# Part Five Multimedia Tools and Techniques

CHAPTER 18 Screen Design Principles

CHAPTER 19 Creating Applications with PowerPoint

CHAPTER 20 WYSIWYG Text Editing

CHAPTER 21 Graphics

CHAPTER 22 Manipulating Objects

CHAPTER 23 Triggers and Hyperlinks

CHAPTER 24 Multimedia Effects

CHAPTER 25 Waveform Audio Recording It should be as easy to author in a medium as it is to experience works created in it.

---Ivan Illich, paraphrased by Brenda Laurel, Edutopia 1, no. 1 (Winter 1993): 6

This part of the book begins the hands-on tutorial that will prepare you to create your own multimedia applications. You will learn how to use a set of everyday multimedia tools and, through practice, develop techniques that will make you proficient in creating applications.

The tutorials in this book teach you how to use the following tools: Paint Shop Pro (Windows) and Graphic Converter (Macintosh) to capture and format graphics; QuickTime Pro to create and edit movies and animations on Windows and Macintosh computers; WS\_FTP (Windows) and Fetch (Macintosh) to publish files to the Web; and a suite of tools in PowerPoint enabling you to record and play back waveform digital audio, make CD Audio clips, and link hypertext and hyperpicture triggers on the screen to multimedia objects. Thus, you will learn how to create multimedia applications.

PowerPoint is just one of many software packages you can use to create multimedia applications. The many alternatives to PowerPoint include presentation packages—such as Compel, Freelance, Harvard Graphics, ASAP WordPower, Aldus Persuasion, or WordPerfect Presentations—and authoring systems—such as Authorware, ToolBook, HyperStudio, Quest, TenCore, and IconAuthor. Many of these packages are discussed in Chapter 9.

PowerPoint was chosen for this book because it runs cross-platform on both Windows and Macintosh computers and is the most widely used multimedia program in the world. Users who are familiar with other packages will realize that many of the PowerPoint techniques taught in this book can be applied using other sets of tools. What is important here is not the choice of a specific tool but rather the concepts that are being presented. Later on, the student can apply these techniques using the tools available in different software packages.



#### After completing this chapter, you will be able to:

- Arrange text in the proper size, color, and font on a multimedia screen
- Choose an appropriate background color and understand how foreground text colors interact with background screen colors
- Arrange pictures on the screen either as background images or design elements for text to flow around
- Make text stand out against a background photo
- Adopt a common look and feel for the screens in your application

The hands-on tutorial in this part of the book will enable you to place text anywhere on the screen in any size, color, or font you want. You will learn how to put pictures on the screen, either as backgrounds that appear behind the text, or as design elements around which text flows. Then you will learn how to make your screens interactive by making hypertext links and placing buttons on the screen. Before you begin, it is important to understand a few principles of multimedia screen design that will help you make screens that have a good layout.

#### Layout

Multimedia screens consist of several design elements, including text, pictures, icons, triggers, and buttons. The relationships among these elements on the screen are called **layout**. When you create a multimedia screen, you should plan its layout so your content is presented with good balance. Think of dividing the screen into regions, of which some will be pictorial, with others consisting of blocks of text. You must also think about how the user will interact with your screen and include the appropriate navigational buttons and hypertext links.

Figures 18-1 through 18-6 analyze the screen layouts of some highly successful multimedia applications. Notice how some rely heavily on text, whereas others are more graphical. All of them provide intuitive ways to navigate that make these applications user-friendly.



Figure 18-1 Textual screen design.



Figure 18-3 Graphical screen design.











Figure 18-5 Mixed screen design.



Figure 18-6 Layout analysis of Figure 18-5.

### **Font Selection**

TrueType font technology enables you to place any font on the screen in any size and color you want. There are hundreds of different fonts available from vendors such as Adobe and Corel. But be careful when you choose a font for a multimedia application you intend to publish. If the font you choose is not installed on the user's machine, your screen will not appear as intended.

You can rely on all Windows and Macintosh users having the standard fonts listed in Figure 18-7. If your application uses a font your users do not have, you must publish that font along with your application. Most fonts are licensed and protected by copyright; make sure you have permission for any fonts you distribute.



Figure 18-7 Standard fonts.

Of the five fonts illustrated in Figure 18-7, all are proportionally spaced except for Courier New. **Proportional spacing** means that wide letters like m and w take up more space than thin letters like l and i. Normally, you will want to use a proportional font, because proportional fonts are easier to read than monospaced fonts. However, if you want to make columns of text line up precisely on the screen, such as in a spreadsheet, you will need to use the nonproportional Courier font. Figure 18-8 illustrates the difference between proportional and nonproportional spacing.

#### Times New Roman

Proportional fonts are pleasing to the eye; their characters are varied in width and easier to read. Use them in text blocks like this, but not for tables:

Sales:	\$100,000	\$85,000	\$43,614
Taxes:	54,521	3,425	6,921
Fees:	231,947	41	324
Total:	\$386,468	\$88,466	\$50,859

#### Courier New

Nonproportional, or monospaced, fonts are regimented and somewhat graceless, but make vertical alignment much easier:

Sales:	\$100,000	\$85,000	\$43,614
Taxes:	54,521	3,425	6,921
Fees:	231,947	41	324
Total:	\$386,468	\$88,466	\$50,859

Figure 18-8 Comparison of proportional and nonproportional spacing.

An important difference between the Times New Roman and Arial fonts is that Times New Roman has serifs, whereas Arial does not. A **serif** is a line stemming at an angle from the ends of the strokes of a letter. Typefaces without serifs are called **sans serif** fonts. Figure 18-9 compares a few characters from the Times New Roman and Arial fonts, pointing out the serifs in Times New Roman.



Figure 18-9 Comparison of Times New Roman and Arial fonts.

### **Text Sizing**

Text size is measured in **points**, which tell how high the character is. TrueType fonts can be sized to any standard point size. They can also be stretched and squeezed to create a wide variety of nonstandard sizes. In print media a point is 1/72 inch. In multimedia a point is about the height of a single pixel on a  $640 \times 480$  computer screen. Due to different-sized monitors, the actual size of the text will vary somewhat depending on the physical height of the screen. Figure 18-10 illustrates different point sizes.



## **Foreground Versus Background Colors**

In the next chapter, you will learn how to create colored backgrounds upon which you will place foreground text in different colors. The choice of the foreground and background colors is up to you. Some color combinations work better than others. Figure 18-11 illustrates recommended color combinations as well as colors to avoid.

Background Color	Recommended Foregrounds	Foregrounds to Avoid
White	Black, DarkBlue, Red	Yellow, Cyan, LightGray
Blue	White, Yellow, Cyan	Green, Black
Pink	Black, White, Yellow, Blue	Green, Red, Cyan
Red	Yellow, White, Black	Pink, Cyan, Blue, Green
Yellow	Red, Blue, Black	White, Cyan
Green	Black, Red, Blue	Cyan, Pink, Yellow
Cyan	Blue, Black, Red	Green, Yellow, White
LightGray	Black, DarkBlue, DarkPink	Green, Cyan, Yellow
Gray	Yellow, White, Blue	DarkGray, DarkCyan
DarkGray	Cyan, Yellow, Dissu	Red, Brown, Gray
Black	White, Cyan, Green, Yellow	DarkRed, DarkCyan
DarkBlue	Yellow, White, Pink, Green	DarkGreen, Blue, Black
DarkPink	Green, Yellow, White	Blue, Black, DarkCyan
DarkRed	White, LightGray, Yellow	Black, DarkBlue
Brown	Yellow, Cyan, White	
DarkGreen	Cyan, White, Yellow	DarkBlue, DarkRed
DarkCyan	White, Yellow, Cyan	Brown, Blue, Gray

Figure 18-11 Recommended color combinations and colors to avoid.

## **Placing Text on Photographic Backgrounds**

Exercise care when placing text on photographic backgrounds. Some photos are so busy that text placed atop them is difficult to read. A drop shadow can improve the readability of text placed on photographic backgrounds. Figure 18-12 illustrates text printed on top of a background photo with different amounts of drop shadow.



Figure 18-12 A drop shadow can improve the readability of text printed on top of a background photo.

## **Arranging Text and Pictures on the Screen**

Although drop-shadowed text looks cool overlayed on pictures that are not too busy to detract from the readability of the text, you should not overuse text overlay. It is often better to position text above or below a picture, or to flow text around a picture, rather than overlay text on top of an image.

Navigational icons normally work best when they appear lined up in the same region of the screen instead of being scattered about the screen. Try to position the icons in a logical order. For example, it is logical to place the page-back icon in the lower left corner of the screen, and page-forward in the lower right. Here is a suggested sequence of icons that gives the user the option to page back, quit, return to the menu, print the screen, or page forward:



#### **User Friendliness**

It is important that multimedia screens be easy to use. When you plan your layout and decide where you will place pictures and text on your screen, make sure you include navigational buttons, icons, or hypertext to clarify what the navigational options are and where the user should click to navigate.

Because hypertext includes words, your hypertext can be self-documenting. For example, the phrases *Return to the Menu*, *Next Page*, *Previous Page*, *Stop*, *Print Screen*, and *Quit* can appear in hypertext which, when clicked, makes what they say happen. Iconic navigation is often more effective, takes up less screen space, and works better with international audiences because the icons can be understood regardless of what language the user speaks. For example, instead of the hypertext phrases, you can use icons like these:



Be consistent. If you adopt navigational icons, use them consistently throughout your application. If you use hypertext navigation, be consistent in how you word the directions.

#### **Metaphors**

In multimedia screen design, a **metaphor** is a way of thinking about new media in terms of something the user already knows. For example, when a multimedia application launches a series of images that the user will view sequentially, it may help to use the metaphor of a slide show. You might even use the icon of a slide projector to launch the slide show:



In addition to providing buttons to move back and forth through the slides, you could carry the slide projector metaphor a bit further and make a left mouse click show the next slide, and a right click back up a slide, just like the remote control buttons on a 35mm slide projector.

Other metaphors found in multimedia applications include the book (for paging through multimedia screens), a stack of cards (popularized by HyperCard), the tape recorder (for recording and playing back audio clips, as in Microsoft's Media Player), a television tuner (for selecting TV channels on multimedia PCs with TV tuners), and the jukebox (for selecting songs to play). Be creative and inventive in your use of metaphors. Think hard about the content of your application, imagine yourself as a user trying to navigate through it, and adopt a metaphor to help orient the user and make your application intuitive.

## **Adopting a Common Look and Feel**

Avoid the temptation to demonstrate every trick you know when you design a multimedia application. Keep it simple. Do not make every screen look and work a different way. Rather, adopt a common look and feel so the user will be able to navigate intuitively after getting used to how your screens work.

It is frustrating to use an application that mixes metaphors and changes what icons mean on different screens. Be consistent. If users have to relearn how to use your application every time they run it, your design is not intuitive.

Successful designers develop the ability to think like a user and imagine themselves being a first-time user of the application. If you can learn to think like the user, look through the eyes of a novice at the screen you are designing, and imagine how the firsttime user will interact with your application, you will become a good multimedia designer. Remember that most users are not as smart as you are. You cannot underestimate the skills of the average user. By definition of the term *average*, half of all users are below average. A successful design takes into account the needs of all potential users.

#### <u>exercises</u>

- Suppose you have a photo, two paragraphs of text, a one-line title, and navigational icons for page forward, page back, home, and quit. Sketch three different ways of laying out these design elements on a multimedia screen. Assume that you have the capability to resize the photo, making it as large or as small as you want. Indeed, you will acquire that ability later on in this tutorial.
- 2. List three different ways you could write a hypertext instruction on the screen which, when clicked, takes the user to the application's home or startup screen.
- 3. Draw three different ways of providing an icon that moves forward to the next screen of an application.
- 4. In discussing the role of the metaphor in multimedia applications, this chapter cited the slide projector, the book, the card stack, the tape recorder, the TV tuner, and the jukebox. List three more metaphors and tell how they would be used in a multimedia application. Can you think of a metaphor you have never encountered on a computer screen before?