small fonts have a tendency to be a bit blurry. A new feature in Flash allows you to make text fields aliased by pressing the Alias text button while you have one or more text fields selected.

14 1. The Flash Authoring Tool

The Properties panel is adaptive in the sense that when you select an item on the stage, the contents of the Properties panel change to reflect properties of the object you selected. Different types of elements on the stage have different properties, and the Properties panel changes to reflect that. For example, movie clips have a position and a size property in the panel, and although text fields have these two properties as well, text fields also have properties that a movie clip does not, such as font, font size, and kerning. When you select a movie clip on the stage and then look at the Properties panel, you see only the properties that pertain to a movie clip. If you select something else, such as a text field, you see all the properties available for that, which include font.

When you're using the Properties panel to manipulate stage elements, the properties pertain to the *instance* on the stage, not to the symbol in the library. That means that if you have five ball instances on the stage (remember when we created ball instances earlier this chapter) and you increase the size of one ball on the stage by selecting it and altering the fields in the Properties panel, only the selected ball changes. The symbol in your library is unaffected, as are the other balls on the stage.

Now that you know what the Properties panel does, go ahead and click on the text field (the one we created a couple sections ago) if it is not already selected. Now look at the Properties panel and compare it with Figure 1.11. Notice that the font, font size, auto-kerning, and several other text properties are available to you now. The upper-left option defines the type of the text field and is labeled in Figure 1.11 as well.

CAUTION

Don't confuse the use of the Properties panel to change an instance with actually editing the library object, which is done by right-clicking on a symbol or instance and selecting Edit.

CAUTION

Make sure that when you try to change the properties of an instance that only one instance on the stage is selected. If you have more than one instance selected and you try to change some properties, Flash will apply all the properties to all the instances.

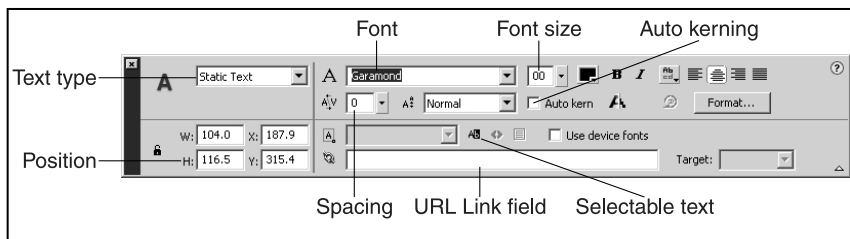


Figure 1.11

The Properties panel shows properties for a text field when one is selected.

Because we only know how to use static text, make sure that's the type defined for this text field. Below that are the position (X and Y) and size properties (W and H). Try changing those four blanks and see what happens. Two of them, labeled W and H, should change the scaling of the text field on the stage. The other two blanks, labeled X and Y, should change the position of the text field. There is also a block of properties that include the font, font size, color, bold, italic, centering, aliasing, and so on. Feel free to experiment with these different text options and consult the tutorial if you have problems. You can also check the Selectable text field on the Properties panel if you want your user to be able to highlight and copy text in your game or Web site with the mouse. Selectable text is labeled in Figure 1.11.

Selectable text is useful if the user needs to copy and paste text from your site to somewhere else. There is also a URL Link field, labeled in Figure 1.11, where you can define a hyperlink to another site. If you place a URL in this field and the user clicks on the text field, the user is redirected to whatever URL you filled in.

Finally, you can use the Properties panel to change some of the properties of the main movie. If you click somewhere off the stage or somewhere on the stage where there are no movie clips, your Properties panel shows the main movie Properties. This can be seen in Figure 1.10.

The Size field indicates the size that the movie will be in the Web browser when it's published. Whatever size you set this to is reflected by the size of your stage background. The next field is labeled Publish. It determines which Flash Player your final movie is playable on. The new ActionScript features introduced with version 6 of the Player don't work if you publish for anything other than Flash 6. Therefore, we won't change this field in any of our games. Essentially, the only reason to use Publish is if you don't have the Flash 6 ActionScript commands and you want users who have older versions of the player to be able to view your movie without downloading the latest player from Macromedia.

TIP

You are encouraged to search around and discover other options and properties in Flash. Rolling up your sleeves and getting your hands dirty is an important part of the learning process.

Although the Properties panel provides many properties to fiddle with based on the stage object we select, it only lists the most commonly used properties. To access all possible properties of an object, you must use some additional panels. One excellent example of this is the Transform panel.

The Transform Panel

The Transform panel allows us to scale, rotate, and skew instances, or groups of instances, on the stage. You can view the Transform panel in Figure 1.12.

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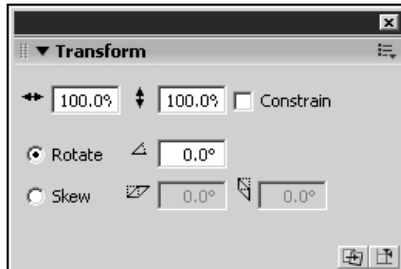


Figure 1.12

The Transform panel allows us to scale, rotate, and skew a movie clip instance on the stage.

The top two fields indicate the scale of the selected object. Click on one of the balls on the stage and open the Transform panel. Both fields are set to 100, which means the clip is being displayed at 100 percent of its normal symbol size. If you change one of the numbers to 200, the ball doubles in size.

The next field in the Transform panel is labeled Rotate. This field allows you to rotate a movie clip instance on the stage by simply changing the number. Try selecting the veggie instance and changing the Rotate field from 0 degrees to 180 degrees.

The final field in this panel is labeled Skew. This value is best explained with an example. Select one of the balls on the stage and look at the Transform panel. Click on the Skew option button and enter 20 in the first blank. Notice how the ball you selected is stretched.

Play around with stretching, scaling, rotating, and skewing some of your movie clip instances. Feel free to drag more balls and veggies from the library if you need more raw materials to experiment on. Figure 1.13 shows some clips being skewed.

TIP

If you uncheck the **Constrain** check box and then alter one of the scale values, only one of the dimensions is scaled, giving you a stretching effect. This is in contrast to the default value, in which **Constrain** is checked. When this is the case, the value you didn't change is automatically scaled along with the value that you did.

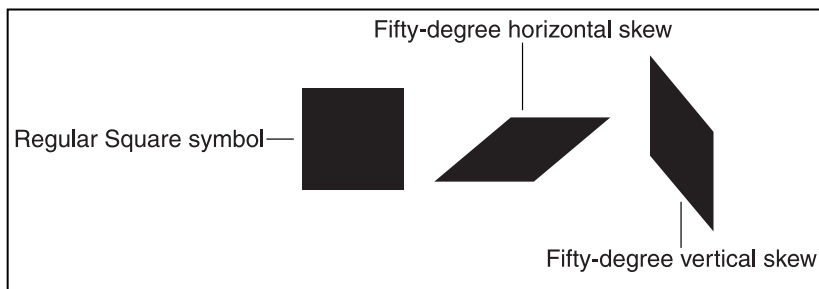


Figure 1.13

The skew property allows you to do some strange-looking stretches. It uses an angle measure for its calculations.

The Timeline

Directly above the stage is a panel called the timeline, which can be seen in Figure 1.14.

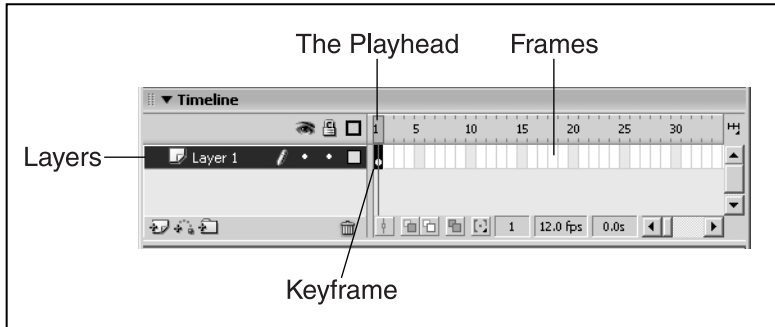


Figure 1.14

The timeline breaks down a movie clip into frames.

In Flash, every movie has a timeline, and the timeline's job is to tell the movie what to do. The timeline is broken down into several pieces, including frames, the playhead, keyframes, and layers. Let's look at each piece.

Frames

You should see a long row of thin white rectangles, labeled in Figure 1.14, which represents the frames in your timeline. Each frame represents one slice of time during movie playback. Flash plays each frame in a timeline, one at a time, in succession. By placing different objects and scripts in various frames, you can control what happens during movie playback. At any given moment of time, Flash will be working in one frame of the timeline. Whichever frame is the current one is said to have the playhead over it.

The Playhead

The playhead is labeled in Figure 1.14. This pink rectangle tells you which frame is currently being displayed on the stage. By dragging the playhead left and right, you can change the currently displayed frame on the stage. During movie playback, the playhead will move from frame to frame, displaying stage instances and executing scripts attached to the frames it passes over. (Attaching scripts to instances is covered in Chapter 2.)

Right-click on frame 10 in the timeline and select Insert Frame. This adds new frames to the timeline and automatically moves the playhead into the last frame. You can now drag the playhead into any of the frames in the timeline and see the contents of the stage during that frame. Any time you add an instance or alter something on the stage, you must make that frame into a special kind of frame called a keyframe.

Keyframes

These are special frames where things change on the stage. When a keyframe is present on a timeline, the frame gets a black dot inside, as in Figure 1.14. You can add a keyframe by right-clicking a frame and selecting Insert Keyframe. Inside a keyframe, you can place art on the stage. The art will appear to the user when his movie has reached that frame.

You can add a keyframe by selecting either Insert Keyframe or Insert Blank Keyframe. If you insert a keyframe, you get a copy of any objects on the stage in the last keyframe before the frame you are adding a keyframe to. This is convenient if you want to make small changes to the position of objects on the stage. If you add a blank keyframe, you don't get copies of the art; instead, you get a blank stage in that frame.

As you can probably tell, if you are creating an animated movie or something similar, you're going to have a vast number of art objects on your stage in any particular frame. This begs for a system of organization for the art objects, and Flash gives us one. It's called layers.

Layers

Layers are primarily a method of organizing objects on your stage. If you look at your timeline, you'll see one layer that is labeled Layer 1. You can see this by referring to Figure 1.15.

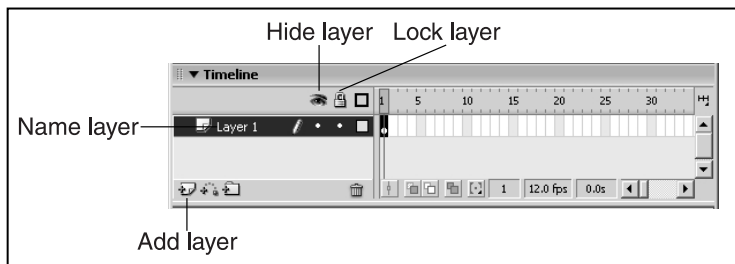


Figure 1.15

The timeline has layers that can be locked, hidden, named, and ordered.

All new movies have just one layer, but you can add more by pressing the Add button in the lower-left corner of the timeline. Press that button now to add a second layer to your main movie timeline. When you drag an instance of a movie clip onto the stage, it is assigned to whichever layer is currently highlighted.

Layers give us some tools for working more efficiently with our stage instances. Layers can be locked, hidden, named, and ordered. These are all important concepts, so let's look at each of them.

NOTE

A keyframe is used when something on the stage changes, such as a new instance appearing or an old instance disappearing. When you want the stage to remain as it is, you will use regular (blank) frames instead of keyframes.

Locking Layers

Each layer can be locked so that any movie clip instances on it cannot be moved or deleted. This allows you to create complex scenes in your movie and not mess things up by accidentally dragging the wrong clip around the stage. To lock a layer, simply click on the dot to the right of the layer's name that is below the little lock icon, as seen in Figure 1.15. This causes the layer to lock, which is indicated by a red X where the dot used to be. To unlock a layer, simply click the red X.

Hiding Layers

You can also hide a layer if you need to. When you hide a layer, it still shows up in your final movie, but it is hidden while you are authoring. This is convenient when you have many clips on the stage and things are getting too chaotic. If you hide some of the layers, you can see the clips that you are trying to arrange more easily. To hide and reveal layers, click the dot that is to the right of the layer name underneath the eyeball icon, as shown in Figure 1.15.

Naming Layers

You can change the name of a layer by double-clicking its name. Try to name layers based on the kind of content you plan to place in them. By giving layers good names, you can easily find your content in the timeline even when you have hundreds of clip instances inside dozens of layers.

Now that we've seen the majority of properties of the timeline, we're ready to move on. From here, we're going to look at more of the objects that we can use on our stage, as well as the ability to add text to the stage.

Ordering Layers

Another important feature of layers is that you can drag them up and down in relation to each other. The stacking order of movie clip instances on the stage reflects the ordering of the layers in the timeline. In other words, if some of your movie clip instances are overlapping on the stage, you can change which one is on top by changing the layer order. Right-click on the veggie movie clip instance on the stage and select Cut from the pop-up menu. Now click the Insert Layer button in the lower-left corner of the Timeline panel. The icon is labeled in Figure 1.15. A new layer should have appeared above Layer 1 called Layer 2. This new layer should also be highlighted. Right-click on the stage and select Paste from the pop-up menu. This should paste the veggie movie clip instance onto the stage in the first frame of Layer 2. Drag the veggie clip around the stage until it's sitting on top of one of the balls. Then go up into the timeline and drag Layer 1 down below Layer 2. Notice that the veggie movie clip is now sitting below the ball because the layer order changed. Putting clips into separate layers allows you to easily manipulate the stacking order of clips on the stage.

TIP

You can use folders to organize your layers, much like you did with symbols in the library. In some movies, you might have dozens of layers, and organizing them into folders that you can open and close will help you keep everything straight.

Frame Labels

Now that we know about the Properties panel, we can go back and cover one more topic about the timeline: frame labels. One additional thing you can do to a frame is give it a name. That's really kind of silly at this point, but in the future, we're going to use those frame labels (names) to do some neat stuff with the playhead. At this point, I just want to get us to the point where we can name frames.

Add a new layer called labels. Select the first frame in its timeline, and look at the Properties panel. Notice the blank with <Frame Label> in it, as shown in Figure 1.16.

NOTE

Remember that when you create a new layer, the first frame will always be a keyframe. You can only add frame labels at keyframes; therefore, if you want to label a frame other than the first frame in a layer, you must add keyframes where you want the labels to go.

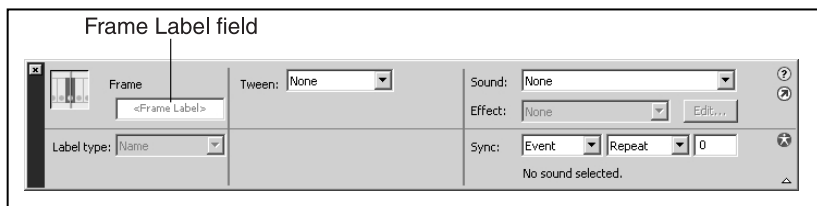


Figure 1.16

When a frame is selected, the Properties panel has a field used to name it.

If you type a name into this blank, the frame is named. Try typing a name into that field now. When you have labeled a frame, a small red flag appears in the frame you labeled, as shown in Figure 1.17.

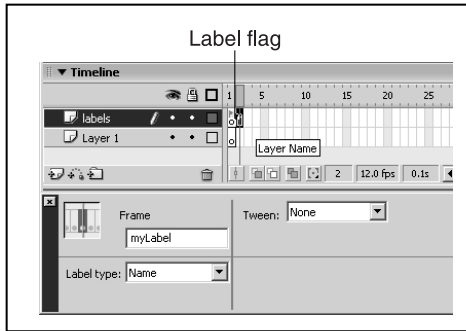


Figure 1.17

A labeled frame contains a red flag to let you know it has a name.

NOTE
 You are not required to put frame labels in their own layer, but doing so makes your movie more organized. I always make a Labels layer, and it's always the top-most layer in my timeline.

The name also appears in the frame, but only if there are enough blank frames following the labeled frame to give adequate room to display it. Add blank frames after the frame you labeled if you cannot read the name. After the blank frames have been added, you should be able to see the label, as in Figure 1.18.

TIP
 You don't need to be able to see the frame label for it to work. If you move the mouse pointer over a frame with a label that is obscured, a ToolTip will appear that tells you the name of that frame.

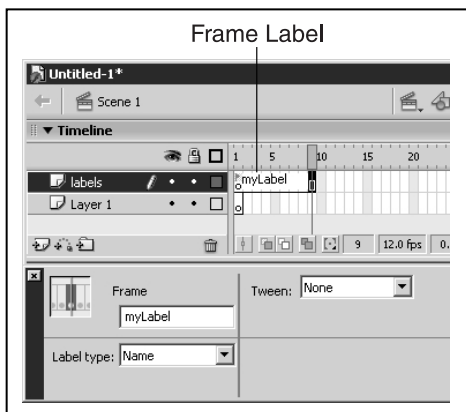


Figure 1.18

If blank frames follow a labeled frame, the name is displayed in the timeline.

NOTE

You can only label keyframes. If you try to label a normal frame, the label is applied to the previous keyframe in the timeline. Frame 1 always contains a keyframe.

Scenes

You can break up a Flash movie into scenes. Scenes are essentially breaks in your timeline in which the numbering of frames starts over at 1 again. In general, artists and animators use scenes as logical breaking points in their animated movies, but for the video game programmer, scenes serve no real purpose. Using scenes only causes a programmer to break his scripts into pieces and place some of them in one scene and some of them in another. Because one of the things a Flash programmer tries to do is keep all his code in one place, scenes are counterproductive. For that reason and many others I won't waste time mentioning, none of the games or code in this book uses anything more than the default Scene 1.

Adding a Simple Tween

We should now add something to our movie that will give us some action. I'm tempted to give you a couple lines of ActionScript to make an instance move about the stage, but that topic is probably best left to the next chapter, which is getting close now anyway. Instead, we're going to do something that we'll probably never do again: tween. Tweening, as you might have read in the tutorials, is a tool that creates motion in Flash. Specifically, a designer places a movie clip on the stage in a particular frame on the timeline. The designer tells Flash to tween the movie clip. Finally, the author changes the position, orientation, size, shape, and so on, of the movie clip at some frame further down the timeline. When the final movie plays, Flash fills in the frames in between, and changes to the clip become fluid over time. An example will help explain this concept.

Click on and delete any instances on the stage. Now create a new instance of veggie by dragging it onto the stage from the library. (If you don't have veggie in your library, go back and reread the section on importing graphics and sound.) Click on the veggie instance on the stage. Now go up to the timeline and notice that the layer that contains veggie is highlighted. I know this is true because when you select a clip on the stage, the layer it exists in is automatically selected in the timeline. Use the Insert pull-down menu and select Create Motion Tween. Now right-click on Frame 20 in the highlighted layer and choose Insert Frame from the pop-up menu. Don't insert a keyframe—just a normal frame. This action causes Flash to add an empty frame to the twentieth frame in the timeline and to fill all frames in between with empty frames. Finally, with the twentieth frame highlighted (it should be selected if you haven't done any other clicking around on the timeline), drag

the veggie instance somewhere else on the stage, as far away from its current location as possible. This completes the tween. Veggie now moves across the stage when the movie is played or previewed.

Previewing a Movie

You can use Flash to preview your final movie by selecting Play from the Control pull-down menu. You should see veggie sort of sliding across the screen while the pink playhead moves down the timeline. When the playhead gets to the end of the movie, it stops. You should also notice that the balls and text field disappear while veggie makes its journey across the stage. That's because there are no empty frames after the balls' keyframe in their layer of the timeline. You can right-click on the twentieth frame in Layer 1 and select Insert Frame to fix this if you want to.

Testing a Movie

The most common way to see your work in progress is to test your movie. You can do this by selecting Test Movie from the Control pull-down menu. During testing, Flash will play the movie inside the authoring tool's window for you. This is the fastest and easiest way to see your work in progress, and we'll be using it extensively later in the book.

Publishing a Movie

After you have completely authored a movie and it's ready to go up on your Web site, you need to tell the authoring tool to publish it. This takes the .fla file that was created when you started the chapter and converts it into an .swf file. An .swf file is playable in the Flash Player, which embeds in the Web browser. The sole purpose of the authoring tool is to allow you to create .fla files and then convert them into .swf.

CAUTION

Don't be confused about the differences in testing a movie, playing a timeline, and doing a publish preview. Testing a movie is the easiest way to see what the movie looks like before it's complete. You can see an animation you've done by simply playing the timeline. You can preview what your movie will look like in the browser by doing a publish preview, which is available in the File pull-down menu.

NOTE

Before you publish, you must save. Use the File pull-down menu and select Save. That way you can name your movie and choose a directory for it to live in. If you do not save, you might have a hard time finding your files after you close Flash.

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When it's actually time to do the .fla to .swf conversion, which is called publishing a movie, you must consider several options that can be used to customize the way your movie looks in the browser. To look at them, use the File pull-down menu to select Publish Settings.

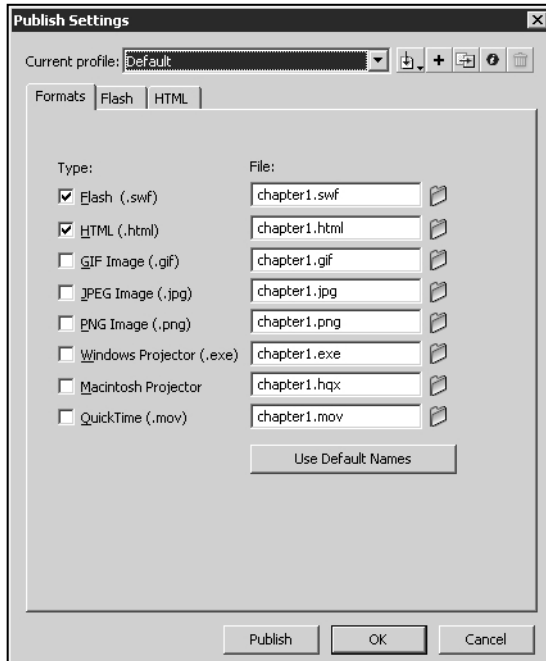


Figure 1.19

Many settings can be altered to customize the way that a movie is published.

This opens up a dialog box with several pages of options, shown in Figure 1.19. Feel free to look through these options, but we'll discuss most of them later in the book, so I'll leave them alone now. At this point, it's only important to note that on the first page of options, labeled Formats, both the Flash and HTML (Hypertext Markup Language) boxes are checked. This causes Flash to create both the .swf file that is the final movie and an HTML document that contains it and can be read by a Web browser. After you click the Publish button, you can view your movie by looking at the HTML document it creates in your Web browser.

TIP

If you want to see how your movie will look in the browser without going to the trouble of publishing and then loading the HTML in your browser, you can select Publish Preview from the File pull-down menu. Flash then opens your browser and puts a temporary version of your movie into it.

Conclusion

Well, we're one chapter in, and at this point, there is no video game in sight. That's okay, though; making games isn't a simple process, and we have some more ground to cover before we're shooting down alien invaders from Mars. We've covered a lot so far, though. You should be familiar with the authoring tool and have a basic understanding of Flash movies and how to make them. With just a little more practice and investigation, you could be creating fantastic movies and animated sequences with the tools you are now familiar with. But because you're reading this book, I infer that is not your intention. Instead, you are like me; you want to program video games. And, of course, to program, we need a programming language. Fortunately, Flash gives us one, and its name is ActionScript.

