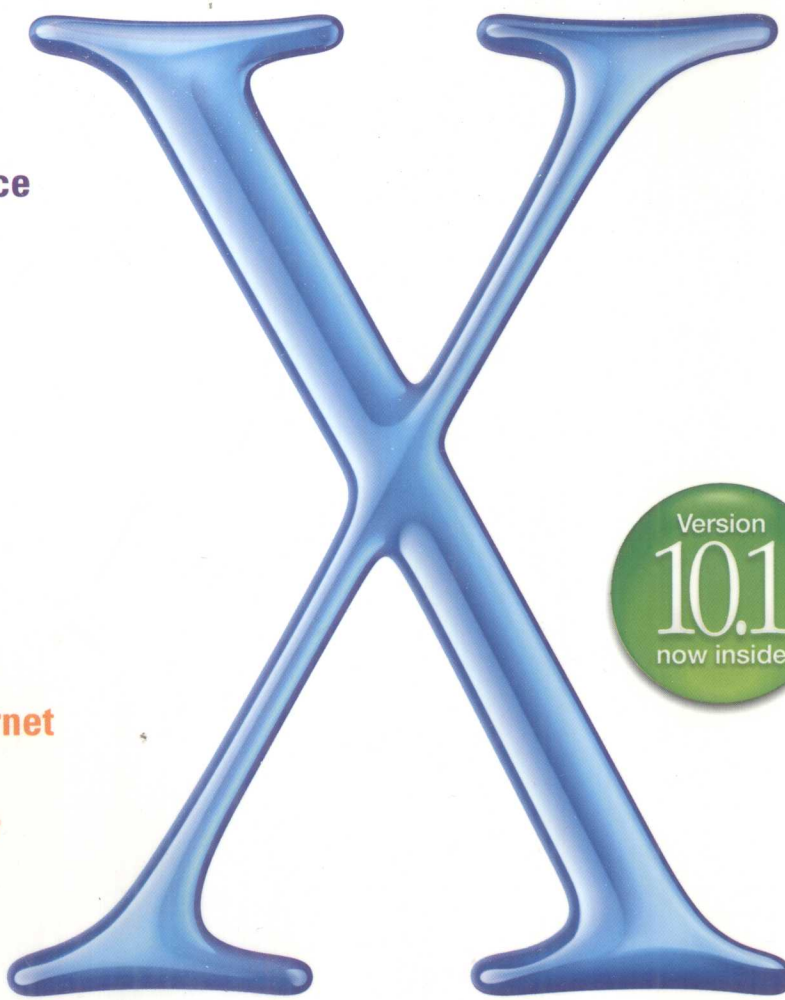
Mac OS X

The Complete Reference



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Jesse Feiler
Author, software developer, and consultant

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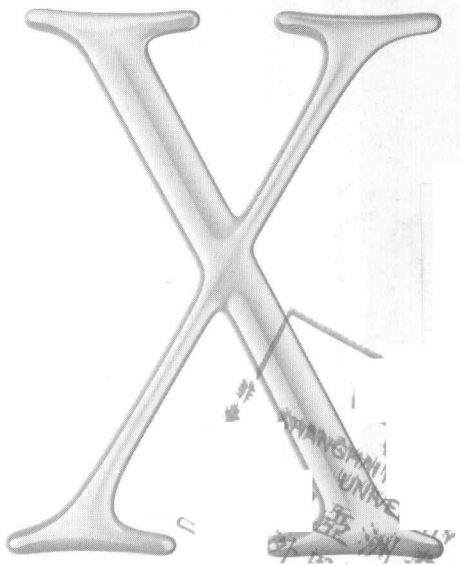
The Complete Reference

Mac OS X



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About the Author

Jesse Feiler is Software Director of Philmont Software Mill; he has served as manager, software developer, consultant, author, and speaker for organizations such as Apple Computer, the Federal Reserve Bank of New York, Young & Rubicam, and Prodigy.

Jesse's books include end-user guides, such as *Database-Driven Web Sites* (AP Professional, 1999); *Managing the Web-Based Enterprise* (Morgan Kaufmann, 2000); *FileMaker Pro 4 and the World Wide Web* (FileMaker Press, 1999); *ClarisWorks: The Internet, New Media, and Paperless Documents* (Claris Press, 1997); *Cyberdog: The Complete Guide to Apple's Internet Productivity Technology* (AP Professional, 1996); and two books on the Y2K problem (AP Professional, 1998 and IDG Books, 1999). He also has written a variety of books geared toward developers, including *Mac OS X Developer's Guide* (Morgan Kaufmann, 2001), *Real World Apple Guide* (M&T Books, 1995); and *Perl 5 Programmers Notebook* (Prentice-Hall PTR, 1999).

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The sheep in Chapter 16 are Southdowns from Sauerkraut Hill Farm, Claverack, NY; Nancy Brousseau, shepherdess.

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At Apple, the Apple Developer Relations group helped get answers to questions and was instrumental in reconciling the author's hieroglyphic notes from the World Wide Developers Conference in 2000 with the reality of Mac OS X as it emerged later in that year.

Perhaps most important of all, Jenn Tust and the production staff at Osborne/McGraw-Hill worked incredibly long and hard hours to make the book as complete as it is. The sheer logistics of producing a book of this size are quite daunting; they are even more so when you add in the complications that arise from incorporating illustrations of a new operating system in which the graphics are optimized for a computer screen and not for paper. Jenn has truly worked wonders. In addition, Lunaea Weatherstone and Paul Medoff provided thorough, helpful, and encouraging copy edits; and Paul and Linda Medoff caught many mistakes while proofreading. Jane Brownlow is a great acquisitions editor to work with.

Notwithstanding the assistance of so many people, any errors that remain are solely the handiwork of the author.

Jesse Feiler

Introduction

This book is complete: my checklists and FileMaker databases have cross-indexed features, preferences, and the applications that ship with Mac OS X, to make certain that everything shows up somewhere in the book. It has been revised against the second version—Mac OS X 10.1. We have tried to include screen shots of almost every feature, preference, and application, but sometimes for the sake of space we have omitted one or two. Fear not—the text walks you through anything that might be missing, and the Web site (http://www.philmontmill.com) has even more goodies and updates.

Q&A with Jesse Feiler

There is one thing that is missing from the book, and I've tried to provide it in this introduction. Before moving to the more formal body of the book, here are the questions I'm most often asked about Mac OS X—along with my answers.

How Did You Write This Book?

This book has been several years in the making—as has Mac OS X. Through early prototypes that didn't even run on Macintosh computers, through developer previews, a public beta, and the first releases of Mac OS X, I've watched its evolution and used it for most of my everyday work over the last year and a half. My perspective has constantly shifted from that of a user working with prepackaged applications to that of a software developer working within the new interface to that of an author trying to explain the operating system and its interface to a user—you.

Watching the changes has been a fascinating lesson in software and interface design. Some broad patterns emerge clearly: buttons, for example, have steadily grown smaller over the last year. Certain features have moved around from one set of System Preferences panes to another. In still other cases, such as for Software Update, an application became a preference. Graphical user interfaces of elegance and simplicity appeared on top of Unix and industry-standard features, such as Apache. Menus and their commands came and went; they were reorganized several times, because several very logical combinations of commands made sense at various times during the process.

Being able to observe these changes has made it possible to see more clearly, than in a static environment, how Apple's designers have worked to make the interface as powerful, yet as easy to use, as possible. Want to know why the Delete button is where it is in the Mail window? Well, it wasn't there a year ago, and it had a different name.

How Did You Learn Mac OS X?

I learned it the same way I suggest everyone learn it—by using it. Looking at it just doesn't cut the mustard. You can observe that a certain menu command you've used in Mac OS 9 is renamed or moved—but until you use it for a while, you won't understand why or what the significance of it is.

I was very lucky to be working with Mac OS X during a period of great transition in telecommunications and the Internet. When this book was started, I used a dial-up Internet connection; halfway through the project, I converted to an always-on cable connection. In fact, the conversion was not mine alone: the stalwart gang at Mid-Hudson Cablevision swept through Columbia County leaving always-on broadband Internet access in their wake. Friends and neighbors asked questions—and I learned a lot about networking Windows and older Macintosh computers from helping them out. I also learned that setting up a Mac OS X Internet connection is the easiest of them all, because with Mac OS X you have both an excellent setup assistant and a clear graphical interface to the TCP/IP settings. The frustrating search for where one particular value might be set—that is so common on other operating systems—is minimized on Mac OS X. In part, this is because TCP/IP has been part of the operating system since long before it became the basis for what is now Mac OS X.

What's a Complete Reference

I took the title literally. In my mind, an 800-page book that is a complete reference should include everything—either completely or in the form of a reference to other sources. The size of the book has allowed me to move beyond a road map of the menu bar to provide some background of how and why things are as they are in Mac OS X. This isn't window dressing: understanding the principle behind a variety of interface elements means that you need to remember only one thing (the principle) rather than a variety of seemingly unrelated details.

Mac OS X ships with extensive assistance as you will see in Chapter 9, "Getting Help." Each of the pieces of the assistance puzzle has its own part to play. When you are trying to accomplish something, online help may be just what you need. However, when you don't know what you can do with Mac OS X, a broader perspective (such as that in this book) might help. In a more extreme case, if you do not even have Mac OS X (or a computer) online help is of no use to you whatsoever.

Why Isn't This in an Apple Manual?

As I see it, Apple's job is to provide task-based help to get you up and running quickly. Its online help and variety of Web-based support products let you explore the possibilities. (In this regard, its advertising and publicity also play a key role.)

What a third-party book like this can do is provide suggestions and perspective. For example, in Chapter 19, "Using AppleWorks," I didn't feel the need to do more than skim over the basic word processing features that most people know. However, I did take time to look at some of the features, such as styles and databases, that most people don't explore. As one Apple developer said to me many years ago, I can play favorites among the commands and features.

And I do. You'll quickly see that I'm very intrigued with the possibilities of automating tasks with AppleScript, the command line, and basic programming. Let's get our computers to work and spend our days and nights in more interesting endeavors.

What's the Coolest Feature in Mac OS X?

If you ask me what feature of Mac OS X I think is most important, I always pick the *Build Web Page* feature in Image Capture. Here's how it works. You take a bunch of photos with a digital camera. Plug it into a Macintosh computer and turn it on—Image Capture automatically opens immediately. Select Build Web Page from a pop-up menu and click a button (Download All). The photos are downloaded, the Web page is built, and it opens in your default browser. (If you want to move it to a Web site, you do have to drag a folder to a Web server.)

I can show a neophyte how to do this in moments—plug in the camera, choose Build Web Page from the pop-up menu, click Download All. It's simple and natural—and rather unimpressive to a novice. It's what's expected: photos in a digital camera put onto a Web page. Experienced computer users, however, are confused. Where are the files? How do you edit the HTML? How does it work?

How it works is actually a great glory of Mac OS X: it brings together a host of hardware and software achievements that are part of the operating system and Apple's modern hardware. The plug-and-play feature of Universal Serial Bus (USB) makes it possible to plug in the camera; the computer recognizes it, and Mac OS X knows to launch Image Capture. AppleScript has long been used for extensive prepress automation: here it's used by Apple to build HTML and insert references to your automatically downloaded photos. A lot of effort has gone into making it "just work," and that effort reflects the design and flexibility of Mac OS X.

What's the Easiest Way to Learn Mac OS X?

Use it. I remember in the early days of the Web that when people showed up in public library classes wanting to "learn Internet," they always failed. People who showed up wanting to make a Web page of their kids for the grandparents to see, or people who showed up wanting to learn how to send and receive email learned.

Don't try to learn Mac OS X—try to do your work (or play). Use this book to help you understand the features that are there and the tools you can use, but then go about your business. True, there are some cases (noted in the book) where you should practice the techniques themselves (editing iMovie clips comes to mind), but in most cases, read about the features and capabilities and then just go to work.

You might want to come back periodically to the book. Learning to do your work is all well and good, but there may be shortcuts or new features that you have missed out on. It's amazing

how many long-time computer users are less sophisticated than new users: the new users learn today's software, and the old-timers learn how to keep doing what they did back in the days of diskettes and dot-matrix printers.

What's the Biggest Mistake People Make in Learning Mac OS X?

The biggest mistake in learning Mac OS X or in using any application is customizing it too early. Some people sit down and start by playing with preferences and adding settings of dubious provenance (from the Internet or other back alleys). Before long, they've customized the software so that it looks like some other operating system—or, more often, like no other combination of settings that anyone has.

At that point, if the software is hard to use (or if it is unresponsive), you haven't a clue as to what the problem might be. Start by using the software (Mac OS X or an application) as it is. Give it some time: for an operating system, that might mean a day or two. There is logic behind each interface choice, so see if the interface doesn't grow on you. If, after that time, you find that you really need a non-standard customization, go ahead.

Trying out the interface as it ships is akin to successfully learning a foreign language; language teachers call it total immersion. If you attempt to learn a foreign language by painstakingly translating each word and phrase of your native tongue into the other language, you will never succeed. You have to jump in and use the language as best you can to get a feel for it and truly learn it.

Do You Have Tips for Writing Instructions for a Computer Lab or Office?

Be direct, to the point, and use terminology that your users will understand. This does not mean avoiding all technical terms. There is nothing worse than describing "the row of words across the top of your screen such as File, Help, Window, and Edit." That's a menu bar, and people should know that term.

Note, too, that the wishy-washy paraphrase of a menu bar presented here is all too common—and it's wrong. The "row of words" includes at least one icon (the Apple icon), and the order of the menus is different from that described here.

If you are in doubt as to whether a word or concept is generally understood, look in print advertising that your users might read (a daily newspaper, a law journal, or whatever they might encounter). If Apple and other computer vendors use a term without explaining it, you can rest assured that their market research indicates that the readers can understand it.

Use your users' terminology where possible. In a classroom lab, users may be teachers, teachers' aides, or students. Differentiate if necessary; explicitly group together if the distinctions don't matter.

Make sure your instructions work. Another flaw is something like, "When you turn on your computer, you will see a round globe...." Maybe your users won't. Describe what they definitely will see (use screen shots taken with Grab)—and only if it matters. Put an AppleScript script in the Dock if you want to avoid a lot of mousing around with windows and folders.

Test your instructions and try to break them. Users will not always do what you say. Finally, keep your instructions up to date.

What's the Biggest Change You've Seen in Computers?

Although more powerful processors, faster telecommunications, and the public use of the Web and email have had marked effects on computing since the dawn of the computer age, nothing has compared with the changes wrought by widespread availability of large, high-speed, relatively cheap disks and always-on Internet access.

Over time, you will discover the amount of disk space that your computer work (and play) takes up. In my case, it's about 12-15 gigabytes. That includes the operating system, current files, archived files (including projects going back about five years), and everything else that I use. With that amount of storage space, I don't have to archive anything; as a result, a 20-gigabyte drive is sufficient to store everything I need.

As I repeatedly point out in this book, it is essential to back up disks, and I do so regularly with Retrospect in the middle of the night (automatically). What I don't have to do with this amount of disk space is clear off space for a new project by archiving and removing an old one.

An enormous amount of effort has been devoted over the years to such archiving. Just as an always-on Internet connection provides a substantially different user experience than a dial-up one, an always-there disk provides a different experience than a partially archived one.

Depending on what you do with your computer, you may use more or less storage space; if you are working with video, you may use a great deal more, and you may need to offload completed projects (or even parts of incomplete ones).

But overall, the biggest change I've seen in computers is the always-on, always-there aspect of large disks and broadband Internet connections.

What Would You Like to See in Mac OS X That Isn't There Now?

Can't think of a thing. Sure, I can think of many features and capabilities of Mac OS X that aren't in the applications I want them in (although AppleScript is supported in many applications, not enough of them are recordable, for example). But that's not something that's missing from Mac OS X—it's just not adopted as widely as I would like it to be (yet).

The more critical question is what would I like to see in Mac OS X that can't be done. After several decades of working with mainframes, personal computers, and handheld devices, as well as the same amount of time dealing with operating systems and application programs from the likes of Control Data to Burroughs to IBM, Microsoft, Apple, and Adobe, I have a reasonably good sense of how you can modify applications and operating systems to fit new features in. In every case that I've seen or heard of, the question of adding a new feature to Mac OS X isn't so much whether it can be done but rather how best to do it and where to fit it in. Apple is convinced—along with a great many people including myself—that this framework will stand us in good stead for the next few decades.

If You Find a Typo...

Every attempt has been made to make this book as accurate as possible. It has been checked and double-checked and triple-checked, but in any work of this size some mistakes may get through. If you think you've found one, please let me know. Send email to macosxref@philmontmill.com with details of what you've caught. It will be investigated and corrected in future editions.

For general questions and queries, check out the Philmont Software Mill Web site (http://www.philmontmill.com), which has a Mac OS X section for this book as well as other Mac OS X information.

For More Information and Updates

Updates and more information about Mac OS X are on the author's Web site—http://www.philmontmill.com—under the Mac OS X navigation button at the left. Chapter 9, "Getting Help," summarizes a variety of other sources of information.

How This Book Is Organized

There are 5 parts, 26 chapters, and 3 appendixes in this book.

Part I: Welcome to Mac OS X

The chapters in this section provide a brief history of Mac OS X as well as a description of how it works.

Chapter 1: Mac OS X

This is the overall introduction to Mac OS X.

Chapter 2: Aqua

The Aqua interface is the most visible difference between Mac OS X and other operating systems. This chapter shows you how to use it all—the Dock, buttons, sliders, window controls, and the like. If you want a quick guide to how to use Mac OS X, here's where to start.

Chapter 3: How Mac OS X Works

This chapter describes the hardware and software underpinning Mac OS X. It helps you not only to understand how it works but also how to use USB and FireWire peripherals, what the role of OpenGL is, and more.

Part II: Using Mac OS X

Part II details using files, printing, getting help, and otherwise making your computer usable. It covers everything you need to know about your computer as a stand-alone device.

Chapter 4: Working with Files

The Finder is the application that you use to work with files and directories on the desktop; individual applications also work with files. This chapter explains the terminology and provides step-by-step guides to using the standard open, close, and save dialogs.

Chapter 5: Printing

Printing in Mac OS X is much simpler—yet more powerful—than printing in other operating systems. PDF formatting for electronic documents is built in, as are standard tools for managing printer queues and jobs.

Chapter 6: Setting Preferences

System Preferences let you set everything from your keyboard layout to the format of dates and times to network choices. This chapter provides a visual guide to each of the operating system preferences.

Chapter 7: Securing Your Computer

Security in the form of keychains and a variety of login options are described in this chapter, along with commonsense tips for protecting your computer investment.

Chapter 8: Managing Your Computer Environment

This chapter walks you through the processes involved in setting up your computer environment. It describes the Mac OS X disk utility applications along with what you need to know to set up your directory environment using LDAP or NetInfo.

Chapter 9: Getting Help

Here's where you'll find descriptions and examples of everything from online assistance to Apple's discussion boards. You also will see how to get additional support from Apple iServices and other groups.

Chapter 10: iTools: Apple's OS Tools on the Internet

Use iDisk, KidSafe, and HomePage to extend the reach of your computer to the Internet.

Part III: Networking

This part integrates your computer with the rest of the world—both a local area network (LAN) and the Internet. The first two chapters help you set up client computers on a LAN and the Internet; the next two help you set up server computers on a LAN and the Internet. The last chapter shows you how to set up the Apache Web server (included with Mac OS X): it can run in any of the four configurations described in this part of the book.

Chapter 11: Communicating Over a Local Area Network

Here you'll find how to configure your computer to communicate over a network. You'll also see how to connect to shared disks using Apple File Protocol.

Chapter 12: Communicating Over the Internet

This chapter includes the Internet settings you need to access file and mail servers.

Chapter 13: Setting Up a Network Server

Setting up a file server with Mac OS X is simple. This chapter shows you how to do so with both Mac OS X and Mac OS X Server (for larger environments). It includes tips on security and management.

Chapter 14: Setting Up an Internet Server

Chapter 14 provides a review of the issues you need to consider in setting up an Internet server. As you will see, the basic technology is covered primarily in Chapter 13; this chapter addresses the issues that opening your LAN to the world raises.

Chapter 15: Setting Up the Web Server

This chapter shows you how to set up the Web server (Apache) using Mac OS X as well as how to use Mac OS X Server and the Server Admin application.

Part IV: Using Applications on Mac OS X

From specific applications, such as Apple Mail and AppleWorks, to general features, such as Services, to the host of applications that ship with Mac OS X, Part IV helps you actually use your computer for productive work and play.

Chapter 16: Working with Applications

Here you'll find all the information you need about using standard application features. File manipulation is covered here (as well as in Chapter 4). You'll also find information on dialogs and windows, and detailed instructions for using the applications that ship with Mac OS X, including iTunes (for managing your music and MP3 files), iMovies (for creating movies), TextEdit, Chess, and more.

Chapter 17: Working with Services

One of the most forward-looking features of Mac OS X, services, lets you put pieces of programs together in a way that is convenient for you. This chapter covers the technology of services that you manipulate directly as well as of those that work behind the scenes, such as system-wide spell checking.

Chapter 18: Using Apple Mail

The Mail program handles multiple mail protocols (IMAP and POP), multiple mail accounts, scripting, automatic rule-based sorting, attachments, styled text, and more. This chapter shows you how to set up Apple Mail and use it to your best advantage.

Chapter 19: Using AppleWorks

Apple's premier productivity tool, AppleWorks, provides text, graphics, database, spreadsheet, and presentation tools. This chapter reviews the tools and details some of the more useful aspects that may be new to you.

Part V: Programming Mac OS X

Programming on Mac OS X ranges from AppleScript to the Unix command line to sophisticated development environments such as Cocoa. All are described here.

Chapter 20: Automating Your Work with AppleScript

AppleScript was introduced in Mac OS 7. Today, it is an integral part of the environment for all power users of the Macintosh computer. This chapter shows you how it is implemented in Mac OS X and helps you move beyond keystroke automation to powerful workflow management.

Chapter 21: Using the Command Line

The Unix command line is available in Mac OS X, but it's enhanced with Apple's typical interface improvements (such as drag-and-drop for complex file names). This chapter shows you how to use the Terminal application, and it lists some of the more important Unix tools and commands. It also offers step-by-step instructions on how to remove orphaned files on your system using the superuser password, which is normally not available to you.

Chapter 22: Programming Mac OS

This overview shows how programming works on the Macintosh. Whether you intend to start programming yourself or want to know how it happens under the hood, this chapter should answer your questions.

Chapter 23: Classic

This chapter guides you through the basics of programming for Mac OS 9 and earlier. You may need to write such programs, but more likely you will have to understand them well enough to read them so that you can rewrite or convert them to Mac OS X. This chapter's emphasis is on reading this ancient code.

Chapter 24: Carbon

This chapter describes the transitional environment, Carbon, and it shows how it differs from Classic programming.

Chapter 25: Cocoa

Cocoa is the new, totally object-oriented development framework that powers the most advanced Mac OS X applications.

Chapter 26: Creating a Nothing Program with Cocoa

Finally, a step-by-step tutorial walks you through the process of creating two basic programs with Program Builder and Interface Builder. The second program is designed not just to show you how these development tools work, but it's also a template that you can use to build sophisticated graphical user interfaces around legacy C, Fortran, or Basic code.

Appendixes

Appendix A: Installing Mac OS X

Whether you are reinstalling Mac OS X on a newly formatted hard drive or upgrading from a previous installation of Mac OS 9, Appendix A shows you how and explains the choices available.

Appendix B: Glossary of Terms

The Glossary of Terms explains some of the basic terminology that is referred to in the book. As is usually the case, the glossary focuses on material that is not fully described in the book: use the index to find full information of Mac OS X terms.

Appendix C: Visual Glossary

This glossary provides the name and a description of images that you'll find on your display.

About the Figures and Illustrations

Mac OS X is optimized for display on a computer: it takes full advantage not only of color but also animation. Both of these are hard to achieve on a black-and-white printed page. In order to show you as much as possible of Mac OS X, there are a lot of screen shots in this book. The author and the Osborne/McGraw-Hill production department have worked to make the black-and-white reproductions that you see here as clear as possible. Bear in mind the following points:

1. Because of the number of screen shots, figures may appear more than a page after their references. Have no fear: they are there—you just might have to turn an extra page or two.

2. You can customize windows in System Preferences as well as in Finder Preferences and View Options. The customizations shown in this book (such as very large icons in some cases) are set to make black-and-white reproduction on paper as good as possible. For day-to-day use, you will probably set Mac OS X preferences differently. (This is described in the book.)
3. Some of the Mac OS X visual effects (particularly translucency) are almost impossible to reproduce on paper. To see them in their full glory, visit the author's Web site—http://www.philmontmill.com. Click Mac OS X at the left and then Search at the top. Type in **Aqua Images**, and you'll find a list of full-size, full-color images that augment those in this book.

Code Snippets

Some samples of code from Apple's examples for Mac OS X are provided in this book. They are governed by Apple's license agreement, which follows:

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Contents At A Glance