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Cynthia W. Harriman

Author of *The MS-DOS-Mac Connection*

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—

C O M P A N I O N



The Macintosh Small Business Companion

Cynthia W. Harriman



**Brady
New York**

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**This book is dedicated
to my grandmothers**

**Emma Martha Kiessling
1898-1988**

**Marguerite Waggett Wills
1895-1988**

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Joan Taylor, Hardware store owner
Kate Hatsy Thompson, Writer and graphic designer
Ryan Thomson, "Captain Fiddle," musician
Susan Tropeano-Lovatt, Mac consultant
Jim Williams, Energy consultant

*pseudonym

Introduction

Open-collar workers of America.

Who are we? We're consultants and carpenters, accountants and artists, psychologists and sales reps; we're writers and realtors, publishers and plumbers, electricians and engineers. We have two things in common: We work on our own, and we use the Macintosh.

We all subscribe to the slogan, "I run my life. It doesn't run me." And we'd like to extend that slogan to read, "I run my computer. It doesn't run me." But many of us, because we work by ourselves, reach a plateau with our Macs; we can do what we do well enough to get by, and it's too difficult to find the time and resources to move on.

I know what it's like because I taught myself how to use an Apple II computer years ago when I clerked in an antique store. I had to come in nights and weekends to find the time to learn what I needed to know to make that computer keep our books and handle antique shipments. I got good enough at running the computer so that the Mac is my business now. But even though I do Mac consulting, training, and writing, my business is still a typical small business, with letters to write, books to balance, and System crashes to survive.

This doesn't make me an Ultimate Authority: I'm just someone who's been there a few steps ahead of you. More like the guy down the street who's been tinkering with cars for years and can tell you what that funny knock means when you accelerate. Or your next-door neighbor who knew what was wrong when your baby was sick, since hers is a year older. I'm a Mac small business companion.

We're All In This Together

This book isn't just my book; it's the combined experience of several dozen Mac small business users. When I first decided to write *The Macintosh Small Business Companion*, I started by sending a questionnaire to over 30 people I knew who were using the Mac to run a small business. Some of these were absolute strangers who had bought my first book, *The Macintosh Advisor*. Others were people who had come to The Summer Computer Institute, a nationwide training program I ran for five years.

I asked all these people to tell me how they used their Macs and where they got their information; why they chose the Mac, and whether they'd ever used any other computer. I convinced them to share their biggest triumphs and breakthroughs, as well as their ongoing frustrations. And I asked them if I could call to learn more: As an active Mac user group member, I'm convinced that no matter how much we know, we can always learn something new from someone else.

When I had quite a bit of information, I put it all together—combining my own experience with my contributors', and working for weeks with new software and hardware that I thought would expand the scope of the book. When I was sure about what I wanted to include in the book, I sent out another round of questionnaires—to a new group of people who attended the Home Office Panel I ran at MacWorld Expo in San Francisco—and followed up with even more interviews.

What you'll read here is that group effort. My name is on the cover, but the experience of over 60 people is inside.

The Macintosh Small Business Companion wants to continue spreading the experiences of small business users across America. If you're running a Mac business from your home, or involved with a small Mac business outside your home, I'd like to hear from you. Send me your card and some information about how you use the Mac in your business, so that I can include your perspective in the next edition:

Cynthia W. Harriman
P. O. Box 6547
Portsmouth, NH 03801

The Way This Book Works

I've written this book to pass on my experience and that of other Mac small business users, not to tell you everything you could possibly do with your Mac. I won't pepper my advice with phrases like "you must" and "you really should." I won't simply tell you, "Press this key, press that key. Don't ask me why."

Instead, I'll give you the facts you need to make your own intelligent choices, along with examples of solutions I've found that work. Nothing has been included in this book simply because it exists: there's nothing like "Cynthia rates 15 word processors." Every program, every shortcut, every suggestion that's in here is something I use—or something that was highly

recommended by other small business users, who are quoted throughout the book.

You don't need to read this book from cover to cover. In general, you can start anywhere, and read the chapters in any order you want, as you need the information. There's no point in wasting time reading something until you decide you're ready for it. And speaking of wasting time: I assume you're already using the Mac pretty successfully, so I won't bore you by telling you how to click and drag. (I'll also assume you're using a Macintosh with a megabyte of RAM or more, and a hard disk. A Mac with only 512K and floppies is very limited, and can't be used to implement many of the ideas in this book.)

1 Letters, Labels, and Envelopes

Speeding and simplifying business correspondence

Most word processors, with all their fancy features for layout, footnotes, styles, and graphics, leave a lot to be desired when it comes to simply dashing off a quick business letter. Since writing letters can take up a sizeable percentage of the average business day, this can be a real productivity drain. This chapter will address the problem of letters just as they're produced, from starting with a new blank piece of paper to printing out the envelope, including:

- Quick ways to load your own customized "stationery."
- How to automatically insert the proper mailing address at the top of each letter.
- A utility that adds a few useful text-processing features to any word processor.
- Tips on centering letters on the page, clear of the letterhead.
- How to print letters and other documents more quickly.
- How to print envelopes (it can be done!) and labels.
- How to mail the same letter to several people with little extra work.

Your word processor may already do a few of these tasks reasonably well. But since nothing on the market covers all these bases, you're bound to find something here that will help you out—for better letters and other documents.

Stationery

Scientific studies show that people who reset the font and margins every time they open a blank document to write a letter waste an average of 13 hours per year in this one task alone. All right—so there hasn't really been any scientific study. But common sense tells you there must always be some way for the computer to take over any boring repetitive task like this. There are, in fact, three main ways to get your words to land in the right

place on your printed letterhead—and a fourth option that involves printing the letter and the letterhead at the same time, on your printer.

Stationery and Style Sheets

Your word processor may allow you the option of setting up a blank document just the way you want it, then saving that document in such a way that whenever you select File New, the blank document that appears is already set up the way you want it—with your favorite font, the right margin settings, and anything else you'd normally set by hand.

In many programs, this feature is called *stationery*, since in effect it allows you to load your own customized paper onto the screen. Microsoft Works is a good example of a program that supports the stationery concept. If you create a special format for letterhead, or memos, or for a form that always has the same headings and text at the top, you can save it in stationery format with the Save or Save As command.

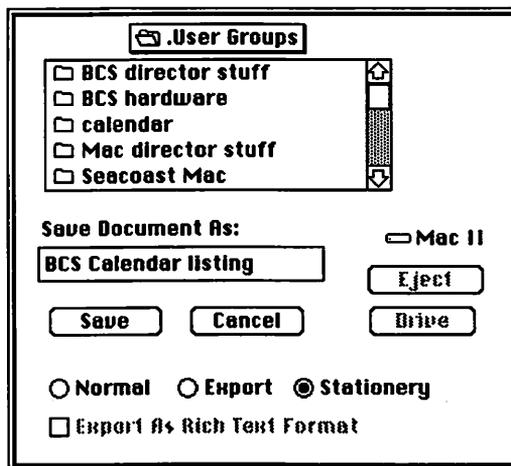


Figure 1.1 With stationery, you can set up preformatted blank pages for memos, letters, and reports and reuse them, as seen here in Microsoft Works II.

Every month, for instance, I send a calendar listing in to The Boston Computer Society with the name of my user group, my contact name and number, and the group's meeting time and place permanently entered at the top. All I have to do is open the document called "BCS Calendar Listing", fill in this month's meeting date and topic, and print it out. The

document opens as “untitled” so I can name it “April calendar” and save it, or just close it without saving after I print, and not disturb the basic format.

One of the strengths of the Works approach is that it allows you to save several different stationery documents, for different uses; some word processors only let you designate one document, with the name stationery, as your standard new blank document.

Other programs, like Microsoft Word, use something called Style Sheets to let you save your favorite settings. In Word there is always one formatting combination that’s called Normal Style; it’s the default that takes effect whenever a new blank document is opened.

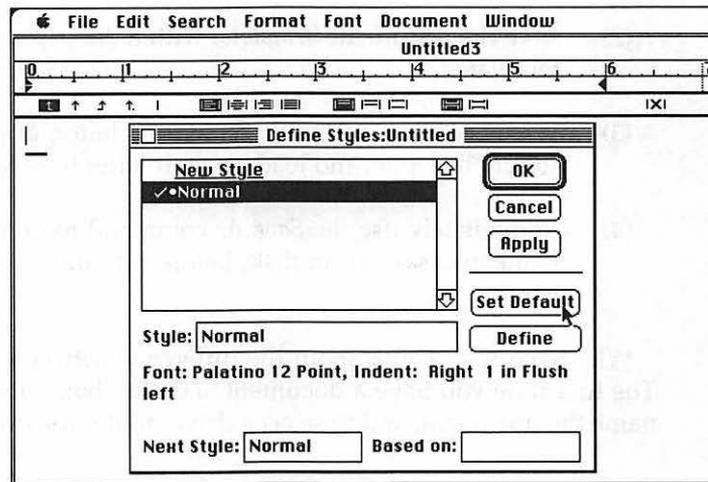


Figure 1.2 Microsoft Word's Normal format becomes your custom default for new blank pages.

To change the defaults, select Define Style from the Format menu, click on Normal, then make any changes you want in the ruler or in menus like the Font and Format menus. Then click on Set Default, and every New document you open will have these settings. Unfortunately, though, there’s no way to add text or graphics to your standard default—just formatting settings.

Templates: Create Your Own Stationery

If your word processor doesn’t let you create stationery, or if it only lets you create one standard form and you want several, by all means make your

own. A form or document you've created to use over and over again is usually referred to as a *template*. You can create templates with any software. A budget template in your spreadsheet, for instance, might have all your expense categories written in, so you could just open it and fill in new data every month.

Here's how you could create a memo template, or a business letter template, with your word processor:

- (1) Open a new document (with File New) and set it up just the way you want—change fonts, adjust margins, type in your company name, or whatever—but don't actually enter any situation-specific text in it.
- (2) Save the document (*template*) with a descriptive name like "letter template."
- (3) Whenever you get ready to write a letter, *don't* select File New: select File Open, and load up your letter template.
- (4) Immediately use the *Save As* command to give your new letter a name and save it on disk, before actually you start writing the letter.

Why Save As? Think about the difference between Save and Save As. The first time you Save a document, a dialog box pops up asking you to name the document, and to select a drive/folder for storing it.

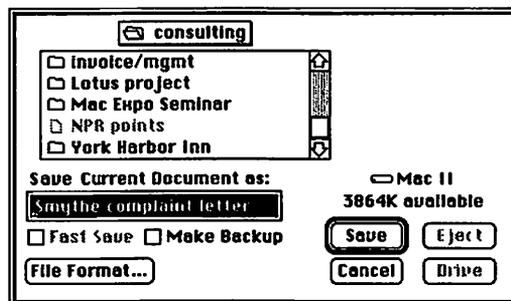


Figure 1.3 The dialog box that lets you name a file appears the first time you save any file. To access the box again to rename a file, you need to use the Save As command.

Once a file has a name, the Save command just updates the file, using the same name—and wiping out its previous contents. If you open up your letter template, type in a letter to a customer, then simply Save, your template will be overwritten by your new letter.

That's why a stationery feature in a word processor is nice: When you open a template or piece of stationery, the name changes automatically from something like "letter template" to "untitled." Then, when you Save, the Save dialog box appears, forcing you to name the file and making it impossible to overwrite your template.

But what's the worst that could happen with homemade templates? One day you'll accidentally open up your blank template, type away, and save without even thinking of what you're doing. All you'll have to do to get your blank back is to select all your text, Cut it, and Save again—not a difficult task by a long shot.

I have a need for lots of different documents during a day—I might type a FAX memo, or a business letter, or whatever—so I've preformatted several documents in my word processor, with my company logo and other style information like fonts and margins. I actually go one step further, and give each one its own button in PowerStation, so I can use them without having to open my application then scroll all over the place to find the right one. It's almost as convenient as having a pad of paper on my desk.

Keith Thompson, Newsletter publisher

Printing on Letterhead

Using templates can help you print on preprinted letterhead more accurately, without accidentally overwriting your logo or address. A few tips:

- If you use the same letterhead for first and subsequent pages, measure your paper to find how large your top margin must be to clear the printing. Then go to Page Setup in your word processor and set the margins to the numbers you measured.
- If you use letterhead for the first page, then blank paper for subsequent pages, things get a bit trickier. This is because the margin settings in Page Setup hold true for the entire document: if you start your first page three inches from the top to allow for a large logo and address block, all subsequent pages will start three inches down, too. Tacky.

Instead, you'll have to press Return enough times at the top of your template so that your writing clears the logo on the first page. What constitutes enough times? You'll have to ruin a few pieces of letterhead experimenting to get your template set up right, but that's better than wasting a page or two whenever you print a letter because you're guessing each time. This system works well: Returns you store in your template to start things off right will not affect the top of the second page, which will start off at your normal margin setting

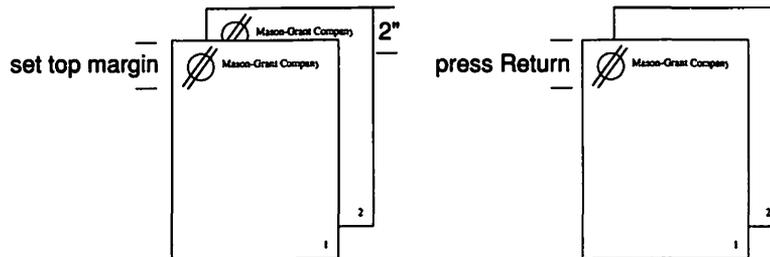


Figure 1.4 If you use preprinted letterhead for every page of a long document (left), use margin settings to avoid the printed area. If you use blank pages for everything but the first page (right), use Returns instead of margin settings to avoid overprinting your logo or company name.

- Letterhead with preprinted information at both the top and bottom gets a bit trickier: There's no reliable way to stop short on the first page without leaving a gap at the bottom of subsequent pages. Think about redesigning your stationery when you run out: It's easier to watch out for one chunk of printing than for two.
- MacWrite (Version 5.0 or earlier) users: MacWrite doesn't allow you to change the top margin, so you'll have to create a template that clears your letterhead simply by pressing Return several times. There's no way to make subsequent pages of the document clear a letterhead, so use blank paper for extra pages. (Upgrade to MacWrite II—it has a stationery feature!)

Making Your Own Letterhead

While feeding single sheets of letterhead is relatively easy on a laser printer, it's a rather iffy process on an ImageWriter. On either printer, the bother of

switching back and forth between regular paper and letterhead can become tedious. You may want to consider printing your own letterhead as you print your letters.

Text Letterheads. If your normal letterhead consists simply of a name and address, and basic graphic elements like a box or a line, just type it all into the blank template you use to start a new letter. It will automatically print every time you create a letter.

If your letterhead consists solely of text, but it's at both the top and bottom of the page, or along the left edge, redesign your letterhead. Some word processors let you create headers and footers in flexible ways, and could perhaps handle top and bottom printing. But I can't think of any way to handle a left-edge letterhead with any existing word processor.

Logos and Graphics. If your letterhead incorporates a logo or some other graphic, reproduce the logo in your favorite graphic program, or have a local laser service bureau or desktop publishing company scan the logo and save the file in a form you can read with some graphics program you use. Then stick the logo in your Scrapbook, and copy it into any document you write, or copy it once into your standard letter template. A few pointers to remember:

Graphics:

- On a laser printer, graphics created with a draw-type program will print clearly and professionally; paint-type graphics will look jagged and blotchy.
- On an ImageWriter, paint-type graphics will look just about the same as draw-type graphics.

Words:

- On a laser printer, words should be created with the printer's built-in fonts, or with special fonts that come with your printer. (Chapter 6 explains why some fonts print more clearly than others.)
- If you use large type sizes on an ImageWriter in Best quality, you must install the font that's twice as large as the one you want to use. For instance, if your letterhead features the name "Acme Enterprises" in 24 point type, you'll need to install the font you're using in 48 point size to print in Best quality. (The ImageWriter takes the larger font and scales it down to create a font with more detail and a crisper appearance.)

It was a real pain in the neck handfeeding [preprinted] stationery into an ImageWriter. I was crinkling it a lot, 'cause I didn't get it in straight. A friend used a Thunderscan to scan our logo, and cleaned it up so we could print the logo as we printed each page, on blank paper. It was just in MacPaint, on regular computer paper, but it was fine—this isn't Wall Street here.

Robin Hartford, Associate Editor, Stock Car Racing magazine

Inserting the Address

Once you've got your settings the way you want, you'll need to type in the address of the person to whom you're writing. If your correspondent is someone you write to regularly—a good customer, or friend—it doesn't make sense to type the address in by hand each time you need it. Better to use a utility that can store away several names and addresses, and find the right one quickly on demand.

Any program you use should be easily accessible while you're still in your word processor, should hold as many names as you're likely to need, should be able to find them very quickly and easily, and should be able to do double-duty, if possible, for some other related task, so you won't have to keep several lists. Let's take a look at two that meet these requirements—QuickDEX and Easy Envelopes.

QuickDEX

QuickDEX is a desk accessory database from Casady & Greene, Inc. It can be used to store any kind of information, not just names, addresses, and phone numbers, but it happens to excel at this task.

Setting Up the Database. Typing in names, addresses, and numbers is easy with QuickDEX. While most database programs require you to set up separate *fields*—identifying labels like “First name,” “Last name,” “Street,” “City,” and “Zip”—and then enter your information into each separate field, QuickDEX is what's often called a free-form database. This means that you just type the information you want into each “card,” in the order you want it. QuickDEX lets you have up to 512 characters in a card (the average name and address card takes about 100 characters), and the number of cards possible in one file is limited only by memory and disk space.

If you're planning to use your QuickDEX list to paste names and addresses into letters, you'll want to put the information in just as it will

appear in the letter, so you can select it all with one pass of the mouse, copy it to the Clipboard, then paste it easily at the top of your letter

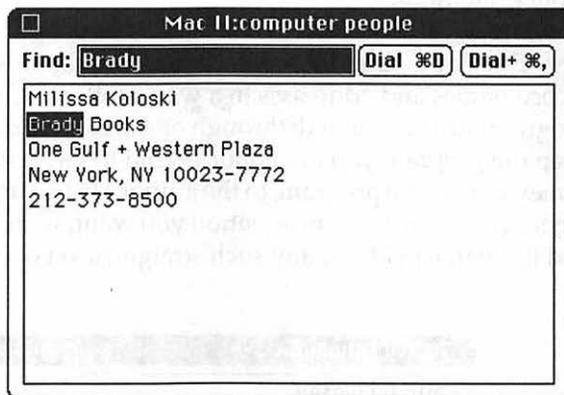


Figure 1.5 QuickDEX can be used as an electronic Rolodex. It quickly locates business contacts when you type any part of the name or address in the “Find” box.

Finding the Right Card. QuickDEX’s free-form approach makes finding the right record easy. Where more traditional databases ask you to construct requests like “Show all records where company equals Brady”, all you do in QuickDEX is pull down your Apple menu to select QuickDEX, then type any part of the name or address you want (this information will automatically be entered in the Find box at the top of the card). QuickDEX then brings up any and all records that contain that word. If my file contains the following cards:

Milissa Koloski, Brady Books, New York, NY
 Nicholas Brady, Department of Treasury, Washington, DC
 Jack Hodgson, 1402 E. 48th Street, Brady, MN

Milissa’s card would be displayed first, then, when I hit Return again, Nicholas Brady’s card would appear, and, finally, Jack’s card would be shown. It’s really much easier to thumb through the choices this way than to type something more exact—like “Brady Books” to be sure to get Milissa—but you can always get more specific if you want.

Side Benefit: Phone Dialing. Once you’ve located the person you want in your QuickDEX file, not only can you cut and paste the information into a

letter, but you can also dial the person's phone number by simply clicking on the dial button at the top of the card. See Chapter 5 for more on this.

Easy Envelopes

Easy Envelopes, a \$10 shareware program from Andrew Welch, lets you record names and addresses in a way similar to QuickDEX's. (Shareware programs are distributed through on-line services and user groups; if you keep the program you are honor-bound to pay a nominal fee, as specified somewhere in the program, to the author.) It also uses a free-form database, where you record the information you want, without worrying about first and last name fields, or any such straightjacket of procedures and jargon.

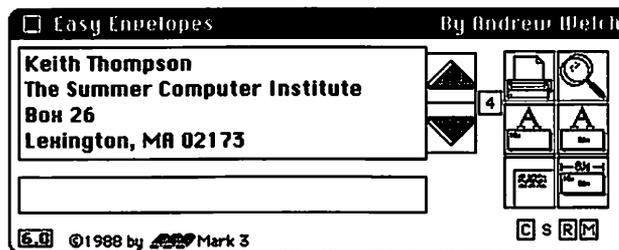


Figure 1.6 Easy Envelopes is a desk accessory that automates envelope printing, and stores up to 99 names and addresses. To find the contact you want, click on the magnifying glass icon, then type part of the name or address in the box that appears.

Easy Envelopes lets you create a database of up to 99 names and addresses, any one of which can be found by simply clicking on the magnifying glass icon or pressing Command-S, then typing any part of the name or address. Once the information you want appears on screen, you can select it, copy it to the Clipboard, then paste it into your letter very efficiently.

Side Benefit: Printing Envelopes. Easy Envelopes can't dial the phone, like QuickDEX, but it can print envelopes using the selected name and address. I'll tell you more about that later in this chapter.

Typing the Letter

Once the paper's set up and the correspondent's address is entered, it's time to actually type the letter. For the most part this is up to you: Nothing I can say will help you compose a better business letter. After you've figured out

what to say, you may find that there are just a few features you need in your word processor that aren't there—not enough features to make you search for and buy a new program, but just enough glaring holes to cut down your productivity.

McSink

McSink, a \$30 shareware program from Dave McWherter, has dozens of such features. (Hence the name, which is meant to denote everything but the kitchen....) The ones that I personally find most useful are those that change the case of any text. Ever type a whole paragraph before you realize your CapsLock key was down? Ever need to capitalize the first letter of every word in a title? McSink lets you do these sorts of jobs, without having to retype all your text.

Upper- and Lowercase. Let's look at the Omigod-the-CapsLock-was-down example, to help you visualize how McSink would work. Say you've just typed the following few sentences all in upper case:

THE MASS OF MEN LEAD LIVES OF QUIET DESPERATION. WHAT IS CALLED
RESIGNATION IS CONFIRMED DESPERATION. FROM THE DESPERATE CITY
YOU GO INTO THE DESPERATE COUNTRY ...

McSink operates by manipulating text that's been copied to the Clipboard—sort of like a Show Clipboard window with commands. So, in general, to work with McSink, you'll select a chunk of text, copy it to the Clipboard, then pull down your DA menu to open McSink.

McSink shows you the contents of the Clipboard in a special window. You can then access the program's commands from its own menu bar, which appears at the top of the McSink window. (The Main menu bar of whatever application you were using when you opened the DA will still appear at the top of your screen.)

From McSink's Convert menu, you'll select Lower Case, to change the entire selection to "small" letters, then Capitalize Sentences to change the initial letter of each sentence to uppercase. Now the data have been transformed into just what you want, so you can select it all, close McSink, and Paste it back into your document.

This is the feature I use most frequently from McSink. It comes in handy because I use Microsoft Word most of the time for word processing, and

although Word can change a selection to All Caps or Small Caps, it can't change everything to lowercase or capitalize the beginning of words or sentences. Also, the version of Word I've been using (3.02) can't count words. McSink can, which helps me a lot when an editor asks for 2,500 polished words.

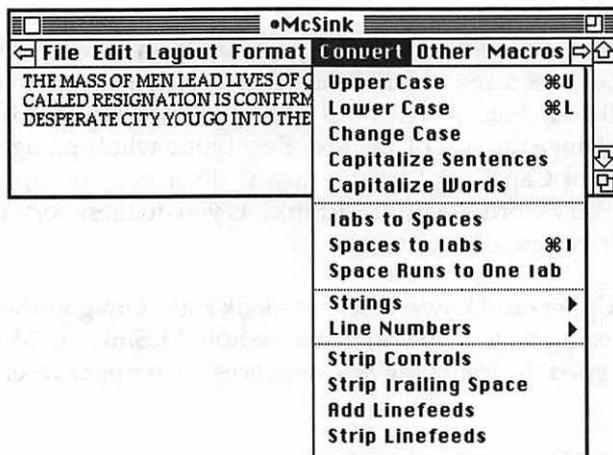


Figure 1.7 The McSink desk accessory can change text from upper- to lower-case, and a number of other text-cleanup chores.

Depending on the word processor you use regularly, these or others of McSink's features—like its ability to turn text into columns, or its ability to sort rows of text—might make up for some missing feature you could really use. McSink is also available in an enhanced form as a commercial DA called Vantage, also from Dave McWherter, which adds macros and a spell checker to McSink's repertoire.

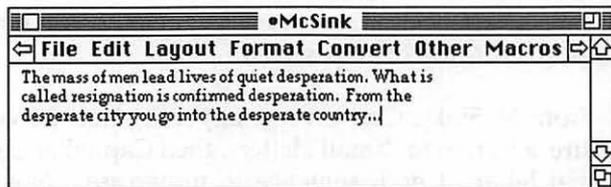


Figure 1.8 McSink changed this text—originally typed with the CapsLock down—to normal lowercase text with capitals only at the beginnings of sentences.

The main point of this section is not just that McSink is a great utility: it's that you shouldn't suffer along without features and utilities you need just because your favorite programs are so right in every other way. Check out your local users' group and read computer magazines to find out about the scores of wonderful little, obscure programs that make life easier.

Printing the Letter

Two steps come into play in typing the typical letter. First, you've got to make sure the letter is positioned the way you want it on the page: If it's a short letter, you want it centered; if it's a longer letter, you want to make sure it breaks at a logical spot; and, in both cases, you want to make sure that the letter doesn't overwrite the printing on your letterhead.

Positioning Your Letter

Positioning a letter on the page is easy if your word processor gives you a Page Preview feature that lets you eyeball the whole page in miniature. Microsoft Word has such a feature (Page Preview in the File menu), as do newer versions of Microsoft Works (through a checkbox in the Print dialog box) and many other programs. Preview features like these can save you a lot of time and paper, by letting you check and adjust the page composition before you print.

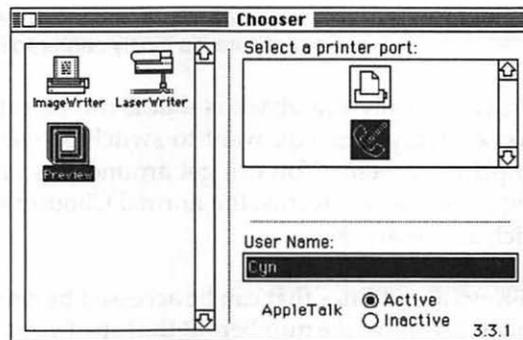


Figure 1.9 If you've installed a utility called Preview in your System folder, you can use the Chooser to see the page on screen before you print.

Preview Utility. If your word processor doesn't have this capability (or if you'd like the ability to preview pages in other applications that don't have

this feature), a small utility called Preview can help. (See the Product Appendix for where to get this, and all other products mentioned in the book.) Preview is a Chooser device: Like the ImageWriter and LaserWriter printer drivers, it shows up in the Chooser once you drop it in your System folder.

Essentially, Preview acts like an extra printer. Once you've set Chooser to Preview, every print command you execute sends its results to your screen instead of to an actual physical printer, looking something like this:

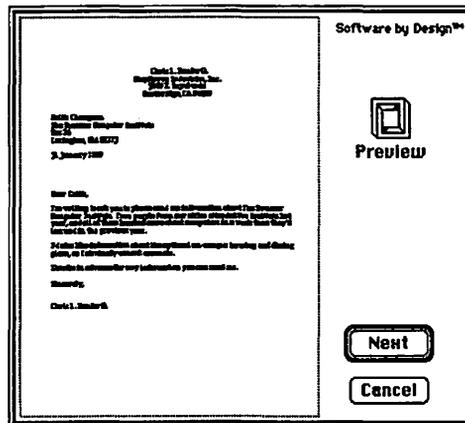


Figure 1.10 Preview shows you a bird's-eye view of your page, so you can make sure it's nicely centered before you print.

Preview's only drawback is that it can be rather awkward to reset the Chooser every time you want to switch between previewing documents and printing them. You can get around this problem, though, since Preview comes in two forms, the normal Chooser device form and a second, which acts as an FKey.

(FKeys are utilities that can be accessed by pressing Command and Shift along with one of the numbers at the top of your keyboard. Apple includes four automatic FKeys in every copy of the operating system:

- Command-Shift-1 ejects a disk in the internal drive
- Command-Shift-2 ejects a disk in the external drive
- Command-Shift-3 takes a "picture" of whatever's on screen, and dumps it to a MacPaint file on your startup disk
- Command-Shift-4 dumps a picture of the screen to an ImageWriter

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You can add more FKeys until all the numbers 0 through 9 are used up; many small utility programs are available in FKey form so that they can be accessed with just a few keystrokes. Installing FKeys is easy if you have a program like Suitcase or Font/DA Juggler, described in Chapter 7.)

Once you've installed the FKey version of Preview, pressing Command-Shift-6 toggles you in and out of Preview mode. Press this key combination once, and your next print command shows up on screen; press Command-Shift-6 again, and the Chooser is automatically reset to your printer. This makes the program *much* more usable.

Speedier Printing

Once you're ready to print, the greatest irritation you'll face is waiting for the print job to be done so you can start using your computer again. Granted, this isn't too bad with a one-page letter. But if you're attempting to print out a multipage letter, or a longer document, the time spent drumming your fingers waiting to get your Mac back can be bothersome.

How can you speed up the process? You can't really—but you can change things so that your Mac becomes usable again before the process is complete. This is possible because printing on the Mac is actually made up of two parts: preparing the file for printing, in which your Mac organizes and encodes the data stream so that it can leave your machine; and the actual printing process, in which the data are fed out to the printer and pages are produced. File preparation requires the use of your Mac's CPU (the main computer chip), which keeps you from using the computer for anything else. Printing itself can proceed without the CPU—but since it's a mechanical process, it ties up data routes and memory in the computer and in the usual course of printing keeps you from getting on with your work.

There are two different approaches to circumventing this problem. They are called *background printing* and *spooling*.

Background Printing: File preparation begins, and the Mac is tied up for a short time. But then control of the Mac returns to you, while printing continues simultaneously with whatever else you're doing. There are no messages or dialog boxes onscreen, and it appears as if you're back working in your regular application with nothing else happening. But every so often there will be a slight pause — the mouse will respond slowly, or words you're typing won't appear for a few seconds after you type them. This is because the printing process and whatever application you're working in are taking turns using the CPU. Background printing only works under MultiFinder.

Spooling: Spooling is a bit different than background printing, although people often use the terms interchangeably. With spooling, the entire file-preparation process takes place before you regain control of your Mac. Once the file is ready for printing, though, it's stored away in a corner of your hard disk; it's not cluttering up memory as it waits for each page to be printed. Spooling ties up your computer longer, since it completes the entire file preparation process first, but there are not usually any lags and delays during the rest of the printing cycle, since no more CPU time is being used.

Background Printing and the LaserWriter. If you are using any of Apple's LaserWriter printers, your remedy is built right into your System software. First, check that the file PrintMonitor is in your System folder along with the LaserWriter and LaserPrep files. Then, make sure that you are running MultiFinder. To do this, you simply pull down the Special menu in the Finder, select Set Startup, and click on MultiFinder instead of Finder. Then restart your computer: The change won't take effect until you have restarted your Mac.

Once this is done, On and Off buttons for background printing will be available in the Chooser whenever the LaserWriter is selected; simply select On to activate Background Printing. From that point on when you print, there will be just a slight pause while the Mac starts the printing process, but you'll get back to work very quickly.

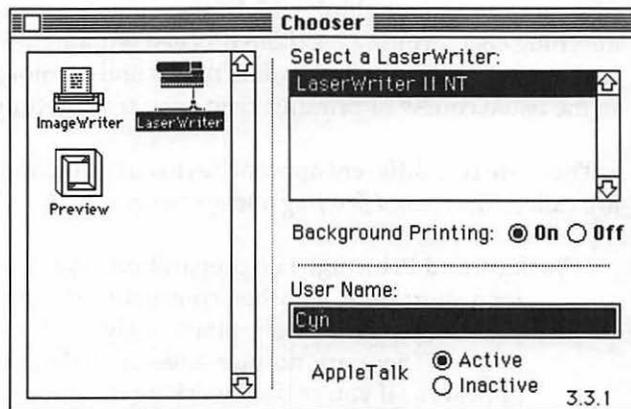


Figure 1.11 If you're running MultiFinder, and the PrintMonitor file is in your System folder, you can use the Chooser to turn on background printing. Then you'll be able to use your Mac while the LaserWriter is still finishing its work.

Don't worry if you only have one megabyte of RAM and you've heard that you must have more memory to run MultiFinder. MultiFinder itself runs just fine in one meg of RAM; you just won't be able to run several different applications at once, like people with more memory in their Macs are able to do. Running MultiFinder just to be able to do background printing and to be able to return to the Finder to make a new folder or delete a few files in the middle of your work can be very productive. See Chapter 10 for more on MultiFinder.

Spooling with the LaserWriter and ImageWriter. If you're not using Apple printers, your printer may come with its own spooler. GCC's Personal Laser Printer, for instance, comes with a spooler. Sometimes a hard disk you buy will come with bonus software like a spooler: SuperMac bundles its spooler with its Dataframe hard drives.

SuperMac's also a good place to turn for a spooler if you don't get one bundled with something you buy. Their SuperLaserSpool works on both the ImageWriter and the LaserWriter, and has the best reputation of all the spoolers on the market for compatibility with a wide range of applications (PageMaker, which won't work with Apple's background printing, works with SuperLaserSpool). Spooling won't completely eliminate the time wasted waiting for your printer, but it will cut down on the time involved considerably.

SuperLaserSpool has been a champion for me. They have a version optimized for the ImageWriter, called just plain SuperSpool. Both versions can control queue order (the priority given to documents waiting to be printed), and cancel jobs. Cancelling jobs is an important feature, especially if you realize you made some major errors and don't want to print ten pages chock full of them.

Stacey Donahue, Mac consultant

Printing the Envelope

All that's left now is to print the envelope. If you've tried this in the past, you may think the phrase "all that's left..." rather ironic. It continues to amaze personal computer users—no matter what computer they're using—that all computer printers are universally bad at the ubiquitous task of addressing envelopes. It's not you: This is just an awkward task with the tools we have available. In this section, I'll talk about a few ways to make envelope-printing less awkward, starting with the most foolproof suggestions of all: Use window envelopes, and try to avoid printing envelopes altogether.

Window Envelopes

Many computer users are bypassing the issue of envelopes entirely by simply using window envelopes—the kind your bills come in. I can hear you groaning as you read this: Window envelopes are ugly, and you don't want your friends and customers to think you're sending them bills.

Suspend your scorn long enough to read these few paragraphs, and give this approach a fair shake. Window envelopes aren't that bad looking once you have them imprinted with your return address or logo by a quality printer. And whatever you think of their appearance, you'll have to admit that window envelopes are an easy solution to the Envelope Dilemma. If you set your stationery up so that the mailing address lands in the right location on the page, your envelope is "printed" as soon as the letter's ready.

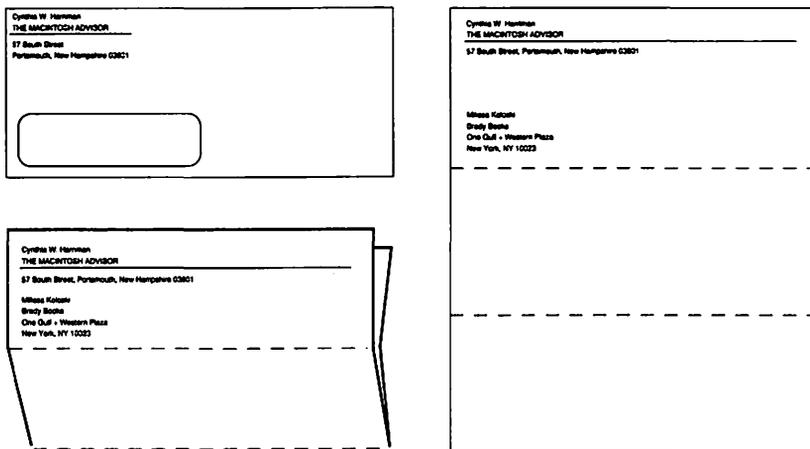


Figure 1.12 If you're using window envelopes, it's easiest to fold your page in fourths, as seen on the left, instead of in thirds like the letter on the right.

One helpful tip for window envelopes: Don't fold your letter in thirds as you normally would. This makes it hard to line up the address in the window, and makes it necessary for you to leave a big gap between your letterhead/return address and the "to" address. Instead, start the "to" address wherever you want, fold the letter in half, and fold it again in order to keep the address visible through the window. This is easier, and results in a more attractive letter with more room for information on the page.

Easy Envelopes

If you'd just as soon not use window envelopes, I recommend that you use a utility program to print your envelopes, or consider automating the procedure with a macro. Here's where the program Easy Envelopes, which I recommended earlier as a good way to store and paste addresses, comes into play. Let's take another look at Easy Envelopes, with an emphasis this time on its envelope-handling features.

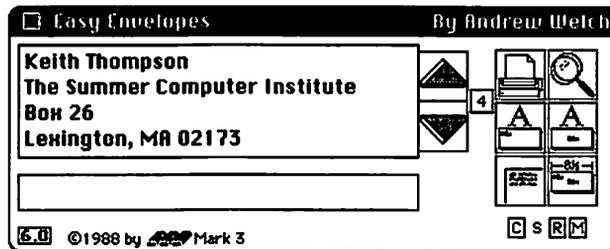


Figure 1.13 In addition to storing addresses, Easy Envelopes automates the whole envelope-printing process.

Here's the same Easy Envelopes screen you saw earlier. When you're ready to print an envelope, all you'll generally have to do is get your envelope ready in the printer, then click on the printer icon. Although there are several other settings represented by the different icons, once you set these to your preferred defaults, you leave them alone. Figure 1.14 shows how the major options included work.

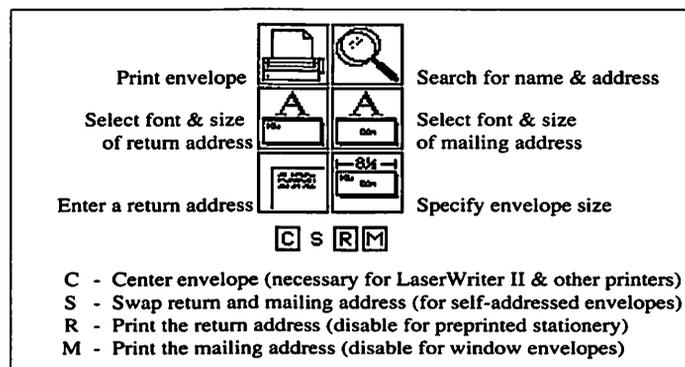


Figure 1.14 Easy Envelopes' options let you use different types of printers, with either blank or preprinted envelopes, in a selection of fonts.

There are other similar utilities on the market (another popular one is Kiwi Envelopes, a shareware program from Kiwi Software that prints envelopes but doesn't store addresses), but Easy Envelopes has the best range of features for most users. Many programs don't support the center feeding necessary for some of the newer laser printers, so check out all the features when you're looking for an envelope-printing program.

For ImageWriter Users. Even though Easy Envelopes supports envelopes, the ImageWriter doesn't support them itself. I've tried several different weights of envelopes on my ImageWriter, and have yet to find one that feeds through the rollers evenly without jamming or getting crooked. If you're using an ImageWriter, your best bets are to use window envelopes for single letters, or to get continuous-feed envelopes that can be pulled through with the printer's tractors if you're printing several envelopes at once. See the tips for printing envelopes on the ImageWriter, below, for more on continuous-feed envelopes.

Although I haven't personally tried it, there's no reason continuous-feed envelopes shouldn't work with Easy Envelopes. Easy Envelopes works on the ImageWriter is by printing in whatever spot you've manually set your envelope at; it won't ever know you're using continuous envelopes.

The Macro Approach

I personally prefer to use a macro to print my envelopes, rather than a utility program like Easy Envelopes. A macro, as you may be aware, is a recording of all the commands, mouse-clicks and keystrokes that go into doing some procedure manually. Once the procedure's been recorded as a macro, you can play it back any time you want to redo the procedure, without having to go through all the steps again — a simple key combination starts the macro, then it runs on its own.

I'm not going to go into the exact details of the macro here, because I've laid it out for you in Chapter 2, where I discuss macros in depth. But here are the steps that I use for my envelope-printing macro:

- (1) I select the mailing address at the top of my letter.
- (2) I press a single function key on my extended keyboard to start the macro (you could use a key combination on a regular keyboard).
- (3) The macro
 - a) copies the mailing address to the clipboard,
 - b) automatically opens a new blank document,

- c) sets margins and changes to landscape printing in Page Setup,
 - d) pastes the mailing address into the new document, and
 - e) selects Print, specifies manual feed, then clicks on OK.
- (4) While all this is happening automatically, I stick the envelope in the manual-feed tray of my LaserWriter, and the envelope gets printed.

It happens that I use Microsoft Word. But this kind of macro could be set up using *any* word processor and the MacroMaker program that Apple includes with your System. Nothing special is necessary, so take a look at Chapter 2 and give it a try.

Avoiding Envelope Jams

I've been focusing on easy ways to get the right mailing address to land in the right spot on your envelopes. But the fact is, *that* part of it is useless if your envelope jams in the printer on its way through. Here is a series of tips and pointers for the LaserWriter and the ImageWriter that you might find useful in avoiding this problem.

LaserWriter tips:

- Stick with standard #10 (4 1/8" x 9 1/2") envelopes. Smaller ones, such as the #6 1/4 (3 5/8" x 6 1/2") size often used for personal correspondence, jam much more readily than the larger size.
- The LaserWriter II printers jam much less often than the original LaserWriter and LaserWriter Plus, because they hold the envelope firmly on both sides for manual feeding. If you print a lot of envelopes, you might consider upgrading to the newer model.
- Avoid heavy bond envelopes. It's hard for either printer to feed them properly, and laser toner will look splotchy on their more-textured surface. I get more consistent results with lowcost supermarket plain white envelopes than with my good stationery.
- Some envelopes will seal themselves shut from the heat of the toner-fusing process. Try another brand: Different envelopes use different glue. (*Don't* try putting the letter in the envelope first to turn this bug into a feature. The extra thickness will almost surely jam your printer.)

- You can buy unfolded envelopes, specifically designed for printing in laser printers. These envelopes avoid the jamming problem, but I find them to be not too attractive, and I don't like the extra work of assembling the envelope. You might find them just the solution you need, though.

ImageWriter tips:

- My first advice for printing envelopes with the ImageWriter is: *Don't*. But if you must, some of these tips may help your printing a bit.
- Use side-seam style envelopes, so that the part of the envelope that gets printed is flat. The standard "V" flap envelopes have a lump where the seams cross in back, which can interfere with paper feeding. Unfortunately, most high-class business letter-head comes with V envelopes; side-seam envelopes usually look cheaper.

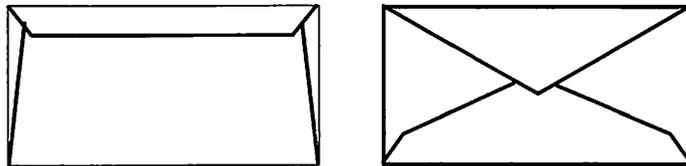


Figure 1.15 Side-seam envelopes, like the one on the left, won't jam as much in the ImageWriter as standard V-flap envelopes like that on the right.

- If you do use V envelopes, feed them through with the flap open. This decreases the lump where the seams cross, and wraps the envelope more thoroughly around the platen before you start printing it.
- You can also buy continuous-feed envelopes. My local computer and office supply store has five choices in its catalog, ranging from standard 20 lb. white for 9¢ each to fancy watermark bond for almost 20¢ each. While this may seem like the ideal solution, keep in mind that it's a real bother to switch between paper and envelopes each time you write a letter. Continuous-feed products are best for mass mailings, when you're doing several envelopes in a row.

These tips will help, but the perfect printer for envelopes just isn't available yet for the Mac. Why not just use window envelopes—or add that

personal touch by hand-addressing them? In a world deluged by junk mail, a hand-written address could really make your letters stand out.

I tried doing envelopes on my laser printer, with Easy Envelopes, but on my good letterhead envelopes the printing comes out too light. In media you have to have nice envelopes, so I just use the typewriter. I'd really stay away from labels—I open letters with labels last, and I assume other people do too.

Elisa Abel, Writer/Producer of Educational Media and Print

Mailing Labels and Form Letters

When you run your own small business, you need to be your own PR department, on top of everything else you do. This means you're likely to be mailing flyers to potential customers, sending out a quarterly newsletter to your regular clients, or carrying out similar tasks that can benefit from computerization.

As with so many of the topics in this book, there are dozens of ways you could do these things. But I'm going to tell you how *I* do them, using Microsoft Works. Once you have the general idea, you can make your own decision about other products. In the meantime, you'll be left with one way that really works (no pun intended), instead of a bunch of confusing options.

Form Letter Primer

Creating form letters with any program consists of three main steps.

- (1) Using a word processor, write the letter as if you were mailing it to one person, print out a copy, then highlight the parts of the letter you'd like to customize for each person. You know the routine:

Dear Mrs. Harriman,

We're writing to let you and all the other people in Portsmouth, NH, know about our special deal on widgets....

- (2) Create a file that contains all the names, addresses, and other pertinent information needed to fill in the blanks for each individual on your list. This is done with a database program.

- (3) Make your word processor and database work together, so that the database feeds one set of information into your word processor program for each copy of the letter.

The third point is the tricky one: Making your word processor and your database work together. If you usually use Microsoft Word as your word processor, and FileMaker for database chores, you could spend weeks with the manuals of the two programs trying to figure out how to create form letters.

If you value your time at all, you'd be better off just buying a program that has both a database and a word processor that already know how to work together easily. With the Mac's consistent interface, it's often easier to learn an entirely new program than it is to learn the more difficult features of a program you already use. I recommend you buy Microsoft Works. Works comes with a word processor, a database, a spreadsheet, and a communications program all rolled into one.

Form Letters with Works

To understand how simple a Works mail-merge project can be, let's look at the type of thing I did when I started this book. I wanted to tell you about a lot of useful products, but in order to do so, I had to make sure to take a good look at the most current versions of these products. Following the generic plan above, I started by writing a letter in the Works word processor that I could send to each of the various vendors, telling them about my project and asking them for a copy of their software.

The letter turned out like this (so you can see the parts we'll be customizing in each copy, I've underlined them here, but you would actually just leave a single blank space in each location):

Dear _____,

I am writing a book called *The Mac Small Business Companion*, to be published in the fall by Brady/Simon & Schuster, which will include a chapter called _____. At this time, I'm planning to include information about _____ in this chapter, so I would appreciate it if you could send me the latest version of your product so I'll have the best, up-to-date information.

I'll call you next week if I haven't heard from you, so we can discuss my project.

Sincerely,
Cynthia W. Harriman

The next thing I did was create a database with *fields* (information categories) for the names of all the products I needed, the companies' names and addresses, the name of the marketing director at each company, and the chapter in which the product is mentioned. I typed in all the data, and Step #2 was complete.

Finally, leaving the database open on my desktop, I returned to the word-processing document, and started on Step 3: Making the word processor and the database work together. Here's how that's done in Works:

- (1) First I wanted to put the Marketing Manager's name at the top of the letter. I placed my cursor in the spot where the manager's first name should appear, then selected Prepare to Merge from the Edit menu. A window appeared, listing any databases currently open, and their fields.
- (2) I double-clicked on *firstname*, and a place-holder representing the first-name field of the software database was inserted into my word-processing document.

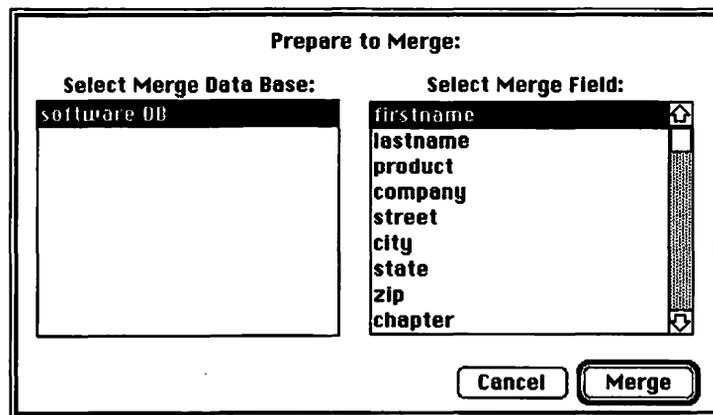


Figure 1.16 Microsoft Works offers one of the easiest mail-merge options of any Mac software. You pick information you want to merge into a form letter, from a list of all your fields.

- (3) I repeated the Prepare to Merge command over and over, for each field in the database that I wanted included in the letter. If you want, you can select Show Field Data from the Edit menu to see actual data from one of the records in your database. Otherwise, you will see all the field names onscreen, as shown below:

software DB: firstname software DB :lastname
software DB: company
software DB: street
software DB: city software DB:state software DB:zip

Dear software DB: firstname ,

I am writing a book called *The Mac Small Business Companion*, to be published in the fall by Brady/Simon & Schuster, which will include a chapter called software DB: chapter. At this time, I'm planning to include information about software DB: product in this chapter, so I would appreciate it if you could send me the latest version of your product so I'll have the best, up-to-date information.

- (4) All that was left was to print the letter. I selected Print Merge from the File menu, instead of the usual Print command; Works printed the letter once, using the information from the first record in my software vendors database. Then it automatically continued, printing the letter over and over again, changing the information in each letter.

This is how the process would work, whether you were writing a dozen letters like I was, or sending two or three hundred sales promotion letters (*Dear _____: We wanted all our customers who have bought a _____ from us in the last year to hear about the great sale we're having on _____*). One final plea: Try not to use your new-found knowledge of mail merge to add to the world's supply of junk mail. Write unto others as you would have them write unto you.

Mailing Labels

Your mailing list is an asset almost as important to your business as your Mac itself. (That really puts it in exalted company!) While you'll use parts of your list with a mail-merge program for small personalized mailings, you're more likely to use the entire list just for printing labels, when you want to mail something to a great many people.

Printing mailing labels can be done even more easily than printing form letters; most any database program that can store names and addresses can print them out in label format as a special database report. (Works is somewhat different. It prints labels in much the same way it prints form letters, working with both the word processor and the database together.)

Problems you may run into are likely to have more to do with the printer you're using, and the type of labels you buy. With that in mind, here are a few pointers that should help:

ImageWriter Pointers

- The easiest approach is to print “one-up” labels: labels that come in a skinny strip one label wide. You can slide your printer’s tractors (the spiked things that hold the holes in the paper) over to grip the smaller width. “Three-up” labels that fill a normal page size are usually harder to set up in most programs, and if you don’t get your labels lined up right you’ll waste more of them before you get things adjusted.
- Only experience will tell you where the top of your first label should be in the printer, so that the names will land in the middle of each label. Make a note of how you set things up (“top of label just above the little paper holder-thingy”), and do a test run of about a half dozen names, then adjust your labels and try again. When you get it right, write it down someplace where you’ll be able to find it next time.
- The standard mailing label is usually 1" high and 3 1/2" wide. When you’re doing labels, most programs consider this to be your “page size.” Go to Page Setup and make all the appropriate entries to let the ImageWriter know you’re no longer using regular paper.

ImageWriter v2.6 OK Cancel

Paper: US Letter A4 Letter
 US Legal International Fanfold
 Computer Paper Custom Size

Orientation Portrait Landscape

Special Effects: Tall Adjusted
 50 % Reduction
 No Gaps Between Pages

Print Row and Column Numbers **Paper Width:**
 Print Cell Notes **Paper Height:**

Header:

Footer:

Left Margin: **Right Margin:**
Top Margin: **Bottom Margin:**

Figure 1.17 When printing labels on an ImageWriter, it’s important to select Custom Size and No Gaps Between Pages on the Page Setup screen, then enter the width and height of your labels in the appropriate boxes. This Works Page Setup screen is typical.

I usually set things up as shown here, checking custom size, then entering the appropriate width and height for my labels. I leave my margins at 0, and make sure to check No Gaps Between Pages so the printer will skip the gap it usually creates to clear the perforations between pages of regular paper. (This is the Works Page Setup box. The Page Setup box in other programs may differ slightly, but should contain roughly the same choices.)

- *Never roll labels backward in your printer.* It seems logical to cut or tear the labels off right after the last one emerges from the front of the printer, then roll the labels out of the printer by turning the platen handle backward. Consider this a warning: *Don't ever do this!*

It's very common to have the corner of one of your labels catch, peel off, and become firmly stuck on the metal guide under the platen (roller) of the printer if you do this. Then it's usually impossible to get the stuck label out without disassembling the printer, a job you'll want to entrust to your dealer, who will charge you lots of money to save your printer. Go ahead. Waste five or six labels (and about as many cents) by cutting the labels *behind* the platen, and rolling the few wasted ones out frontwards. One final note: Never turn the platen on any printer when the printer is on. You may strip its gears.

- Now that you know that labels shouldn't be rolled backwards in a printer, how do you deal with the fact that the ImageWriter II has a nasty habit of automatically rolling backwards at the top of each page? Two possible solutions: Trade it for someone else's ImageWriter I, which is a much better printer all around; or make sure to use labels that don't easily peel off when used with badly designed printers. Many people I know recommend Avery labels as the solution to their ImageWriter II nightmares.

LaserWriter Printers

- Make sure to use labels designed for laser printers. The high heat used to fuse the toner in a laser printer can cause some labels to separate from their backing, or even to jam in the printer. Again, I've had very good experience with Avery.
- Another reason to buy special laser labels is because laser printers can't print all the way to the edge of *any* page. If you

use regular sheet labels, you'll have to waste a whole label at the top and bottom of each page; laser labels come with a half inch margin on either end.

- You'll need to use a program that can print multiple labels on a single page. Some programs print only one label to a page—an approach that's not a problem on the ImageWriter, where each label can be considered as a small custom-size page, but is unacceptable on laser printers that consider 8 1/2 x 11 as their minimum page size. (The original version of Microsoft Works had this drawback.)

General

- Sort your labels before you start printing. If you're bulk mailing, you'll have to sort by zip code. But even if you aren't, do yourself a favor and sort by *something* before you start. Why? Labels always jam or misfeed at some point, and you'll have to stop the printer. In order to start where you left off, you'll need to be able to select specific records—for instance, "Print all records where zip > 45832" or "lastname > Morton" — a task that's only possible if the records were in some sort of order to start with.
- If your program lets you set line spacing at 6 lines per inch (normal typewriter spacing), then do so. Normally, different fonts use different line spacing; with 6-lines-per-inch, you'll know how many spaces to put between labels to make the next one line up just right. (A three-line label would need three spaces to total six lines; a four-line label would need two spaces, and so on.)

We have over a hundred regular contributors to our magazines. Every month I print out a label for each person, and the secretary puts it on an envelope, and they're all in alphabetical order. We send everyone a newsletter—it's really just a letter from the editor, that tells what pictures and stories we're looking for—and the people that contributed things get their check in the same envelope. The secretary used to have to type the labels three across on paper, and put them through the copy machine. They'd never come out straight, you'd have to use white-out when they changed, and they were never in alphabetical order. This makes a big difference.

Robin Hartford, Assoc. Editor, Stock Car Racing magazine

Now It's All Up to the U.S. Mail

If you're carrying on all your business correspondence the traditional way—on paper—that's about all I can say. I don't know of any way to use your Mac to put a stamp on more quickly, or to speed up the U.S. Postal Service. When you're ready to consider other ways to send your message besides letters, though, take a look at Chapter 5, and learn what's involved in sending electronic mail.

2 Simple Shortcuts

Keyboard equivalents for everything

If you're like most people, you probably find the mouse best for graphic manipulation ("moving furniture around") and the keyboard best for word-intensive tasks like database entry or word processing. While each has its place, you'll work more efficiently if you're not constantly switching back and forth between the two.

In practice, this involves finding ways to do as much as you can directly from the keyboard. In this chapter I'll talk about several ways you can make better use of the keyboard to make your work on the Mac more efficient, including information on how to:

- Take advantage of built-in shortcuts in applications and the Finder.
- Add keyboard shortcuts to programs that don't have them.
- Record simple macros—custom sequences of commands—for later playback.

You'll hear some of the simpler keyboard shortcuts referred to as "keyboard remapping" a term that implies, correctly, that you can make any key on your keyboard represent anything *you* want. By the same token, you'll often hear anything beyond the simplest key-substitutions referred to as "macros." By whatever name, though, all of these techniques represent the potential to save you a lot of time.

One final note: There are two types of macros. The first, which I'll cover in this chapter, are what might be called "Band-aid Macros." Band-aid macros are very simple and require no programming knowledge. They're most useful as quick and permanent fixes to drawbacks in your favorite programs.

In Chapter 3 I will continue on with what I call "Cheap Labor Macros," covering some of the more perplexing issues that are involved with creating complex macros. Complex macros can be considered your alternative to hiring a temp—they give you cheap labor to accomplish some repetitive

and onerous chore, but you don't usually keep them around for long. I've divided this information into two chapters so that those of you with no wish to know anything about programming can still get the benefit of simpler macros without being overwhelmed.

Built-in Shortcuts

The standard Mac interface includes many well-known shortcuts for avoiding the mouse. Most people who have been using the Mac more than a few months pick up the most common ones:

Command-X	Cut
Command-C	Copy
Command-V	Paste
Command-S	Save
Command-P	Print

While shortcuts like these—which one colleague refers to as “the five Command-keys all Mac users should tattoo on their arms”—are widely known and used, several lesser-known universal shortcuts are also available, and popular applications add others. If you'd like to be able to bounce around dialog boxes and save and retrieve files without taking your hands off the keyboard, this section will tell you how.

Many of us who are self-taught know how to use the Mac, but may have missed out on the official names for the things we do every day. Here's a quick review of some of the terms I'll use in this chapter:

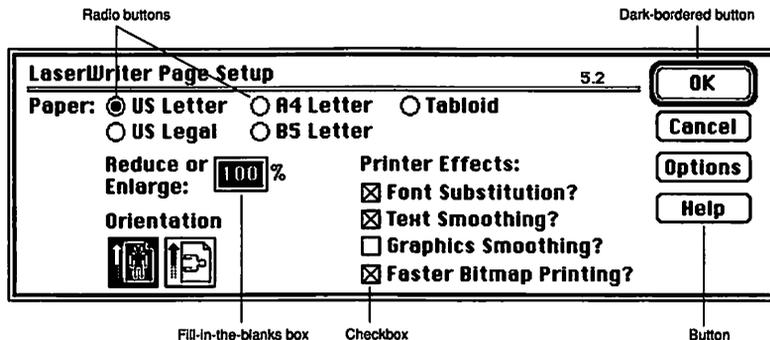


Figure 2.1 A glossary-at-a-glance for many of the terms to be described in this section.

Dialog Boxes

Whenever a dialog box appears onscreen in any Mac program, you should try the following tricks to avoid grabbing the mouse:

<i>Pressing:</i>	<i>Has this effect:</i>
Return	Activates any button with a dark border around it
Tab	Moves you from one fill-in-the-blanks box to the next
Command-Period	Activates the Cancel button
The first letter of any word	Toggles on/off a dialog box choice starting with that word

The first two—Return and Tab—work quite consistently. Command-Period works in about half the popular applications, as a substitute for Cancel. The “first letter” trick generally only works in Microsoft applications, and even then not all the time. But it’s so useful, and Microsoft programs are so widely used, that it’s worth mentioning.

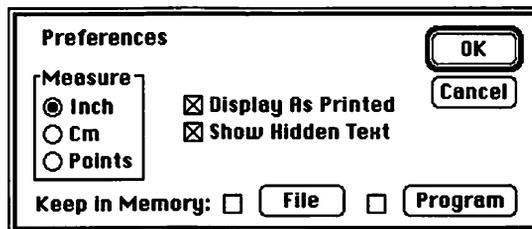


Figure 2.2 In some programs—such as Microsoft Word, shown here—dialog box choices are accessed through the keyboard as well as the mouse.

A few examples from Microsoft Word illustrate dialog box shortcuts at their best. In the first example, the Preferences dialog box shows how a box behaves when it doesn’t have any fill-in-the-blanks boxes:

<i>Pressing:</i>	<i>Is the same as clicking on:</i>
I	the Inch radio button
P	the Points radio button
Return, O	the OK button
Command-Period, C	the Cancel button
F	the File button
D	the Display as Printed checkbox
S	the Show Hidden Text checkbox

Almost every choice on screen, whether it's a button, a radio button, or a checkbox, can be activated by pressing the first letter of its name. The only exceptions are the duplicates: Since C activates the Cancel button and P activates the Points radio button, there's no way to choose "Cm" or "Program" from this box without mousing.

When a dialog box has fill-in-the-blanks, the situation gets a little more complex. This is because one of the blanks is selected at all times: If you type a letter meant to be a keyboard shortcut, the Mac will interpret it as a new entry in the blank. Therefore, you'll need to press Command along with a letter when you want to activate a button or checkbox.

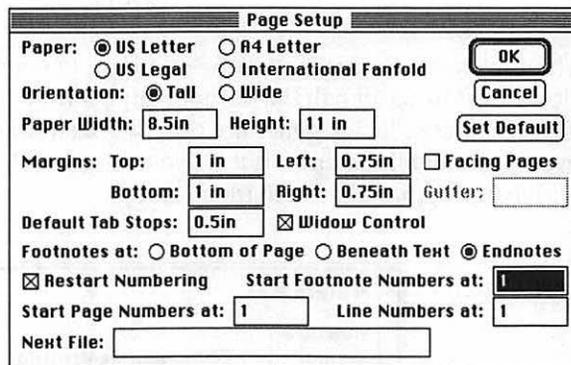


Figure 2.3 Word's Page Setup dialog box illustrates how the keyboard can be used to make choices when fill-in-the-blanks boxes are included.

The Page Setup box from Word illustrates this well:

Pressing:

Tab
Return, Command-O
Command-Period, Command-C
Command-U
Command-A
Command-I

Command-W
Command-T
Command-B
Command-E

Has the same effect as clicking on:

the next fill-in-the-blanks box
the OK button
the Cancel button
the US Letter radio button
the A4 Letter radio button
the International Fanfold radio button
the Wide radio button
the Tall radio button
the Bottom of Page radio button
the Endnotes radio button

Command-F
Command-R

the Facing Pages checkbox
the Restart Numbering checkbox

One final dialog box trick is sometimes useful. So far I've only seen it in a few places in Microsoft applications; the Mac community would be well served if other companies adopted it, and if Microsoft used it consistently. It's a shortcut that unchecks a whole block of checkboxes if you simply click on the title of the block. My favorite use of this is in the Format Character dialog box in Word, where clicking on the words "Character Format" is much more convenient than individually toggling off each of several styles. A click on this line toggles off any style that has been selected.

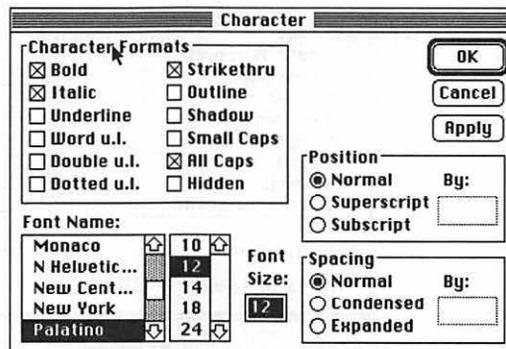


Figure 2.4 In some Microsoft dialog boxes, clicking on the title at the top of a group of checkboxes will turn all the boxes off (uncheck them). This one is Microsoft Word's Format Character dialog box.

The Standard File Box

When you select File Open or File Save from a Mac menu, the dialog box that appears is usually referred to as the Standard File dialog. You can control the scroll bars in a Standard File Box, without mousing.

Pressing:

any letter(s) of the alphabet

the UpArrow cursor

the DownArrow cursor

Command-UpArrow

Return

Return

Tab

Has this effect:

Moves to the first file or folder that starts with the letter(s)

Moves up one file in a scrolling list

Moves down one file in a scrolling list

Moves up (back) one level in HFS

Opens the currently selected file

Moves down one level in HFS

Activates the Drive button

Command-E	Activates the Eject button
Command-O	Activates the Open button
Command-Period	Activates the Cancel button

If there are extra nonstandard additions to the Standard File dialog, some Microsoft applications again let you activate buttons and checkboxes by typing *Command-Letter*, where letter is the first character in the choices. (Obviously, typing the letter alone would move you to the first file or folder that starts with that letter, so Command must be added.)

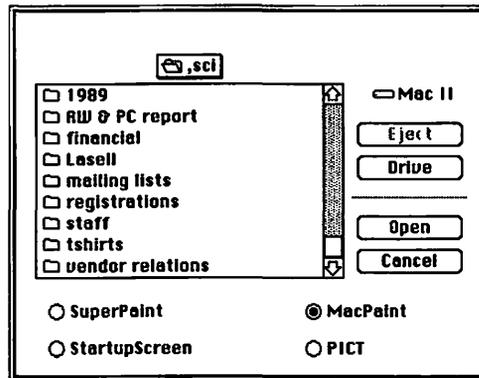


Figure 2.5 In almost any program, there are Command-key shortcuts for moving around the dialog box that appears whenever you select Save or Open from the File menu.

In the SuperPaint Standard File dialog above, for instance, typing “m” then “Return” would scroll to the folder *mailing lists*, then open it. (An interesting aside: The Open button here *should* have a dark border around it, since it’s activated by pressing Return.) If you wanted to move back into the SCI folder, typing Command-UpArrow would return you to this screen, one level up in the HFS arrangement for this disk. Tab activates the Drive button, and Command-Period clicks on the Cancel button.

I really like Acta, because I can use it without ever touching the mouse—once I’ve clicked on its opening screen. And I use about every PageMaker shortcut there is. I try and use all the Finder’s shortcuts: I couldn’t live without Command-W [to close the active window] because I have so many windows open all the time. I could go for Command-anything. I just wish sometimes you could do Command- and two letters, so I could have even more of them.

Paul Parisi, Desktop publisher

Create Your Own Keyboard Shortcuts

Once you start using keyboard shortcuts you're apt to find yourself increasingly frustrated by programs that still make you jump to the mouse; you'll want an easy way to build in your own keyboard controls. In some programs, you may just want to add the occasional command that's been left out—even in the best keyboard-rich programs, for instance, there's rarely a shortcut for Page Setup. In other programs, you may need to add command-keys for almost every menu command.

There are several programs on the market that make it easier for you to do just about anything by simply pressing one or two keys. In this section we'll look at my favorite, a program called QuicKeys from CE Software, and at a neat little shareware program that helps you access menus in any program without using the mouse.

QuicKeys: A Great All-around Keyboard Optimizer

The QuicKeys package actually consists of two useful parts, QuicKeys itself and DialogKeys. **DialogKeys** is an INIT, a simple program that loads itself into memory each time you start your Mac. It provides two universal shortcuts that can be used in dialog boxes in any program: Command-Tab moves you from choice to choice (among buttons, checkboxes, radio buttons and fill-in-the-blanks) in the dialog box, and Command-Spacebar "clicks on" the selected choice.

This arrangement makes a great deal of sense in a Mac-intuitive way. While the Mac's built-in shortcuts (and those in some applications) require you to keep track of several options—Tab, first letter, Command-first letter, and so on—DialogKeys uses one procedure to move anywhere, and one more procedure to activate anything. What's more, it makes perfect sense that Command-Tab should be the move keystroke, since most users are accustomed to moving between fill-in-the-blanks choices with the Tab key. (Command-Spacebar is less logical, but at least it's convenient for your fingers, and you can be quite sure your application isn't already using it for something!) While you can modify DialogKeys to substitute some other keys for these operations, there's really no need.

QuicKeys. QuicKeys lets you create shortcuts for any series of keystrokes or mouse clicks. This is not unusual. But what sets QuicKeys apart from other key-customizing programs is the fact that it comes with a series of prerecorded sequences that make set-up much quicker and less confusing. These ready-made shortcuts are organized into several categories, further optimizing the set-up procedure. Let's look at each of the categories in turn.

Mousies. Mousies substitute key combinations for any frequently used mouse operation. I have, for instance, created the following Mousies to help me write this book:

<i>Pressing:</i>	<i>Has the same effect as:</i>
Option-UpArrow	clicking on the Up scroll arrow
Option-DownArrow	clicking on the Down scroll arrow
Shift-Option-UpArrow	clicking in the scroll bar above the box
Shift-Option-DownArrow	clicking in the scroll bar below the box
Option-Period	clicking the current window's close box

Date and Time. Date and time QuickKeys are useful if you write a lot of business correspondence. They let you assign a simple key combination to ten different time and date formats. I frequently use two different date formats—a simple numeric one like 7/8/1989 in spreadsheets and database entry, and a more prosaic one like 8 July 1989 for letters—I have used QuickKeys to make it easy to enter either format. I've set up my machine as follows:

<i>Pressing:</i>	<i>Has the same effect as:</i>
F5	typing 8 July 1989 (or current date)
Shift-F5	typing 7/8/1989 (or current date)

As you can see in this example, an extended keyboard with function keys F1 through F15 is a handy thing to have if you want to use a lot of keyboard shortcuts: You never have to worry about accidentally picking a combination that's being used by one of your applications for some other task.

Menus. Most Mac programs make extensive use of Command-key equivalents for many menu choices: Command-X, Command-C, and Command-V for Cut, Copy, and Paste in the Edit menu, for example. QuickKeys lets you assign Command-key combinations or any other combination of keys to menu choices that are lacking this useful shortcut.

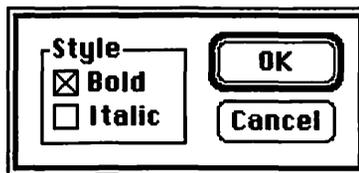


Figure 2.6 Making cells bold or italic in Excel takes several steps. QuickKeys can substitute one key press for this entire process, and others like it in any program.

One of my favorite menu **QuicKeys** is one I created for Excel. It selects “Style” from the Format menu whenever I press Option-S. Up pops the Style dialog box, where I can type “b” for bold or “i” for italic, then hit Return to activate the OK button—to make the current cell bold or italic (or both) without ever leaving the keyboard.

Menu keys are also very useful for selecting desk accessories you use frequently—the Chooser, for instance, if you’re constantly switching back and forth between two printers. I use a simple **QuicKey** to call up **QuickDEX** for dialing my phone and finding addresses. (See Chapters 1 and 5 for more on how I use **QuickDEX**).

The only drawback to using **QuicKeys** to add menu equivalents is that, unlike those built into your program, the **QuicKeys** equivalents don’t show up on the actual menu when you pull it down. If this bothers you, or if you find yourself making up scores of different menu shortcuts, you might also take a look at a utility called **Staircase** that’s described later in this chapter.

Text. If your word processor has a glossary feature, you’re probably already familiar with text macros. Basically, they let you reproduce a string of typed characters with a simple key combination. The time and date shortcuts mentioned above, for instance, are really text macros: they save you from having to retype the same information over and over again. As such, they hardly qualify as mouse-avoiders—but they’re still very handy.

You could use a text macro for the name of your company (typing something like Option-A is a lot easier than typing Amalgamated Alligators Incorporated a dozen times a day). Or you could use text macros for common phrases like “sincerely yours” or for your return address block for business correspondence. Anything goes—including punctuation and return characters—as long as you keep it less than 71 characters. I’ve got one made up so that:

Pressing:
Command-Option-C

Has the same effect as:
typing Cynthia Harriman

71 characters is a reasonably flexible size for simple phrases, and you’ll find there are lots of short blurbs you’ll want to turn into text **QuicKeys**. If you want longer selections and extensive boilerplate paragraphs, other macro programs like **MacroMaker**, **AutoMac**, and **Tempo** allow you more than 71 characters.

Specials, File, and more. I’m not trying to rewrite the **QuicKeys** manual here, and I think you get the point: You can create quick keyboard shortcuts

for just about any Mac operation with a program like QuicKeys. This is a program that's inexpensive and easy to learn, and will really boost your productivity. I highly recommend it.

I've been using QuicKeys almost since it was announced. I use it to start up applications with a single keystroke, to pull down my favorite desk accessories, and for some other things that take several steps. Anytime something gets kind of tedious I try to use QuicKeys. The best example is for changing between the LaserWriter and the ImageWriter and the fax modem. They're all in the Chooser and with QuicKeys I can go from one to another without having to do anything but press a key.

Martin Boling, Industrial sales

Staircase: Mouse-free Menu Selections

If you simply want some way to access menus without using the mouse, you might want to use a simple shareware program called Staircase. Staircase is an INIT/CDEV that you simply drop in your System folder; it loads itself into memory whenever you subsequently start up your Mac. Once it's running, you can control all your menus with the command key. In the Finder, for instance,

<i>Pressing:</i>	<i>Has the same effect as:</i>
Command-0	pulling down the Apple menu
Command-1	pulling down the File menu
Command-2	pulling down the Edit menu
Command-3	pulling down the View menu
Command-4	pulling down the Special menu

Once a menu's pulled down, you'll see that numbers have been assigned to each choice on the menu. You simply type the number on your keyboard, and the appropriate menu option is activated. Even though you can no longer see the Command-key equivalents listed on your menus, they still work as before, so your old habits will still stand you in good stead.

Unfortunately, the version of Staircase available as this was written (Version 1.0.2, shown in Figure 2.7) ignores the hierarchical (multilayer) menus that have started to become popular. But what do you want for free? Eccentric Software does not charge for this program, yet it seems to work quite well with regular menus. Take a look at it, or look for a similar program, if you want a universal keyboard solution for menus, without having to code each one as you would in QuicKeys, and without having to remember an endless series of key combinations.

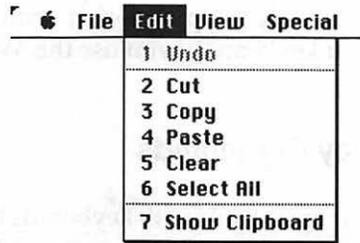


Figure 2.7 An inexpensive utility called Staircase lets you press numbers instead of using the mouse, for any command in any program.

“Staircasing” in Word and FullWrite. FullWrite Professional has a built-in feature called WalkDown Menus that’s a lot like Staircase—only it’s built into FullWrite. With this feature, each menu item has a number, starting with 1 for the File menu, 2 for the Edit menu, and so on. If you press Command-1, down comes the File menu; almost every item on the menu then appears with a Command-number equivalent for access.

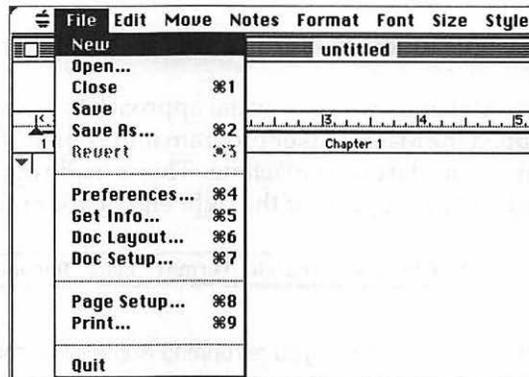


Figure 2.8 The File menu in FullWrite, a program with shortcuts for almost every command

Microsoft Word has something similar. In Word, once you press the decimal point (or period) key on your numeric keypad, you can type the first letter of any menu and it will drop down, letting you again type the first letter of any command to activate it. When there are several menu choices and commands that start with the same letter of the alphabet, you can use your cursor arrows to move from left to right or up and down to

select the command you want. (Tip: You might want to use **QuicKeys** to replace the numeric keypad period with some other key closer to the middle of your keyboard, if you use this **Word** feature often.)

Beyond Key Commands

Once you feel comfortable with keyboard shortcuts, it's time to start exploring other types of macros. In this section, I'll talk about macros that replace entire procedures with one or two keystrokes. **QuicKeys** can do something like this—it lets you string together a series of **QuicKeys** to do several tasks at once—but to really customize your shortcuts, you'll want a program that basically just watches everything you do, records your actions in a file that's stored away (usually in the **System** folder), then repeats the whole procedure whenever you ask it to.

Such a program is usually referred to simply as a macro program, while programs like **QuicKeys** will often be called "keyboard optimizers" or "keyboard remapping programs." While there are many macro programs on the market, in this section I'll use **MacroMaker** for all the examples, since Apple provides it free to every Macintosh user.

A Few Introductory Words about **MacroMaker**

MacroMaker uses a very visual approach to creating macros. Once you've dropped the **MacroMaker** program into your **System** folder, it's available as soon as you start your machine. This is made apparent by a small cassette-tape icon that appears at the right end of your menu bar in all programs.



Figure 2.9 When you're running Apple's **MacroMaker**, a small cassette icon appears at the end of the menu bar of all your applications, to remind you that you can record macros at any time.

Whenever you want to record a macro, you pull down the menu that's under the cassette tape, and select **Start Recording**. When you're done with the actions you'd like to record, you pull down the menu again and select **Stop Recording**. A somewhat overcute cassette recorder then appears onscreen (see Figure 2.10), where you can label your macro and assign it a keyboard equivalent for easy playback. Look in the *Macintosh Utilities User's Guide* that comes with every Mac or **System** upgrade for more details on how **MacroMaker** works.

Building Single Command Macros

Probably the best place to begin in moving beyond key commands is with a simple boilerplate macro—a macro that records a block of text you'll be using over and over again, and plays it back on demand to save you retyping it. QuickKeys can do this for really short blocks of text (up to 71 characters) but here we'll use MacroMaker, to show you how a recorder macro differs.

The Return Address Macro. Here's a macro I actually use, which inserts my name and address into a Word document:

- 1) Select Start Recording from the MacroMaker menu
- 2) Type Cynthia W. Harriman <press Return>
57 South Street <press Return>
Portsmouth, NH 03801 <press Return twice>

Of course, where I wrote <press Return> you will actually press the return key—don't type the words! (And you can certainly use any word processor, and type your own name, if you want to try this macro on your own machine.)

- 3) Select Stop Recording from the MacroMaker menu
- 4) When the MacroMaker cassette recorder appears automatically onscreen, type *Return address* in the space next to Name. You can also click in the Info box and record a brief descriptive phrase or sentence, if you'd like.
- 5) Click down next to Keystroke and enter the keys you'd like to use to run the macro. I like to use the Control key along with a single letter that reminds me of the macro's purpose: Control R, for instance, for a return address macro. (See notes below for tips on macro keystrokes.)
- 6) Finally, click on Store to record the macro on disk—so far, everything you've done is just in memory. When you Store, your new macro becomes part of the file called Macros that is in your System folder.

This is a very simple macro, but if you stop and think how many times a month you type your name and address, you can see how useful it can be. You can also imagine similar macros, just as easy, that would finish off a letter—adding the word “Sincerely,” skipping a few lines, then adding your name—or create any other frequently needed “boilerplate” text. MacroMaker can handle not only these short text pieces but also much longer ones: I’ve made entire pages into macros with MacroMaker.

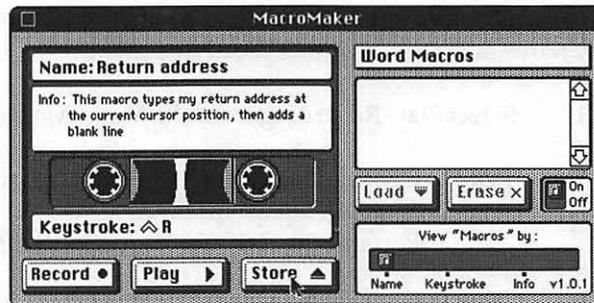


Figure 2.10 In MacroMaker, you assign a name, a keystroke, and an optional description to every macro.

Building Multiple Command Macros

There’s really nothing more to creating a macro than these basic steps: Start recorder—Do your thing—Stop recorder—Name it and assign a keystroke. All you need to do to create a complex macro is add more steps to the “Do your thing” part of the process. These steps can be anything you’d do manually on the Mac—mouse clicks, menu choices—that together constitute a task. Let’s look at how an example might work with MacroMaker.

The Envelope Macro. Like the return address macro, the envelope macro is also useful for writing letters. It takes the name and address from a letter you’ve just written, and automatically prints it on an envelope. (This is the macro I referred to in Chapter 1, when we were talking about envelopes.)

Manually, you would accomplish this by creating a new word processing document with the name and address centered in the proper position, and with the page set to print sideways (“wide” or “landscape”). Then you would stick the envelope in your manual feed slot, and print. (As is, this macro assumes you’re using Microsoft Word and a LaserWriter NT. After the macro I’ll talk about how you’d change it for different word processors and different printers.)

- (1) As is typical of many command macros, the envelope macro assumes you've got things set up in a certain way before you record the macro. I'll assume you've just written a letter, and that the address of your correspondent is somewhere near the top of the letter. Start by selecting all the lines of the person's name and address.
- (2) Select Start Recording from the MacroMaker menu.
- (3) Select Copy from the Edit menu to put the address in the Clipboard.
- (4) Select New from the File menu to create a new blank document.
- (5) Select Page Setup from the File Menu. In the dialog box that appears, set the left and top margins each to 4", click on Wide, then click OK to close the dialog box.
- (6) Select Paste from the Edit menu to put the address in the new document.
- (7) Put an envelope in the printer, select Print from the File menu, click on Manual, then click OK.
- (8) Select Stop Recording from the MacroMaker menu.
- (9) Name the macro "envelope", give it a keystroke of Control-E, and Store it.

Although this macro was created to print envelopes on a LaserWriter NT with Word, few changes would be needed to work with other applications and other printers. Due to the consistency of the Macintosh interface, macros for common tasks like printing would work the same way in almost any application. Think about it: All the commands in this macro—Copy, Paste, File New, Page Setup—are the same in virtually any word processor.

Printers do differ, however. The LaserWriter NT's manual feed takes in envelopes in a position analogous to the center of a sideways sheet of paper. That's why step 5 was necessary: I wanted the address to start printing about four inches in from the edge of the envelope, in about the middle of the "page." If your printer is different, simply use different margin settings here. (The LaserWriter and LaserWriter Plus feed manually from the edge

of the tray; a top margin of about two inches works well with these printers—but keep the left margin at four inches.)

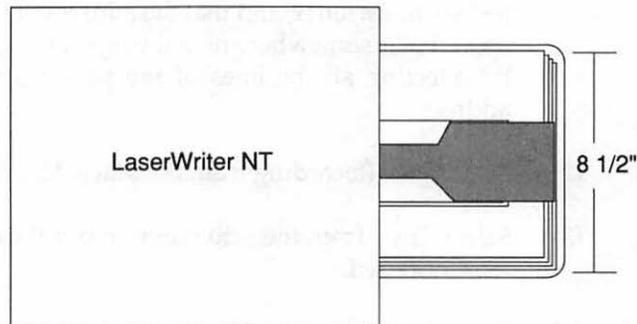


Figure 2.11 Apple's LaserWriter II printers, and printers from several other manufacturers, feed envelopes from the center of the input tray.

Examples of single- and multiple-command macros only start here, and go on and on: If you can do it, a macro can do it for you again and again, saving you from boring repetition.

Pointers for Command Macros

As I said before, there's not much more to a typical macro beyond Start recorder—Do your thing—Stop recorder—Name it and assign a keystroke. A few pointers might help you, though, to create better macros not only in MacroMaker but in other macro programs.

Naming Your Macros

There are no standards for naming macros. Mostly the process relies on common sense, keeping in mind that the point of a name is to make it easy for you to call up the macro and use it over and over again. Some pointers:

- Almost all programs let you give your macro two names. One is a longer English name that describes the macro. It's used to run the macro from a menu that lists all your macros. The second "name" is the set of keys you can press to run the macro without the bother of pulling down a menu.
- The key commands you choose for the second name will consist of one or more "modifier keys"—keys like Shift, Command, Option,

Control that are always pressed in combination with other keys—and a letter or number. (Check your program. Some don't allow numbers.)

- Pick modifier keys that don't conflict with commands in the programs you'll be using. If you name your macro *Command-C*, for instance, it will conflict with the Copy command in every single program you run! (Most macros will override and replace built-in commands with the same trigger.)

The common built-ins are obvious, but if you use programs like Word—which uses almost all possible Command and Option combinations—you'll have to be extra careful. I use the Control key as my modifier in programs that allow its use: Regular Mac programs don't usually use Control for anything, so it's safe. (Note: The Mac Plus keyboard does not have a Control key.)

- For the other part of the macro key combination, pick letters that mean something or have a mnemonic connection to your macro, so that you'll remember them better. Control-N would be great for a macro that writes your name; Control-P would make sense for one that computes your payroll.
- Some macro programs differentiate between upper- and lowercase. Watch out for this! In Excel, for instance, if you assign a macro the keystroke "Command-Option-G," you'll have to hold down the Command, Option *and* Shift keys while you press G—without the shift, it's a totally different macro.

The good news in such programs is that you can have twice as many macros before you use up the whole alphabet. The bad news is that it's tough to remember whether to shift or not, and it's awkward to hold down so many keys when you do need to shift. (MacroMaker treats both upper- and lowercase letters the same.)

- If you forget the keys you've used to launch a particular macro, most programs let you check a list or pull down a menu to refresh your memory. So don't worry about forgetting them.

The Extended Keyboard

If you get hooked on QuicKeys and/or some simple macro program, you should investigate replacing your current keyboard with an extended keyboard. Apple offers one (called, cleverly, the extended keyboard); the DataDesk Mac 101 keyboard is another similar choice.

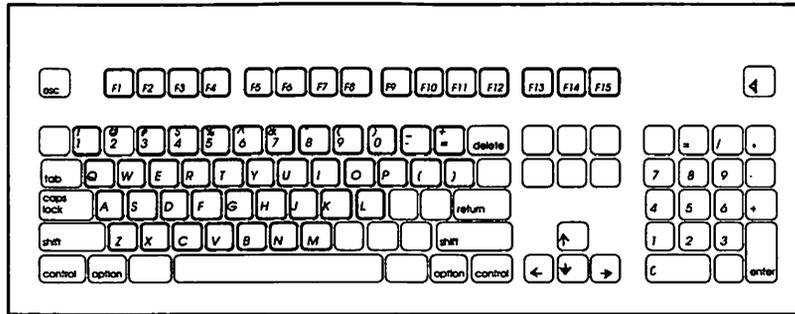


Figure 2.12 Apple's extended keyboard offers 15 function keys across the top that can be used to store your favorite macros.

Both of these keyboards give you a lot of additional keys that aren't used for anything in regular programs, and are therefore available for triggering macros with a single keystroke. Especially useful are the function keys across the top of the keyboard, that can each be assigned to invoke a different macro. In contrast, with the regular Mac keyboard you'll have to press *combinations* of keys for all your macros, because all the single keys already have some special meaning in all your programs.

A new extended keyboard will cost you about \$140 (DataDesk) to \$220 (Apple) but you can get an awful lot of functionality for the money when you combine this expenditure with an inexpensive macro program.

I use a DataDesk 101 keyboard because the slope is better for my wrists [than the steep Mac Plus keyboard]. I like the [function] keys on the top row, too—I use them with the macro software that comes with it.

Henry Barton, Episcopal Rector

Keyboard Versus Mouse

In the steps I used in the envelope macro, I said things like "Select Copy from the Edit Menu." This seems a bit stilted to most of us who haven't selected Copy from the Edit Menu in ages: We're much more apt to use its keyboard equivalent of Command-C.

Let me make it clear that whatever you regularly do to run your Mac, you can do when recording macros. Keyboard shortcuts are perfectly okay. If it works when you do it in person, it will work when the macro plays back. In fact, keyboard commands can sometimes work better than mouse clicks in some instances, in some applications, with some macro programs.

In case you're interested, here's how the entire Word/envelope macro could have been recorded using as many keyboard shortcuts as possible:

- 1) Select the correspondant's address.
- 2) Select Start Recording from the MacroMaker menu.
- 3) Command-C to copy.
- 4) Command-N to create a new document.
- 5) Select Page Setup from the File menu. Tab to the left margin box and type 4. Tab to the top margin box and type 4. Type Command-W to select Wide, then press Return to select OK.
- 6) Command-V to paste.
- 7) Put your envelope in the printer. Command-P for File Print. Command-M for manual. Press Return to select OK.
- 8) Select Stop Recording from the MacroMaker menu.

Global Macros Versus Application Macros

Most macro programs let you create two types of macros: *global* macros, and *local* or *application* macros. Global macros are macros that you want to be able to use no matter what program you're using; in effect they are things you want to be able to add to the general Mac interface. For instance, if you wanted some way to close a window, or manipulate the scroll bars in any window without having to use the mouse, you would want to create a global macro. On the other hand, if you wanted to create a macro that selects the polygon tool in MacDraw, you would need that to be available only in MacDraw.

The advantage of having global macros is obvious: you want to have access to universal shortcuts anywhere (not coincidentally, some programs use the term *universal macros* to describe global macros). The advantage of being able to limit specific macros to a certain application is that you can then reuse your favorite key combinations: Control-P might select the polygon tool when you're in MacDraw, but it might trigger a different application macro in Excel that selects the Paste Function command.

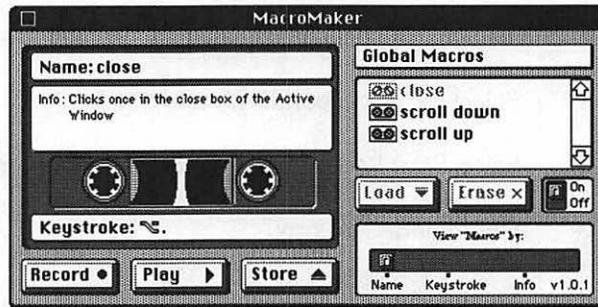


Figure 2.13 MacroMaker can record either global or local macros. If you click on “Global Macros” in the upper right corner before saving the macro, you could change it to a local macro that would work in only one specific application.

Checklist for Simple Macro Programs

At this point, you may be ready to choose a program that will help you create keyboard shortcuts and command macros. The best way to proceed is certainly to play around with MacroMaker: As a Mac owner, you either own it already, or can get it for free with your next System upgrade. Try some simple macros, and see what you like and don't like about MacroMaker; then if it doesn't meet your needs, start looking for an alternate product.

Rather than limit you to a feature-by-feature assessment of what's on the market today, I'll finish this chapter with some ideas to help you buy new programs as they become available. Some things you might want to consider before buying:

How do you access the program? Does it plant an extra item on your menu bar? Does it use up any Desk Accessory slots? Must you use the mouse, or can you use keys to access it?

Better programs let you access your shortcut creation commands without using the mouse (since most people using such programs are trying to avoid unnecessary mousing).

Does the program cause conflicts and crashes with any other applications you run regularly?

Keyboard shortcut programs function by intercepting key-

strokes that would ordinarily be handled by the application you're running. Some applications can't handle this interference, and crash. Since this may reflect as much on the applications you're running as on your macro program, check before you buy. Better programs will include a section in their manuals that warns of known conflicts.

Can you temporarily turn off the program without having to uninstall it?

In case an application does conflict with your keyboard macro program, you'll need to be able to temporarily disable it. It shouldn't be necessary to permanently uninstall a good macro program.

Can you have more than one set of macros, and change sets easily?

As long as your macro program can create both universal and local macros, individual users are unlikely to have much need for a program that creates different sets of macros. (In fact, you'll find your key combinations too tough to remember if you do use different sets.) But if you plan to share your machine with someone else, you'll want to buy a program that lets you both keep a set of individual macros and shortcuts in your own files.

Can you use any key combination on the keyboard?

Popular applications have often already used many of the Command, Option, and Shift combinations on the keyboard for their own functions. Good macro programs let you use the CapsLock key, numeric keypad keys, or the keys on an extended keyboard—such as Esc, Control, and Function Keys—for assigning keyboard shortcuts.

Is it easy to see a "crib sheet" of all your macros, with descriptions and keyboard assignments?

Some programs list macros by name, by their keyboard shortcuts, or by a descriptive phrase—but only by one of these attributes at a time. Look for one that lists key combinations with either a name or a description, so that you can easily review what you have—and what keystrokes trigger them.

Can you print out a reference list of all your shortcuts?

Look for a program that can create a detailed list of descriptive names and their triggering keystrokes. Even better, look

for one that gives you the option of printing out your shortcuts on a keyboard template that you can easily use as a reference.

How long a string of text can be recorded as a text macro?

If you're running a legal office with long paragraphs of boilerplate, for instance, you'll want to make sure your macro program can handle more than a few words or phrases.

3 More Macros

Automating long, repetitive jobs

While Chapter 2 dwelt on simple ways to substitute a keystroke or two for tedious little procedures you do over and over, in this chapter I'll take a look at more complex ways to avoid tedious big procedures. While you can generally read any chapter of this book in any order, I would recommend that you read Chapter 2 before you start this one, since the two are very closely related.

In the last chapter I may have given you the impression that this chapter was going to be terribly difficult. It's not so. You can write more complex macros, and they are definitely worth the trouble any time you have a long repetitive job that needs to be done.

Tempo [a more sophisticated macro program] came in very handy for making a directory for the local Chamber of Commerce. They had all these listings for hundreds of organizations, that came from an IBM database program. We created a macro that brought the whole thing into Word and changed the typeface and size of each entry, and got it all ready to go into PageMaker.

Mary August, Graphic artist

But there's a lot to learn first, and even then, macros can be a bit quirky. Once you get past the simpler macros, you are very apt to collide rather abruptly with some sobering truths about programming and, specifically, programming on the Macintosh. Save this chapter until you really need it—until there's some task that justifies the mental investment you'll need to make. Then you'll find it time well spent. For now, you might want to just skip on to the next chapter.

With that said, let's take a look at the potentials and pitfalls of more complex macros, including:

- Why some macros can't simply be recorded.
- What programming controls are, and how they can help.

- How to think like a computer, to plan out a macro.
- Why you should focus on getting the job done—not on writing the ultimate macro.
- Why your macro might not work, and how to fix it.

Why You Need Programming Controls

Most of the macros I've talked about up to now are what I call band-aid macros: They quickly and easily patch some small problem or shortcoming of a program. Into this category go all the little keyboard shortcut macros and even the simple command ones in Chapter 2. (I think it's reasonable to call the fact that word processors can't print envelopes "a problem.")

Band-aid macros are for the work you do yourself—the little second-savers that come up over and over throughout the day, in work that you're going to have to do yourself no matter what. Even if you had five people working for you, there's no way you'd call over someone to open a new document and choose the right font for you!

Cheap labor macros are for the things you'd delegate if you had an army of amiable minimum-wage saints in the room, willing to take over any time you were faced with a time-consuming, repetitive task. And repetitive is the key word here: Because cheap labor macros repeat the same action over and over again, you need a new approach to creating them. The "watch me and record this" approach you used in band-aid macros is still important, but you'll need to add some new techniques. There's no way you're going to record some tedious job 4,000 times just to avoid doing it 4,000 times—your whole goal here is to totally avoid the job in the first place.

I don't see myself as a computer person. The issue for me is, at a particular level, when do you get frustrated with the amount of time it takes you to do something? I got to the point in Excel where resizing the column width or bolding got to be an irritation rather than fun, and I figured out I had to use the macro language to make those things into key commands.

Martin Dalgleish, Consultant to international businesses

Programming Controls and Concepts

The new approach you need involves tools that can be referred to as *programming controls*. Any macro is a program—which to a computer means nothing more than a list of instructions that it carries out sequentially. A simple recorder macro program like those in Chapter 2 can only make a literal list of instructions.

Do step A
Do step B
Do step C
Do step D

But one that incorporates programming controls lets you control these same steps to create instruction lists that are more complex, like this:

Do step A
Repeat step B ten times
If it's after 11:00, do step C
Do step D until the end of the document

The basic idea is that computers are dumb. They will always plod through programs one instruction after another, unless you specifically prod them into taking the instructions in some different sort of order.

There are two programming controls—loops and branches—and two concepts—modules and conditions—that you need to understand in order to make a macro work in the order you want. I'll define each of these four things, then show you how they can work together.

Loops. The simplest loops tell the computer to repeat an instruction or several instructions, either indefinitely or a certain number of times. Loops let you avoid recording your boring job 4,000 times: Instead, you record the job once, then build a loop that tells the computer to repeat the job 4,000 times.

Branches. Branches tell the computer to interrupt its sequential processing, and start again at some other instruction. You can tell the computer to return from the branch to the point where it left off, or you can tell it to just continue on.

Conditions. Conditions add sophistication to your loops and branches. Instead of saying "always loop" or "loop 5 times," or instead of saying "branch here and return," you can say "loop until you find the word "Siegfried " or "branch to Module 2 if it's after 9:30."

Modules. A module is just a group of steps that go together. When you're planning complex macros, the first thing you should do is figure out what logical groups exist in the procedure you're trying to do: If you want to loop back and repeat steps B, C, and D every time, turn those three steps into a separate module, so it's easy to repeat all three steps. Programmers call modules "subroutines." The name doesn't

matter. The fact is that whether you're creating macro modules or program subroutines, working with small chunks will help you keep track of what you're doing, and will enable you to build lots of different procedures from different combinations of chunks.

Let's move away from computer examples for a minute and start to see how programming controls work. Imagine that, instead of computer macros, you're creating music macros. You want to record a song as efficiently as possible, then control the way it's played back. The song looks something like this:

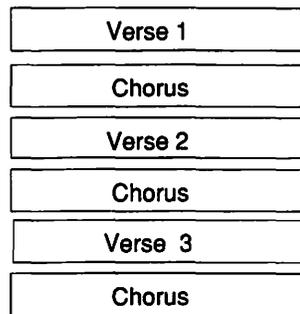


Figure 3.1 The first step in writing any macro is to think about the parts of the procedure, as in this musical example.

If you use a literal "watch me and record" approach, you'll end up recording the chorus three times, which is a lot of extra effort. So you think about the song, and decide that it really only has four different modules:

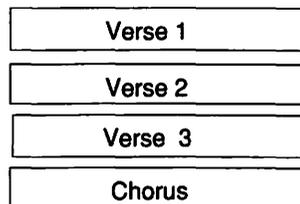


Figure 3.2 The second step in macro planning is to consolidate repetitive procedures, like the chorus of this song.

If you just record these four pieces, though, the chorus will only be sung once, at the end. So you need to add branch instructions to make the sequence clear:

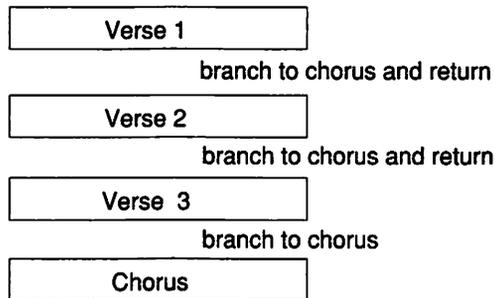


Figure 3.3 Using programming controls, a complex macro can loop back to repeat sections of a process over and over again.

Programming controls keep the computer from sequentially processing each step or each module. With two branch-and-return controls added, the song will come out right.

Just to give you one more crack at the idea of programming controls, here's another example, a bit more business-oriented. Let's say you have a long list of customers who owe you money, and you'd like to print polite reminder notices to the ones who have owed you money for a few weeks, while taking tougher measures with those who have owed you money for several months. Here's the way you might look at the steps in the process, and sketch it out:

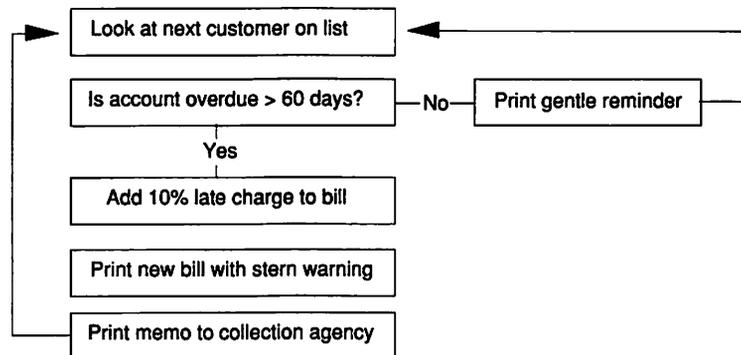


Figure 3.4 Writing macros requires thinking like a computer, in logical steps. Diagramming a process is the best way to see if your idea will work.

In programming jargon, this is referred to as "flow charting." All it is, really, is figuring out how to think like a computer thinks, reducing every-

thing to the smallest number of steps, arranging the steps in logical order, and adding conditional tests, branches, and loops to control the flow of the program.

The Phone Number Macro: The Concepts

The best way to get an idea of how a macro with programming controls works is to take a look at one. Let's say that a friend has graciously offered to share her mailing list with you. The list, which includes 4,782 names, addresses, and phone numbers, was created on an IBM-PC with the Lotus 1-2-3 spreadsheet. You plan to bring the file into Excel, which can read 1-2-3 files easily, then Save As Text Only to create a file that your copy of FileMaker can read.

CW	Harriman	Box 6547	Rye	NH	03801	6034315555
Jack	Hodgson	333 W 57th	Ynez	CA	94356	4089741234
Sue	Wood	21 Lotus	Easton	VT	05607	2275421
Ben	Calica	64 Oak St	Gillian	CA	92126	6195558493
Libby	Samuels	Box 27E	Dover	VT	05512	4279876

But when you open up the file, you realize that all the phone numbers in the list are completely without formatting—quite impossible to read. So you decide to clean things up while the list is still in Excel. (Spreadsheets, because they put each field in its own column, are a great place to clean up database messes.) You're faced with a long, tedious process to fix up each record, so you decide to do it with macros.

I'll run through the whole macro conceptually, then give you the actual keystrokes to do the whole thing in a macro program, called Tempo, that can do very sophisticated loops, branches, and conditions.

Find the Modules

Your first step is to figure out, using plain English, what you need to do. Looking closely at the problem, you realize that there are two different problems you need to solve: Every single record needs hyphens added to make it more readable, and on top of that, some of the records need to have an area code added (your friend had just recorded them as local calls, but you live in a different area code). You decide that the easiest way to proceed would be to:

- sort the records so that all the ones without area codes are together.

- create one looping macro to put the missing area code in front of all the numbers that need it; and
- create another looping macro to put hyphens in every single number (including the ones that just had area codes added).

You start by sorting. This doesn't need to be recorded as part of any macro, since you're only going to do it once. Rule One: Don't go overboard and automate everything you see. Concentrate on boring and repetitious tasks.

Create the Area Code Module

This is a very easy task. All you have to do is create a macro that will do what you would do by hand in Excel:

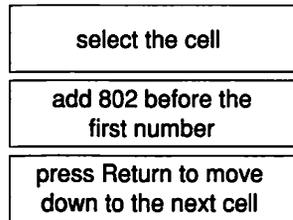


Figure 3.5 The first step in planning any macro is to think about the steps that would be required to perform the actions manually.

With a simple recorder macro in a program like MacroMaker, you can record this process once, then simply press a key combination over and over again to repeat it. Not a bad idea if there are a few dozen records, but a definite problem with a database like this, with 4,782 records. You need a loop, to make it work something like this:

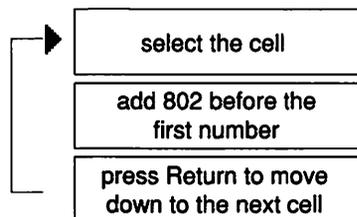


Figure 3.6 If the actions are going to be repeated over and over, add a loop.

Before you actually record your loop, you'll need to think about how you're going to stop it. In this case, you've got two obvious options: You can count up how many entries need area codes and tell the macro to loop X number of times, or you can separate the area-codeless entries from the others, and tell the macro to stop when it reaches a blank cell.

As with all macro work, there's a trade-off. Looping a certain number of times gives you more work—you must count the entries first—but is easier to write. Looping until the macro reaches a blank cell saves you some work but is harder to write, because you must add a condition. It's up to you.

The Hyphen Module

The Hyphen module works exactly the same way. It takes the steps you would do by hand in Excel, and puts them in a loop:

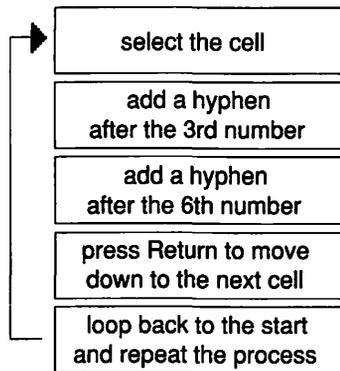


Figure 3.7 The steps required to hyphenate each phone number in the macro, then loop back again to do the next one, would look like this.

Again, you'll need to decide how to stop the loop, either by putting in a certain number of times the macro should repeat, or by telling it to check for some condition. If you don't build in some way to stop the macro, it will stop when its repetitions create an error condition—when it bumps into the edge of the spreadsheet, for example, or runs out of memory.

Putting it All Together: Whether to, and How to

Once you have the Area Code Module and the Hyphen Module created, you may think that the next step would be to tie the whole thing together

with a condition that checks each number on the list, branches to the Area Code Module if necessary, then runs the Hyphen Module.

This is not necessary. Always keep your eye on the question that's basic to all macro work: Can I create the macro faster than I can do it by hand? If you're never going to work with a list like this again, it's better to substitute one or two manual steps for the time and complex logic needed to completely automate everything. Sort your list, to separate the phone numbers with area codes from those without. Then run the Area Code Module on the numbers that need it, and run the Hyphen Module on everything.

If you were likely to receive a list like this every week, though, the situation would be different. It might then make sense for you to take the extra trouble to create a complete macro system that automates the entire procedure, without sorting and running two separate macros. Here's how that process might look:

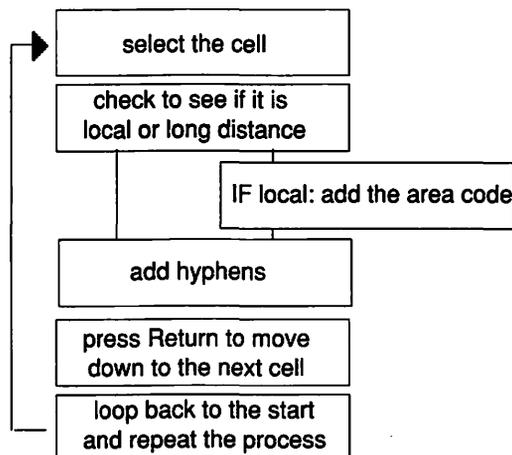


Figure 3.8 If you planned the entire process as one macro it would look like this. But it might be easier to run two separate macros.

It starts off by selecting the first entry. Then, somehow, the macro must check the entry and figure out whether or not it is missing its area code. That's your first task: to figure out what the test will be. If the number is local (no area code), the macro branches off to add the area code; otherwise, it just continues on to the next step. You'll notice by the diagram that even if the macro does branch off to add the area code, it rejoins the regular

sequence at the next step. Once all the steps have been done for a particular cell, the action moves down to the next cell, then loops back to the start to do it all over again on the next entry.

The Phone Number Macro: The Keystrokes

Here are the steps you'd use to create the whole complete automated system in Tempo, a sophisticated macro program from Affinity Microsystems.

Record the Area Code Module

- (1) In Excel, with the mailing list file open, select a cell that's missing its area code, then select Start Recording from the Tempo menu. (Tempo is a desk accessory that, when launched, adds its own menu—designated by a small Command-key symbol—to the main menu bar.)
- (2) Using the same procedures you would normally in Excel, mouse up to the editing line just below the menus, click, and type in 802 in front of the six numbers already in the cell. Click on Excel's editing check box to enter the change.
- (3) Return to the Tempo menu and select Stop Recording. Name the macro Area Code, but don't bother to give it a key-combination name: You won't be invoking it from the keyboard except to test it.

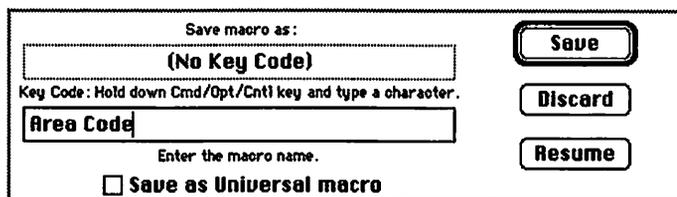


Figure 3.9 When you stop recording with Tempo, a dialog box appears where you can name your macro, and assign it a key command if you like.

- (4) Move to another cell that has no area code, and select the Tempo II Command from the Tempo menu. Select the Area Code macro from the list of macros that appears, and watch it add the area code to the cell automatically. (If it doesn't work, you'll need to repeat these steps and record the macro over again.)

Record the Hyphens Module

- (1) Much the same procedure records the module that adds hyphens to each phone number. Select a cell that already has an area code, then Start Recording.
- (2) Using Excel's normal editing procedures, insert a hyphen after the first three numbers in the entry, then after the next three numbers. Press Return enter your change and move down to the next cell.
- (3) Stop Recording, and name the macro Hyphens. Test the macro, as above, before proceeding any further.

Put It All Together

Now you'll write one master macro that strings it all together. It should start by checking out the current cell, to see if it's a local or long distance number.

- (1) Start Recording, then go back to the Tempo menu and select Options. Everything you do in Tempo is recorded—except trips to the Tempo menu. Options gives you a dialog box that lets you specify a branch or a loop (known as a repeat in Tempo) and any conditions of the branch. You'll click on Branch.

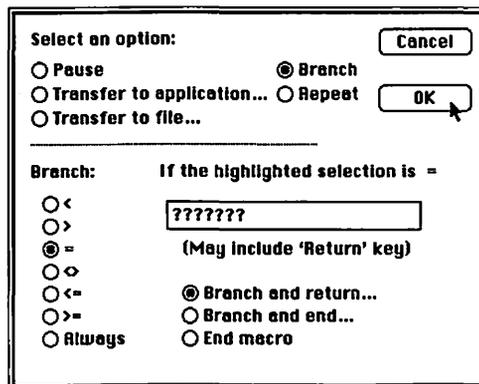


Figure 3.10 Tempo offers a variety of options for making your macro branch automatically based on some condition.

To single out phone numbers without an area code, the macro will need to find those with seven digits. The best way to do this in Tempo is to use a "wildcard" symbol. Tempo lets the question mark stand for any one single character, so asking Tempo to see if

the selection is equal to ??????? is the same as asking if it's equal to any seven-digit number (or seven-letter word—but that's not an issue here).

- (2) As soon as you specify the branch condition, Tempo will ask you what you'd like to do next—what set of instructions you'd like to branch to if the condition is met. A window appears listing all your available macros, and you pick Area Code by double-clicking on it.
- (3) Next the macro should run the Hyphens module, on every cell. This calls for an *unconditional branch*, or a program control that says "always do this next, no matter what." Pick Options from the Tempo menu again, and select branch again. But this time, make sure Always is selected as the "condition."
- (4) As soon as you click OK, Tempo will again ask what set of instructions to branch to, and this time you'll specify Hyphens.
- (5) Once the appropriate hyphens have been added to a cell, it's time to loop back and start all over again. Select Options from the Tempo menu one final time, and this time select "Repeat," then click on "Repeat Until... ." As with a branch, you're asked to specify the conditions under which you'd like the macro repeated.

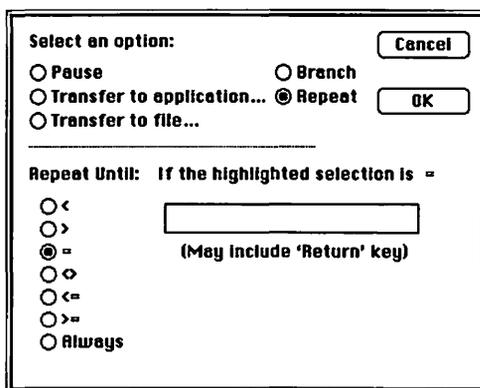


Figure 3.11 Looping back to repeat part of a macro is done with Tempo's Repeat Option.

Although you can't see it in this screen, you'll click on = and then press Return on your keyboard to enter a Return character in the box. (The Tempo manual told me that this combination makes a

macro in a spreadsheet stop at a blank cell. If I hadn't read the manual, or if some of the entries had no phone numbers listed, I would probably have put the word END in the first cell after the phone numbers, and told Tempo to Repeat Until = END. Use your imagination.) A click on OK finishes this off.

- (6) Name the macro Phone Fixer or some such descriptive name, and give it a key combination so you can run the whole thing by just pressing a few keys. Let's say you name it Command-1 (any key combination you're not using for something else will do). Click on the Save button, and you're all set.
- (7) Now return to Excel, put your cursor in the first cell at the top of the phone numbers column, and start the macro by holding the Command key and pressing 1. It will go from one cell to the next, adding area codes where necessary, and adding hyphens to each number. It will automatically stop when it reaches the end of the list.

Editing Macros

You may have noticed that I blithely assumed your entire complex macro would work, once you'd strung it all together. If you followed all the steps exactly, it should. Of course, that's only because I redid the thing about five times when I was making up the example. When you get to creating your own macros, you'll have to fix your own mistakes.

That's where the awful truth comes out: You can't really edit a Macintosh macro in any meaningful way. There is an Edit command in Tempo that attempts to show you your macro line by line, but it's awkward and you're apt to get mixed results. The fault can't really be laid on Affinity's doorstep, though, or on that of any software vendor. Macintosh macros, combining as they do mouse clicks, drags, menu selections, and keystrokes, are complex affairs that can't really be accurately depicted as lines of instructions.

This means the only reliable way to fix a macro that doesn't work the way you want is to record it again. That's one of the reasons I recommend you build your macros in modules, then string them together with programming controls: It's much easier to re-record one small module that doesn't work, than to redo a large complex macro that wasn't built in pieces.

Other macro programs aren't any better than Tempo in the editing department, and many are worse. Excel's macros are perhaps the best from

this point of view, but only once you've learned which of Excel's scores of unfamiliar written instructions represent the familiar Excel actions you're accustomed to. Other macro programs, like MacroMaker, don't make any pretense at editing, and insist that you record your whole macro over again. So with any macro program, build in small modules, and test each one carefully.

You might also try to keep your macros as small as possible. It may be better to create two small macros that work perfectly, and run each separately, than to combine the two into a larger macro. Quit while you're ahead: Every macro you write makes your life easier, even if it's not the macro to end all macros.

Always keep in mind your ultimate goal: to get the work done. In the Phone Number example, for instance, writing two small macros did 80 percent of the work, for 20 percent of the effort. Creating the complete system was not worth the extra effort, unless the macro was going to be used over and over again.

I'm using QuicKeys in everything, mostly to add Command-key equivalents. For more complex macros it's not as useful, because you've got to build big macros from little sequences, and you have to assign each part to a different key. If you're running something like Microsoft Word that uses so many keys already, you just run out of keys.

I used [the old version of] Tempo for a little while, but I don't any more. What I really hated was that you couldn't get in and edit your macros. All you could do is run it slowly to try and catch your mistake. Even the most ancient dedicated system lets you edit macros—there's no excuse for a macro program not to be editable. I liked the way Tempo could create macros that would go between programs, but not being able to edit was just too frustrating.

Cheryl Jencks, Graphic design and editing

Why Your Macro Doesn't Work

That's a discouraging title, but the fact is once you get past the simplest macros there are dozens of reasons why your creation won't work. In this section, I'll try to explain most of the major reasons why macros run amok.

Pauses. Any process that takes time—that shows the wristwatch or some "... in progress" message—creates a chasm your macro might have trouble crossing. In the envelope macro in Chapter 2, for instance, it would have made sense to end the macro by closing (without saving) the extra tempo-

rary document created to print the envelope. But this was not possible; in a relatively unsophisticated program like MacroMaker, macro steps coming after such an interruption will usually play themselves out *during* the interruption, and be lost.

Some macro programs let you add a pause to force the macro to suspend operation until printing or whatever other process is complete. This is the best solution. But since MacroMaker comes free from Apple, you might not find it so awful to simply click on the leftover window's close box, and close it manually. Look for this feature in other macro programs if you become a heavy macro user.

Graphics and Real-time Recording. If you're trying to create macros that record and reproduce graphic images, you need to know that macros ordinarily record only the essential clicks and drags, not every movement you make. Generally, this is sufficient: If you're dragging a window or an icon from place to place, what matters is where you start and where you end, not whether you took the scenic route along the way.

In graphics program, however, every move may matter, especially if you're doing freehand work. That's why more sophisticated macro programs give you the option of recording normally (beginnings and ends only) or in "real-time" (every move scrupulously preserved). Two examples of graphic creations (I use the word very loosely due to my questionable artistic skills) illustrate this well.

The house graphic in Figure 3.12 was drawn entirely with geometric shapes—four rectangles and two straight lines. As you can see, the house comes out the same in the left-hand instance, using normal macro recording, and in the right, where real-time recording was used.

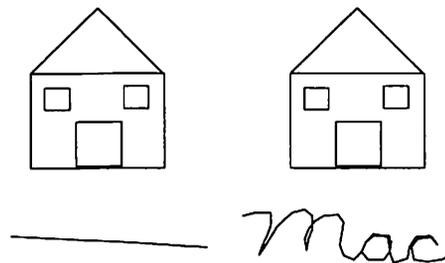


Figure 3.12 The two macros on the left were recorded normally in Tempo. The ones on the right used "Real-time" recording, which is essential for most graphics that aren't made up of geometric shapes.

The lower set of graphics in Figure 3.12 shows what happens when you use a nongeometric tool, like the freehand tool in a draw package or the pencil in a paint package. Each of these is the playback of the same original task—that of writing the word “Mac.” Normal recording, shown on the left, records only the point where I first pressed the mouse button and the point where I let go, assuming a straight line in between. Real-time recording captures the whole word.

You’ll need a real-time option if you do much graphic work with macros. But don’t fall into the trap of recording your macros in real-time: They’ll always take longer to play back than a “normal” macro, which has all the “dead space” from your natural pauses and hesitations removed. Due to some internal quirks in the way the Mac works, real-time macros may play back a procedure up to ten times slower than the original procedure itself. This certainly could counter any advantage to automating your work.

Relative vs. Absolute. When you record clicks and drags in a macro, you need some way to tell the macro whether you’re referring to a particular cell, word, or graphic element, or to whatever happens to be in that position on the screen at the moment. In computer terms, if you mean the particular item, it’s called an “absolute” reference, and if you’re referring to a position it’s called a “relative” reference.

Excel, for instance, lets you select whether you’re making an absolute recording or a relative recording.

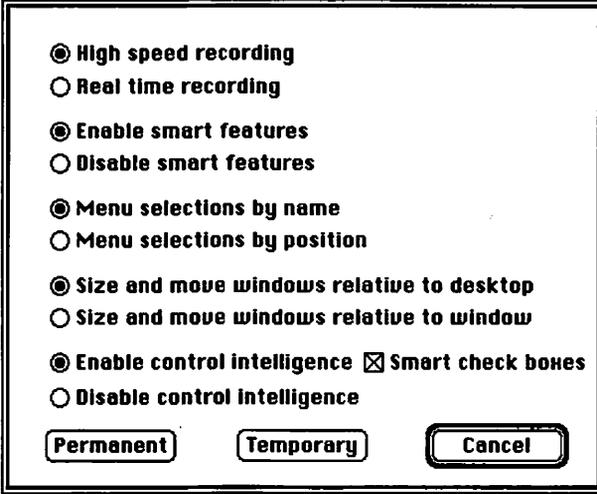
	A	B	C	D	E	F	G
1		Jan	Feb	Mar	Apr	May	June
2	copying	\$12.45	\$47.50	\$0.00	\$36.25	\$88.00	\$25.00
3	office supplies						
4	postage						
5	repairs						
6	telephone						

Figure 3.13 Macros in Excel work differently depending on whether you record them with “Relative Record” or “Absolute Record.”

If your cursor is in cell G2 and you record a macro that moves the cursor to cell B3, it will play back in one of two ways:

- Recorded with “Relative Record,” it will move the cursor five cells to the left, then one cell down.
- Recorded with “Absolute Record,” it will move the cursor to cell B3, no matter where the cursor is when you invoke the macro.

Tempo has a number of recording settings where you can make several choices as to how your clicks and drags are to be treated. These choices, as illustrated below, let you use real-time recording for graphic work, as well as several other features whose utility will become apparent as you read through the rest of this section.



The image shows a dialog box with a double-line border. It contains a list of radio button options and one checkbox option. At the bottom, there are three buttons: 'Permanent', 'Temporary', and 'Cancel'.

- High speed recording
- Real time recording
- Enable smart features
- Disable smart features
- Menu selections by name
- Menu selections by position
- Size and move windows relative to desktop
- Size and move windows relative to window
- Enable control intelligence Smart check boxes
- Disable control intelligence

Figure 3.14 Tempo's many options let you control some of the problems that occur when the Mac misunderstands your intentions.

If a macro program doesn't let you make this kind of choices, you may not be able to record some important parts of a procedure that you'd like to automate.

Menu Name vs. Position. If your macro includes making menu choices, you'll get different results depending on whether the actual menu item ("Print") is recorded or whether its position ("the fourth menu choice from the top") is recorded instead. More sophisticated programs use the actual menu name, so that menus that change—most notably your font and DA menus—won't cause problems. MacroMaker (in its current version—1.01 as I write this) records menu choices based on position rather than name. So you really can't use it to select your favorite DA or font.

Toggling Menu Choices. Some programs have menu names that toggle back and forth between two choices: They may change from Show Ruler to Hide Ruler, or from Undo to Can't Undo, for instance. A program that uses menu names and can't optionally use positions may not handle names that change.

Toggling Check Boxes. All check boxes on the Macintosh are toggles: that is to say, a click puts an X in a checkbox that wasn't previously selected and takes the X away from one that already was checked. Your macro needs to know if you mean "always check this box" or "click in here and give me the opposite of what I had before." The results, obviously, will be very different depending on which one your macro understands you to mean.

Changing Environment. When you start recording a macro, your screen is set up a certain way: In a word processing program, a specific font may be in use, and in a graphics program a certain tool may have already been selected. If you later run your macro in a different environment with different defaults, your macro may seem to go berserk and do things you just don't expect. Build into your macro any choices that your macro depends on.

I've been using Tempo, but just for repetitive editing procedures, things where I'll have to do several keystrokes to make a change. Sometimes things don't work as I expect them to. So I record them over again, and sometimes they'll work, sometimes they won't. I think it depends on the software I'm using, and how compatible it is with Tempo.

DeRay Norton, Desktop publishing

Logic Problems. All the problems mentioned before this could come up even in a simple "band-aid" macro. "Cheap labor" macros, with their branches and loops, introduce a new level of complexity. If you've used faulty reasoning in setting up a branch, your macro obviously won't work. The only way to check logic problems, usually, is to build a diagram like the one earlier in this chapter, detailing each step in the macro and where it should go next.

If you simply can't find the logic error in a malevolent macro, break it back down into smaller pieces and do one step in the middle by hand if necessary, to link the pieces.

Immortality. The folks who wrote Tempo first used this word to describe the fact that Tempo macros could move from application to application without dying (crashing/stopping). If you want to write a macro that takes your bottom line from an Excel spreadsheet, pastes it into a word processing document, then logs onto an electronic mail service to send the results to your partner, you must make sure your macro program is able to move across application boundaries with or without MultiFinder.

Your application doesn't support that task. This last one may seem the most obvious. But all too often we expect macros to make anything

possible, and they just can't do that. Macros can only automate jobs that your applications can do by hand. If, for example, your word processor has no way to count how many letters are in a word, you can't create a macro that underlines every four-letter word in your document.

Tempo is the only macro program that stays alive between applications. That means that you can do something in one application, let's say Excel, then copy everything you did, go to another application like Word and paste it in—and it will record everything. All of your moves, everything you've done. It allows you to create these huge monstrous macros that do a tremendous amount of switching between programs.

I've set up a lot of boilerplate blocks of text that I use, as separate little files. When I want to write a form letter, I can mix and match them. I've set up Tempo so that it pauses for user input, and I tell it the name of each file to open, and it goes Plop, Plop, Plop and pulls them together very quickly. It's like having a palette of boiler plate things. I use it for text, but it would work just as well for graphics, too.

MacroMaker and QuicKeys just won't do things like this. They can't pause for user input, and they won't stay alive when you quit one program and start another. They just die. The macro has to be in one program.

I think anyone could use Tempo to record things, and they should be able to incorporate user input pretty easily. All you have to do is go to the menu, select Pause for User Input, and type in the prompt—"Please give me your name" or something like that. Loops, on the simplest level, are quite doable too. Anyone could pretty much learn that right off the bat. Repeats and if-thens are tricky, and are probably more for programmers.

I don't think Tempo replaces things I'd do another way as much as it lets me do things I wouldn't do anyway. It's unique. Half the trick of it is figuring out what it can do, because it's so open-ended. It's so powerful, you don't know what to do with it.

David Drucker, Musician and composer

Should You Do Macros?

Don't get too discouraged by the long litany of potential problems I just laid down. The difficulty in writing good macros stems from the fact that you must tell the computer every little thing that you would do by hand; the fact that this is a very tricky process just points out how much you and I do

unconsciously when we run the Mac ourselves, and how difficult it is to record—or equal—human performance on a machine. Don't take it personally.

Don't feel guilty, in fact, if you decide not to take it at all. Despite a background in programming, I don't use complex macro systems like this regularly. I just don't have tasks I do regularly that require this kind of power and that would justify the work involved in creating them. The macros I find most useful are the keyboard shortcuts and the shorter recorded macros at the beginning of this chapter.

Other people—and you may be among them—find macros indispensable. Rick Barron, president of Affinity Microsystems (the Tempo people) told me about three of his favorites:

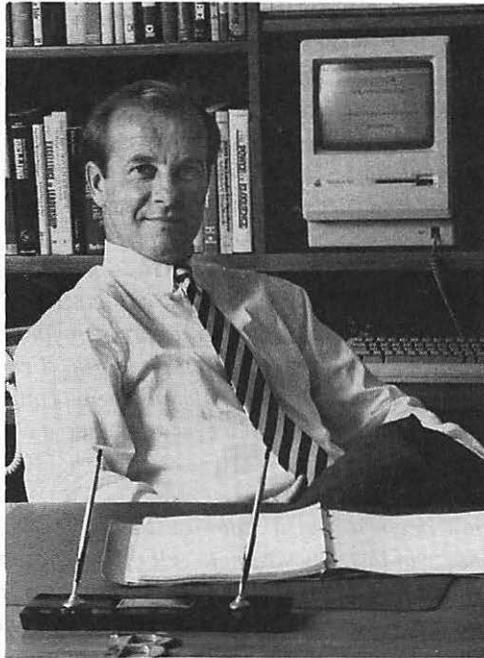
- **Baseball.** A statistician uses Tempo to keep his eye on the ball, his fingers on the keyboard, where a single keystroke starts a macro that tracks each action.
- **Singing.** A school for the deaf uses Tempo in real-time mode to create a “bouncing ball” that everyone can follow, to learn to sing in unison.
- **Games.** A Wizardry whiz uses Tempo to record all the right moves so that once he's passed a particular dragon or precipice he can easily get back to that spot and forge on next time. (He simply discards any recordings where the dragon wins.)

If you're into more mainstream business uses, Rick's own favorite macro is one that almost anyone could use. He wrote it for Microsoft Word:

My favorite simple word processing macro does this series of steps: Shift-left cursor, Command-x, left-cursor, Command-v, right cursor. That's a macro. It flips the two characters to the left of the cursor, thus resolving my most common typing error, transposed characters.

Rick Barron, President, Affinity Microsystems

Whether you have complex projects, or simple needs like Rick's, a good macro program may be able to help.



Mike Bosworth **Sales Training Consultant**

Mike runs a specialized sales training program he calls “Solution Selling” from his home in California. Although 95 percent of his time is spent on customer sites, when Mike’s in the office he uses a Mac Plus, a DataFrame 20, and a LaserWriter Plus, with ReadySetGo, MacWrite, and FileMaker. He’s on the verge of upgrading to a Mac IICX.

I do sales training and consulting for high-tech companies—more properly labeled “companies who are selling products and services that are difficult to sell.” They don’t come to me unless they have a problem: They aren’t meeting their sales goals, their turnover’s too high. The classic one for most of my customers, who sell turnkey solution products that go for around a quarter of a million dollars each, is that it typically takes a new salesperson nine months to sell his or her first system. I cut that down to four months.

First I schedule a day-long meeting with the CEO, the head of sales, and the head of marketing, and give them a management overview of my system. Then we customize the program—get the marketing department to put together sample letters, phone scripts and so on, using my model and their knowledge of the industry and the product. Then we have two four-day training sessions, one for sales managers (they won’t take training with their people—they don’t want to be wrong!) and one for the field people and tech-support people.

I use the Mac for everything, primarily with ReadySetGo. I live and breathe ReadySetGo. I've got my letterhead in there, for instance. I had someone do a logo for me in Illustrator, and I've got it right in a blank ReadySetGo document. I open it up, write "Dear Harvey" or whatever, then bring in the text from a bank of seven or eight standard letters that I made in MacWrite. I do a little customizing, and print it right out. I use plain bond paper; I have no preprinted letterhead. Correspondence is real easy and it looks real good.

The big thing I do with ReadySetGo is my 100-page training manual. I started this business in 1983, before the Mac existed. I used to have to have a typesetter for my material. Typesetting was a real problem for me because when I've made that investment, I want to get my money's worth. I ended up with a static piece that stifled my creativity. Now my manual's being constantly revised. The number one value of the Mac for me is that every time I do a class I come back with a new idea and change the master.

I can't begin to put a value on that. None of my competition realizes the importance of this: They want to sell their materials, so they make a huge investment in static materials. I'm not selling materials. I'm selling a methodology—the material just happens to be a way to conduct that methodology. So if I wake up in the middle of the night and get an idea that improves that methodology, I make ten changes the next morning. I have no investment in typesetting or inventory.

The other program I use a lot is FileMaker. I use it with ReadySetGo to keep track of my revenue. First I create a nice invoice in ReadySetGo, and print it out. Then I record it in FileMaker. When they pay I put that in FileMaker too. It's easy to figure out who hasn't paid me at any time, and at the end of the year I can break out paid expenses versus professional services, and get totals.

A friend set all this up in FileMaker for me. I also use it for my checkbook, to distribute everything to all the different expense categories. It's also been handy for managing the two associates who pay me royalties for using my program—I have another FileMaker database that tracks the business and revenue they bring in, how many classes they do, how many attendees they have, and so on.

My associates are across the country. One is in Charlotte, North Carolina and the other is in Boston, while I'm in San Diego. We all have Macs. When I create new and wonderful interest-arousal letters, we mail disks back and forth. None of us have modems yet. It's possible we may get them in the future, but I haven't wished I had one enough yet to do it. Don't have a FAX either. There's a little mail office about a half mile from my house that will let me receive a FAX or send one. It's not that inconvenient to just jump in my car and take a nice drive in the California sunshine. If I still lived back East I'd probably get one, so I wouldn't have to go out.

The most frustrating thing for me is learning new things. It takes time to tackle something. One thing I want to learn that I don't have the patience to do is, I want to have names and addresses in FileMaker and do a letter in ReadySetGo and do a mailmerge. I just need someone with the expertise rather than fiddle around with it myself. I think I could probably get through it eventually, but I'd rather pay someone \$50 an hour to just get it done.

Tutorials help. I love tutorials. I love to follow a prechoreographed way to learn something. It gets me to try the features. I just got ReadySetShow, and I had a ball yesterday going through the tutorial. I've already spotted two ways I think I can really use that program. One is, it will help me to create slides. On occasions I've spoken to large groups, and I think that slides are better for that than transparencies, which I normally use. The second use I spotted was, about a month ago I did a live TV broadcast in New York, and they wanted everything horizontal instead of vertical. Took me quite a while to turn everything around. It would have been a piece of cake with ReadySetShow.

Sometimes I almost have to pinch myself so I don't take all this for granted. When I first got my Mac—and it was a 128K—I couldn't sleep for three nights. I remember thinking, "This is the way it's supposed to be." Now business is booming—I have something [a product] nobody else has. Venture capitalists have approached me and told me they can build an empire from what I'm doing. But I plan on staying solo. I like working at home. It allows me to do soccer practice and spend wonderful time with my kids, who are 8 and 11. I could not operate like this if it were not for the Mac.

Sam Partridge **Mechanical Engineering Consultant**

A mechanical engineer, Sam took early retirement a few years ago from a division of United Technologies. Now, he works out of his home—in the odd weeks when he's not on the road setting up power plants. Sam uses an SE with an ImageWriter II; the software he uses most frequently is MacDraw and Works.

I'm really doing the same thing now that I was doing on my old job. Right now, for instance, I'm out in the San Joaquin Valley, near Delano, putting in a cogeneration plant. I'm working as site manager of a plant that will use waste heat to dry grape pulp that gets turned into cattle feed. It'll be about a one-year build.

I had a Trash-80 [Radio Shack TRS-80] before the Mac, and I tried to learn Basic. There's no comparison. I bought the Mac right when I took early retirement. It was a 128K Mac, with Write and Paint. Then I went out and bought MacDraw, and just kept experimenting. I wouldn't say that I was really productive on a work-related basis for a couple of years. To me, "really productive" was when I got to the point where I could no longer do it faster by sitting down with a lead pencil and a piece of paper and a ruler.

Now, I do all my sketches, make all my engineering changes in MacDraw. On the Mac, the changes are instant. You can get there really quick. And that's important, because there can be several hundred drawings on a typical project. I've built a little database in Works, where I've got all my drawings listed and indexed, by title and by number. That makes it really easy to find the one I want. I can make it do what I need it to, when I need it to, but I wouldn't say I have a 100 percent grasp. I know there's so much more that I can do.

I carry this thing [the Mac] with me everywhere. It's almost a portable. You get one carry-on bag on the airlines, and it's always my SE. I have to check the printer, though, and those airline gorillas did in my ImageWriter on my last flight. I had to buy another one, and they wouldn't pay up. I've been thinking of buying a different printer, but it has to be fast. My problem is I can look at the page all day when it's on the screen, and it looks perfect, but when I hold it in my hand I see all the errors. And then I've got to print the whole page out over again. So it can't take forever. The ImageWriter's fine. And I can always find a LaserWriter for 35¢ a page someplace nearby. I don't mind taking my disk down to the store to get a nice copy.

I'm a big believer in the status quo. As long as I'm able to do my work, I don't try to upgrade. I bought MacDraw II, because I needed the rotation. But I'm having real problems with that one. It's buggy—even after the upgrade to the upgrade that they sent me. For instance, I'm not a sharp enough typist to do upper-and-lowercase, so I keep the caps lock down. With Draw II, the caps lock keeps you from dragging anything—it just jumps around.

It's interesting. I go into a lot of big companies in my line of work, and I can see how computers are being used. You peek into people's offices, and the one thing you notice is, if there's a PC in there, no one's using it. But if it's a Mac, it's on and in use. On my own, I need the Mac to keep up. Without it, I'd be lost; I'd be out of business.



Mary August Graphic Artist

Mary started Augustagraphics, her desktop publishing and design business, in 1984 in what used to be her living room. Since the birth of her baby last year, working at home has become even more important, even though her business has grown to include a full-time employee. The business bought a Mac Plus in 1986, and added extra RAM, a Radius Full-Page Display, an accelerator card, and a LaserWriter; recently Mary has leased a Mac Ix.

Ninety percent of our work is for one client, a local fish-processing plant. For them, we do labels—everything from nice four-color stuff to generic labels for 60-pound boxes of frozen cod that go to a cafeteria. Our work is mostly in preprinting production: Deciding where the picture of the fish will go, where the type will go, and so on.

I've been in the design field for almost 16 years, and the entire concept of desktop publishing is something I had been striving to attain for quite a while. When I was in the newspaper field, I worked on a conventional Varityper [typesetting machine]. I didn't like that at all. All you saw was a screenful of text. You'd have to

sit down with calipers and a slide rule and count characters to see when words would break around an illustration.

When I first went out on my own, I used to do all my mechanicals for packaging and brochures by subcontracting type, and by using another computer system, a CPM system. Comparing that to the Mac is like a tricycle next to a Motobecane 10-speed. I'd type everything with little codes, like F1 for bold, then modem it down to a place near Boston. They'd run a translation program for the little imbedded codes, print it out, and express mail it back to me the next day. Woe on me if I typed an F11 instead of an F1—it would come back italic instead of bold, or something, and I'd have to pay to get the whole thing redone. And I work with clients who have deadlines of yesterday, so it was a real problem.

We use all the usual tools you'd expect in desktop publishing, mostly PageMaker. What took tedious hours previously (with often misaligned results) became more efficient when we started using PageMaker. The time saved translated into more billable time to expand my business. In the first month we had this program I doubled my workload—in half the time! With our old machine, design often had to take a back seat. With the Mac, you can design on time, under budget, and smile all the way to the bank.

QuicKeys is another great program. We use it a lot for text insert, for ingredients with long names on the fish packages—things like sodium hexametaphosphate or calcium propionate. Things that are finger boring. Another thing we use it for is opening different folders of fonts. Apple was very unrealistic when they allotted just 256 slots for fonts. With QuicKeys, Control-I opens my font-control program without returning to the Finder. It's even faster than MultiFinder.

QuicKeys doesn't have a loop function, so we have Tempo, too. That came in very handy for making a directory for the local Chamber of Commerce. They had all these listings for hundreds of organizations, that came from an IBM database program. We created a macro that brought the whole thing into Word and changed the typeface and size of each entry, and got it all ready to go into PageMaker. I know I haven't used Tempo to the best of its ability. This happens with a lot of programs: I learn one and use it to the maximum for what I'm doing right now, then I don't go any further.

My finances are like that too. My general ledger is just a spreadsheet in Works. I do a breakeven and a profit and loss. I create monthly and quarterly and yearly spreadsheets, then I give it all to an accountant. As far as projections, I could be doing them in Works or in Excel if I took the time and made a real good business practice of taking even a half hour at the end of the day. I think it's just some human restrictions at this point.

Backing up is really important. Archiving my clients' jobs is critical, since so many new projects are revisions of previous ones. I've just been reminded of that this week—I just put Virus Rx on my machine, because I was having strange problems in PageMaker. First I had problems copying one whole page to another page—the clipboard wouldn't retain it. Then, I went to open another document and my cursor changed into what looked like a giant spider—it had like a big asterisk over it. Never seen anything like it. Virus Rx says there's "no known virus" on my disk, but now I'm a little worried. Maybe I just have a corrupted application. I'm planning to reinstall my applications tonight and see if that helps. Whoever writes these viruses ought to have their toenails clipped—with a lawnmower.

The one thing that makes me really sad is that I don't have a portable Mac anymore. I used to unplug my Mac Plus and take it on ski trips, but now I'd miss the Radius and the LaserWriter too much. I'd have to take my magnifying glass ... sometimes I'm surprised that so much nice work gets done on small screens. I'd probably retire if I had to go back to being a designer without a Mac. When you've had this, why go back to hieroglyphics and chiseling in rock?

Martin Boling

Industrial Sales

Power Brushes of Indiana fooled me at first: when I heard about all the things that Martin was doing, I assumed he had a much larger company, and perhaps a factory. But there are just two full-time employees, and another two part-timers, working out of Martin's home. PBI uses a Mac II, a Mac SE, a Radio Shack Model 100 (for out-of-the-office work), an ImageWriter, a LaserWriter SC, and a wide variety of software including Double Helix II, BPI General Accounting, FastBack, DiskFit, QuickKeys, and many more.

I do so many things—like so many people, just about anything to make a buck. We sell industrial brushes—for streetsweeping equipment, factory sweeping, things like that—to contractors in the industry. We converted the garage for a mini-warehouse and light manufacturing, and we make some of our brushes, and buy and resell others. I also do a little Mac business on the side—memory upgrades, sell a little software and so on. That about covers it, until something else comes along.

We use the Mac for just about everything I can think of. We use it for all our bookkeeping, and for our billing—we do that with something I wrote myself in Double Helix II. And we use ReadySetGo to prepare brochures. When we aren't too busy, we also do newsletters and page layout for other people.

I've been using QuicKeys almost since it was announced. I use it to start up applications with a single keystroke, to pull down my favorite desk accessories, and for some other things that take several steps. Anytime something gets kind of tedious I try to use QuicKeys. The best example is for changing between the LaserWriter and the ImageWriter and the fax modem. They're all in the Chooser and with QuicKeys I can go from one to another without having to do anything but press a key.

I haven't gotten into Tempo. It's a lot more complicated than QuicKeys. We had used it before and were unhappy with it. You'd spend a lot of time creating a macro and it wouldn't work right, and it was taking more time than it saved. For what we're doing, I just found that QuicKeys works a lot better.

Besides using it for billing, we use Double Helix II to keep a database of product information. We're looking up part numbers all the time. We have hundreds of parts, and we have to be able to search on a part number. We used to look through manuals, and that took a long time. Now we're adding pictures to that file. When you can actually see something on screen, you can find it a lot better. And having a picture makes a world of difference in solving problems. If somebody calls us with a question or a problem, we don't have to go back into inventory and get the part and look at it, so we can see what they're talking about.

We're slowly getting pictures of all our parts scanned in. We had been using Thunderscan already for scanning in images for flyers. Then when Apple came out with a scanner we could afford, we decided we'd be better off. Everytime we update a part number or a price, if there isn't a picture in there, we scan one in. We don't have time to just do it all at once, so we're doing it a little at a time. And now that we have the scanner, the latest thing we're doing, which is kind of neat, is optical character recognition, with ReadIt. I was pretty skeptical at first, but we've been pretty successful in scanning documents. They advertise that ReadIt is better than 95 percent accurate, and it really has worked out that way for us.

Sometimes I think I get too involved with computers. We used the Apple II until about 1985. We watched the introduction of the Mac for a few months before we decided to use it. Then we kept both the Apple and the Mac for awhile, and now we have two Macs. Before that we experimented with a Sinclair Z81 [a tiny cassette-based computer that could be upgraded all the way to 64K]. We actually kept a pretty extensive database of customer information on the Sinclair, and it taught us a lot about how computers could be used in a business. From then on, we knew we had to use computers.

**Robert Batson****Technical/Marketing Consultant to the Chemical Industry**

Robert Batson worked 9-to-5 for 17 years in the chemical industry, most recently for Loc-Tite as an engineer. A few years ago he started a business called Batech, for consulting to the chemical industry, especially in the area of adhesives. In his home-based partnership, Robert uses an SE and an ImageWriter, and works mostly in WriteNow and PageMaker.

I started my consulting business two years ago after I left Loc-Tite. My daughter had a Mac at the University of Virginia and showed it to me. I used to work with a Compaq at Loc-Tite but I just never could get into the technology and jargon. I could run the programs but I never really felt comfortable, and if things went wrong I had to take hours searching out the problem. With the Mac I felt comfortable right off.

I work on my Mac at least four to six hours a day—I do feature stories and news releases, marketing brochures and newsletters, everything up to 200-page training notebooks. I also teach marketing at the University of Hartford two nights a week. For that, I use the Mac to make up exams, and for all my overheads—maybe 18 to

20 of them a night. The Mac makes such great graphics. I also do mailings. Each month I send about 60 press releases to two different lists of editors, using a program called LabelMaker. It works great for storing all the addresses and printing out the labels.

I'm just using an ImageWriter II now. It does a beautiful job for what I need, and I have a service where I can go to one of the Apple shops and use their laser printer. It's inconvenient to go the five miles, but my customers like [the output]. I'd like to give my customers a little better image. I looked at the GCC [Personal Laser Printer] but I didn't like it at all. I went through a couple of demonstrations and it was so slow—it took forever. Now I'm looking at the HP DeskJet. It's not any faster than the GCC, but it's 500-something dollars instead of almost two thousand. And I think the quality is better.

Earlier this year I went into partnership with a long-time friend in Cleveland. We both work out of our homes; he has his Apple and I have mine, and we exchange disks. We'll probably buy modems next year, but for now we use the FAX all the time, sending each other things like budget sheets, literature, interesting things we got in the mail. Dave uses his Mac mostly for material safety data sheets, two-to three-page documents that companies are required to have for all the chemicals they use. The MSDS, as it's called, includes instructions on how to use the chemical, what precautions to take, how to dispose of it safely, carcinogenics, and so on. Dave has a format for this, and he drops in all the chemical names. His wife's been in computers for a long time, and she's set up a lot of templates for us. We've got formats for our expense sheets, budget, pro-forma P&L, and so on in Excel. All we have to do is enter the numbers and it automatically tallies each of the groups.

My wife does the books. She's just buying her own Mac because she doesn't want to cut in on me. At first she was doing everything just with a [manual] one-write system. Now she's using Excel. But we've just switched from cash to accrual [accounting] and next year we'll need a complete computerized accounting system, because we'll have inventory. We're branching out into manufacturing and we'll have raw materials, packaging materials, and everything to keep track of.

My only problem is I don't have a lot of time to learn new programs, to experiment. I stick to basics, even if it takes a little more time than it might if I learned some new way. But I did change from MacWrite to WriteNow. I thought MacWrite was great, but when I changed it was a real revelation—all the features, and it's very easy. So I might try Word, because my partner is using it.

The other way I try to keep up is by going to the user group in Hartford. You can meet anyone there, from the people who will tell you anything you want to know, to people who won't tell you anything because they took so long to learn it themselves.

It's bedlam, but I like it: there are usually four submeetings go on at the same time, and a guest speaker, and someone off in the corner inking ImageWriter ribbons for a dollar. I find it very difficult to read through the magazines. So much of what you read is more pie-in-the-sky than reality. I'm not interested in next year. I want something I can get my hands on now.

4 Books and Bills

Tracking your bottom line without complex accounting

It's a central fact of business life that you can't survive if you don't make money. And you're not likely to make money unless you send out bills, and keep track of expenses. This chapter will give you some ideas about how to make sure the money keeps flowing into your bank account regularly—without having to learn the elements of accounting. It will answer questions including:

- How much accounting do I need?
- What does double-entry accounting really mean?
- How can I make tax time less taxing?
- Do I need a separate billing program?

In answering these questions, I'll use as examples three programs (Quicken, Managing Your Money, and TimeSlips) that I've found especially promising for meeting small business needs. I'll also mention a few others that are targeted to the small business market, and try to give you the information you need to make your own sensible judgements about other programs that you might want to consider.

This chapter is aimed at the typical small service business: consultants, lawyers, desktop publishers, and chimney sweeps. It won't tell you what to do if your business is retail-oriented—if you have a hardware or jewelry store. It also won't cover all your bases if you have employees, since I'm not including any advice on payroll, 941s, W-2s, or any of the other issues that employees bring. Even if you are in these groups, though, read on. Your needs go beyond those of a service business, but they start in the same place, so you may benefit from much of this.

Why Not Accounting?

If you're a typical small business person, you immediately considered computerizing your accounting as soon as you bought your computer. You

may have even rushed out to your computer store, where the salesperson showed you an impressive—and expensive—accounting system, complete with General Ledger, Accounts Receivable, Accounts Payable, Payroll, and Inventory Control. The whole thing seemed just right, until you came to your senses and realized that:

- You weren't really sure yet how to use the computer.
- You didn't have any payroll, since you had no employees.
- You weren't running a store, so you didn't carry inventory.
- You couldn't tell a credit from a debit.

So you walked out without buying anything, telling yourself you'd plow into "all that accounting stuff" and learn about liabilities and assets as soon as things slowed down a bit. But somehow, months or even years have passed. Every time you have a few hours of free time, something more pressing wins out, like filling out the Publisher's Sweepstakes Entry Form or replacing all the 1967 snapshots in your wallet with new ones. Every time you even think of the A word, you feel uncomfortably guilty, knowing that some day you'll have to deal with it.

Goodbye Guilt

The good news is that you don't really have to deal with accounting. Not now, not ever. If you're running the typical small service or professional business on your own, you're going to leave the tough stuff to an accounting professional. Most of us really only need some way to

- keep track of expenses that need to be billed through to clients;
- get a rough idea of your business bottom line every once in a while; and
- organize your expenses and income enough to have something to dump in your accountant's lap at the end of the year.

All this is much more manageable, and can be done by the average mortal without studying accounting nights. It's okay if green eyeshades look terrible on you. You need *bookkeeping* and *billing*, and hardly any accounting.

I didn't know anything about accounting when I started my business. I went to libraries and tried to learn, but the more I read, the more complicated it sounded. So I read a lot of magazines, and went to several booths at MacWorld and other shows, and [Inhouse Accountant] seemed to do the most for the least money. There were a few things I couldn't figure out on my own, but a friend who knows even less about accounting figured

them out, and it's worked out pretty well. I didn't need it for billing or budgeting—my business is not that big—I just wanted it to keep track of things.”

Ryan Thomson (“Captain Fiddle”), musician

What’s the Difference between Bookkeeping and Accounting?

Bookkeeping means nothing more and nothing less than recording everything you spend and everything you earn. If you throw all your income stubs and receipts into a shoebox, you’re doing bookkeeping (albeit of a rather primitive nature). If you keep a lined notebook where you record all your income and expenses, you’re doing bookkeeping.

Accounting is the next step, where you take your books and use the numbers in them to analyze where your business stands—to *account* for its current success or failure. Accounting can encompass everything from the simple income statement—or “profit and loss”—that gives you your bottom line, through the balance sheet, that shows you everything you own versus everything you owe, all the way to corporate tax returns and beyond.

The typical small business needs a lot of bookkeeping and just enough accounting to get a glimpse at the bottom line now and then. That’s where your Mac comes in: If you do your bookkeeping on the computer, it’s relatively easy to do the first stages of accounting, such as adding up all your expenses and breaking them down into categories so you can see where your money’s going.

Single-account Bookkeeping Systems

The simplest type of bookkeeping program you can use on your Mac makes it very easy to enter expenses and income, and to get out an income statement whenever you want. This type of program acts something like an electronic checkbook, for the most part, and is very straightforward to use. Let’s look at Quicken, from Intuit Software, for a good example of this type of program.

Quicken

Quicken is familiar and comfortable for anyone who’s ever used a checkbook. When you start up the program, you record your expenses by simply filling in an on-screen check, as shown in Figure 4.1 on the following page.

File Edit Activities Categories Recurring

Write Checks: 1st National

Balance: 6,433.05 Date: 2/8/89

Pay to the Order of: Mac Connection \$ 36.00

Thirty-six and 00/100***** Dollars

Category	Amount
SUPPLIES	33.00
POSTAGE	3.00

Address: 14 Mill Street
Marlow, NH 03456

Memo: copy of Quicken

Accept Delete New

Figure 4.1 Recording expenses in Quicken is simple, since the program uses a familiar checkbook layout.

The right-hand part of the input form is just like a regular check. As soon as you fill in the amount in dollars, Quicken writes it out in “longhand” for you on the next line, and fills out the line with asterisks. Then you move over to the left-hand side of the screen to fill in the check stub. You can subdivide any single check into several expense categories, as seen here.

Quicken comes with two sets of suggested expense and income categories—one for household accounts and one for business accounts. The account categories consist of real words, not cryptic numbers, and you can add to them or modify them on the fly, whenever you need a new category to suit the way *You* do business. Here’s a list of all Quicken’s built-in categories:

Do you wish to use these standard home categories?			
Automobile Fuel	Education	Interest Income	Other Interest Expense
Automobile Expense	Entertainment	Investment Expense	Other Misc. Income
Bank Charge	Federal Withholding Tax	Investment Income	Property Tax
Beginning Balance	Gift Expenses	Medical Expense	Salary Income
Bonus Income	Food and Supplies	Miscellaneous Exp.	Social Security Tax
Charitable Contributions	Home Repair & Maint.	Misc. Taxes	State Withholding Tax
Clothing	Household Misc. Exp.	Mortgage Interest Exp.	Telephone Expense
Dining Out	Insurance	Mortgage Principal	Travel
Dividend Income	Interest Expense	Not Categorized	Water, Gas, Electric
Or these standard business categories?			
Advertising	Depletion	Legal & Prof. Fees	Returns & Allowances
Bad Debt	Dues & Publications	Miscellaneous Exp.	Services
Bank Service Charges	Employee Benefits	Not Categorized	Supplies
Beginning Balance	Entertainment Expense	Office Expenses	Taxes
Car & Truck	Freight	Other Expenses	Travel Expense
Cost of Goods - Labor	Gross Sales	Other Income	Utilities & Phone
Cost of Goods - Matl.	Insurance	Pension & Profit Share	Wages & Job Credits
Cost of Goods - Other	Interest Paid	Rent	
Commissions	Laundry & Cleaning	Repairs	

Home Business Neither

Figure 4.2 Quicken comes with default categories for business or personal finances, but you can add, remove, or change categories as much as you want at any time.

Using exact category names is important: "postage" and "shipping" may mean the same thing to you, but they're no more related than "limburger cheese" and "space shuttle" to a computer. (That's why accounting has traditionally used numbers instead of names, to make sure all transactions are grouped into the exact and proper categories.) Quicken makes it easy for you to get the right category, by showing you a list of your categories on request. You can scroll through the list and click on any category to enter it in the check stub, or you can simply type the first few letters of its name in the stub: Typing PO, for example, would enter POSTAGE (as long as no other category starts with PO—you must type enough letters to uniquely identify the category).

Once you've entered information for a batch of checks, Quicken can print them out, using special check forms you can buy for your LaserWriter or ImageWriter. If you'd just as soon write out your checks by hand (printing checks only makes sense if you pay all your bills at once or in a few big batches), you can still use the check-form for input, or you can use an alternate "transaction-input" form (like the one in Figure 4.6) that is similar but leaves out the address space.

March 10, 1989		Page: 1
Account: Mason Grant		
Income and Expense Report		
From: 1/1/88 To: 12/31/88		
Category	Description	Amount
CONS	consulting income	15,340.09
SEM	marketing seminars	9,875.00
OTHER	any other income	2,507.00
Total Income:		27,722.09
BANK	Bank charges	21.00
BOOKS	Research publications	608.60
DUES&PUBS	Dues and publications	339.44
ENT	Entertainment	93.81
INS	Insurance	235.00
POSTAGE	Postage/Shipping	618.62
REPAIRS	Repairs	410.00
SUPPLIES	Office Supplies	1,415.99
TELEPHONE	Phone expense	2,151.09
Total Expense:		5,893.55
Overall Total:		21,828.54

Figure 4.3 Quicken's Income Statement is simple to generate, and gives you a good look at your bottom line.

Quicken can do a lot of other things too. It lets you enter deposits and withdrawals, or see all your entries in "check register" form for easy

editing. And once you're done posting all your transactions, you can create an income statement, either on-screen or on paper, by selecting Category Report from the Activities menu. Quicken's income statements look like the one in Figure 4.3.

Quicken only has two basic reports, the Category report as shown here and the Transaction report, which basically just lists all your entries one after the other. But because Quicken lets you select specific entries by date, memo and category, among other criteria, you can use the program to get almost any kind of answers from your books.

For instance, let's say that you send only a few bills each month, so you use your word processor rather than take the time to get up to speed on a fancy billing package. You're concerned, though, that you aren't keeping track of all the expenses you could be billing through to a particular client. If you had used Quicken's memo field to record the client's name or the name of the project, you could ask Quicken to give you a Category report limited to expenses for a specific client or project.

Filling in the selection criteria like this, for instance, would create a report of all your expenses and income associated with the project called "video project."

Category Report

Restrict report to transactions
dated from: 1/1/89 to: 2/8/89
whose memo matches:
video project
and whose category matches:
 Exclude empty categories
 Compare to budget
 Tax-related items only
Print

Figure 4.4 By specifying certain dates, memos and categories, you can get an expenses and income summary—known as a Category Report in Quicken—for a particular client or project.

Quicken's Limitations

Good as Quicken is, it has its limitations. The main limitation is that it's organized by *account*, not by *business*. What this means is that each "set of

books" in Quicken can only draw on one bank account; any report, like an income statement, will reflect only the income and expenses deposited into and withdrawn from that single account.

That may be adequate for you: Many small businesses are run from a single checking account, with a small petty cash fund for incidental cash expenses. Even if you basically run your business from a single account, though, you may handle some of your expenses with cash and credit cards. This can be done in Quicken, but not as thoroughly as you might prefer.

Cash and Credit: No Details. The easiest way to handle cash expenditures is to keep a petty cash box, and throw the appropriate receipt into it any time you take money out of it. Then, whenever you replace the money in petty cash, tote up all the receipts and enter them into Quicken.

Let's say you've spent \$72.56 in cash expenditures this month, for 12 small purchases. All you'd do is write a check for cash, then add up your cash receipts into categories for entry into Quicken. Your check might look something like this:

Category		Amount
SUPPLIES		28.17
POSTAGE		4.25
ENTRTHHT		40.14

Write Checks: 1st National	
Balance: 429.15	Date 12/8/89
Pay to the Order of Cash	\$ 72.56
Seventy-two and 56/100***** Dollars	
Address	
Memo	refill petty cash box

Figure 4.5 If you account for cash expenses with a single check that refills your petty cash box, you won't be able to record the details of each cash expense.

If you sometimes charge business expenses to your credit card, you could treat those expenses the same way, writing a summary check each month, broken down into categories to account for the things you actually bought. Then, when you run your income statement (or "Category report," in Quicken's terms), all of your cash, credit, and check expenses will be reflected in the bottom line.

This system meets the goal of a quick bottom line admirably. But it's no good if you use cash and credit a lot and want to have detail on every single transaction. Let's say, for instance, that you want to make sure to bill all the expenses you've incurred on the video project mentioned above, so you've

been writing "video project" in the memo field of each individual expense that you pay by check.

When you write a single check for all your credit card charges, though, you'll be lumping perhaps dozens of small transactions into just a few categories, on a transaction slip or check stub that lumps everything into a few categories and includes one general memo for the whole thing. If you pay your VISA bill with a check, then record it with a transaction like the one below, you'll never know that \$177.53 worth of video project supplies were lumped into the total of \$238 for all supplies.

Enter Transactions: 1st National

Ending Balance: 549.50

Check Deposit Withdrawal

Date: 8/14/89 Number: 2431

Payee: 1st National Bank, VISA

Amount: 612.87

Memo: pay VISA bill

Category	Amount
SUPPLIES	238.00
AUTO:GAS	112.67
REPAIRS	189.50
DUES&PUBS	72.70

Cleared Printable Check

Accept Find Delete New

Figure 4.6 Accounting for credit card transactions is difficult in Quicken. If you pay with one check, it can only record broad category details; individual "supplies" or "repairs" are not detailed and described.

I like to see all the detail for each transaction, and used to use memo fields a lot when Quicken was my accounting program. I dealt with this in Quicken by simply entering every transaction as a separate entry as it occurred, whether it was paid by check, cash or credit card. (Entering transactions is a weekly marathon session where I record every receipt in my billfold. It really works if you *always* get receipts for absolutely everything.) I used the check number field to mark the way an entry was paid: the actual check number marked a check, a number 1 marked a cash expenditure, and a 2 marked a credit card entry. When I actually wrote a check to cash or to pay off my VISA I *didn't* enter it in Quicken, since its transactions were already accounted for.

Of course this meant that I couldn't use Quicken to balance my check-book, since it considered the money spent before I actually paid my VISA

bill. But then I knew how to balance my checkbook already by hand, and this system gave me a lot of other information I couldn't easily get manually. If checkbook balancing is more important to you, you may need to look at another program.

No Balance Sheet. Another limitation of Quicken's single-account approach is that it can produce an income statement but not a balance sheet. Why is a balance sheet important? An income statement alone doesn't give the whole picture of the financial health of a business. Let's say, for instance, that Joe's Fish Market has just taken out a \$50,000 loan. Joe deposits the money in his checking account along with all his other income—then three days later prints out an income statement. With an extra \$50,000 in the till, the bottom line looks very rosy.

But in fact, the business is in debt now, with the addition of a new liability. If Joe wants the whole picture, he needs a statement showing how much he owns (his assets) and how much he owes (his liabilities). That's the balance sheet. Generating a balance sheet requires a more sophisticated program than Quicken or any other "electronic checkbook" program.

Let's Not be Judgmental. This doesn't mean Quicken and other simple programs are bad. If you run a cash-basis business without inventory and without much business equipment—just you and your Mac working out of your home, let's say—a simple income statement could tell you all you need to know about your business. It's important to keep in mind that the goal of a bookkeeping/accounting program is to tell you what you need to know—and that differs widely from business to business.

If a single-account program's enough for you, don't look any further. You'll find something like Quicken simple to use: so you'll use it faithfully.

They should charge more for Quicken. I like it because it does everything you're supposed to be able to do manually with a checkbook, but I never could. All it does is balance the checkbook and do basic budgeting. It's an absolute no-brainer. It's just that it works—one of the few things in life that actually delivers.

Robert Duquette, Commercial real estate broker

Double-entry Systems

If your needs are too complex for a single-account program, there are a few more concepts you'll need to know, the first of which is the term "double-entry accounting."

What *Is* Double-entry?

Way back in school, you learned in science class that “for every action there is an equal and opposite reaction.” That principle holds true in bookkeeping, too: Every time your expenses go up, your checkbook balance goes down. When people talk about doing “double-entry bookkeeping” that’s all they’re referring to: A system where both the action and the reaction are properly recorded at the same time.

Even single-account systems take this double-entry approach: every time you enter an expense you decrease the balance in your checking account; every time you enter a deposit you increase the balance. Since one end of the transaction is always income or expense, and the other end is always your checking account, you’re never even aware that you’re doing double-entry accounting.

More complex systems use a more obvious double-entry approach to give you increased flexibility in recording the many things you do in your business. With such a system, instead of just one checking account you can have many accounts, along with other types of assets. Assets are things you own that are worth something: checking accounts, petty cash funds, computers, cars. And you can have liabilities, too: things you owe, like a credit card balance or a car loan. In addition, you can still have the same basic income and expenses as before.

With all these different choices on either end of any transaction, a bit more thought has to go into the appropriate accounting. But it’s still pretty logical. A few examples make this clearer:

Transaction: You buy a roll of stamps
the *expense* “postage expense” goes up \$25
the *asset* “petty cash” goes down \$25

Transaction: You buy lunch for a client
the *expense* “entertainment expense” goes up \$18.17
the *liability* “credit card balance due” goes up \$18.17

Transaction: You buy a new Mac
the *asset* “office equipment” goes up \$3,000
the *asset* “checking account” goes down \$3,000

Transaction: You borrow \$10,000 from the bank
the *asset* “checking account” goes up \$10,000
the *liability* “bank loans” goes up \$10,000

Transaction: You make a \$550 payment of principal and interest on your loan

the *asset* "checking account" goes down \$550
the *expense* "interest expense" goes up \$50
the *liability* "bank loans" goes down \$500

Because a double-entry system like this not only makes things more flexible but also lets you more accurately portray reality, it's really a better deal all around. But, nothing good comes easy, generally. Double-entry systems almost always ask more than the average layperson is willing to give. They often insist that you:

- Build a chart of accounts by giving your expenses, assets, liabilities and income sources cryptic numbers instead of understandable names like "postage expense" and "bank loans."
- Understand the meaning of the terms "credit" and "debit" instead of thinking logically about what goes up and what goes down. This wouldn't be tough if "credit" always meant "goes up" and "debit" always meant "goes down." But in accounting, each transaction must consist of one credit and one debit. As you can see above, in some transactions two things go up—or two things go down—and normal people have a hard time figuring out which is a credit and which is a debit.
- Make a reversing entry to correct an error: You can never simply go into your books, find your mistake, and edit it. If you type in \$50.30 when you really mean \$30.50, you will be forced to leave the error on your books, type a correcting entry of -\$50.30, then enter the actual transaction of \$30.50. This is known as keeping a strict audit trail; everything that takes place is left in the books, to make it harder for anyone to "cook the books."

There's more, but these are the basics that make the average double-entry system a double-nightmare to most people.

Accountants and most software vendors would put the guilt on you: They make you think that if you want the accuracy and flexibility of double-entry, you simply must learn and put up with this approach. If you can't handle it, the fault is all yours. I don't buy this, and have long thought that the ideal program would provide the benefits of double-entry without its pain.

Now, finally, such programs are becoming available on the Mac. We'll take a look at one, *Managing your Money*, that does just this. There may be other programs out there—and others may join them in the future—but I'll cite MYM as an example here, so you can see how a double-entry system differs from a checkbook program like Quicken.

Managing Your Money

That *Managing Your Money* manages to be more sophisticated than Quicken without being much more complicated is obvious right from the "Spend Money" screen, where checks and other expenditures are entered.

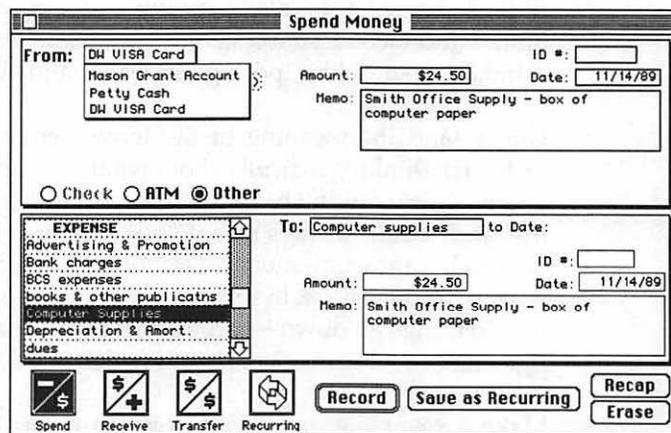


Figure 4.6 *Managing Your Money* lets you select any one of several accounts, and any one of several expense accounts each time your record something you spent.

This screen is similar to Quicken's check screen, with two important differences:

- There is a scrolling "From" list at the top left corner. This list lets you choose which asset or liability you're taking FROM, in order to make this expenditure. It lists all your cash assets, first, in alphabetical order, then lists any liabilities with spending power, such as credit cards. You pull down the list and select the appropriate account.
- The screen is divided, to remind you that it's necessary to record both the "action" up top and the "reaction" on the bottom. You scroll through the accounts list in the window at

the bottom left, to pick the appropriate “reaction” (or reactions: the program lets you subdivide any expense into multiple categories just like Quicken). Although the list includes all your accounts—income, expense, asset, and liability—it automatically scrolls to the appropriate section (EXPENSES, when you’re spending money) to make selecting easier.

That’s about as tough as double-entry gets with *Managing Your Money*. As you can see, account names are understandable words rather than cryptic numbers. The words “From” and “To” are used in place of “Credit” and “Debit.” And you can bring up your entry again at any time to edit it, until you’ve closed out the end of the year.

Managing Your Money’s Big Strengths

Just these few changes, though, make it easier to record what *really* goes on in your business. There’s no need to invent clever systems to shoehorn your financial activities into a few simple choices, as in Quicken.

Credit and Cash. *Managing Your Money*, for instance, lets you make Transfer transactions: When you cash a check you’d simply record it as FROM “checking account” on the upper part of the screen and TO “petty cash” on the lower part. Same thing when you pay off your credit card balance: It’s recorded as a transfer FROM checking account TO credit card balance. These kinds of transactions can get awkward in a single-account program, where you can’t really represent the other end of the transaction accurately, but they work beautifully in a double-entry system like *Managing Your Money*.

The payoff to a double-entry system comes at the end of the month (or whenever you’re looking for information about your finances), when you can get not only a list of your income and expenses, but also a look at the bottom line of any of your accounts. How much is in my checking account? How much cash do I have? How much do I owe VISA or MasterCard?

The Balance Sheet. The statement that shows the current status of all your accounts, as I mentioned before, is the balance sheet. In logical terms, the balance sheet shows everything you own minus everything you owe; the difference is how much your business is worth.

Assets (what you own)
— Liabilities (what you owe)
Net worth of your business

This makes a lot of sense. And it's a definite advantage of *Managing Your Money* that it can show you your net worth at any time, in a simple text-based report or in graphic form. *Managing Your Money* can also turn this report around so that it's arranged in a way more in line with traditional accounting practice:

$$\begin{array}{r}
 \text{Liabilities (what you owe)} \\
 + \quad \underline{\text{Equity (worth of your business)}} \\
 \hline
 \text{Assets (what you own)}
 \end{array}$$

Since the point here is to make sure that what you owe doesn't start to outstrip what you own, either form will tell you what you need to know. *Managing Your Money* uses the first approach, partly because it makes more sense to most people and partly because it doesn't require you to understand the concept of equity. I happen to think this is fine, since my overall goal is to get the picture of my finances, but if you like things set up the other way, *Managing Your Money's* manual tells you how to switch things around. (It's in the chapter called "Things You Shouldn't Know" under the heading "Making Your Balance Sheet Balance.")

A Few More Pros and Cons

My goal in this chapter is to discuss accounting with examples from a few good programs, *not* to give a complete review of any one program. But having possibly piqued your interest in *Managing Your Money*, it's worth spending just a few paragraphs in rounding out your impressions of the package.

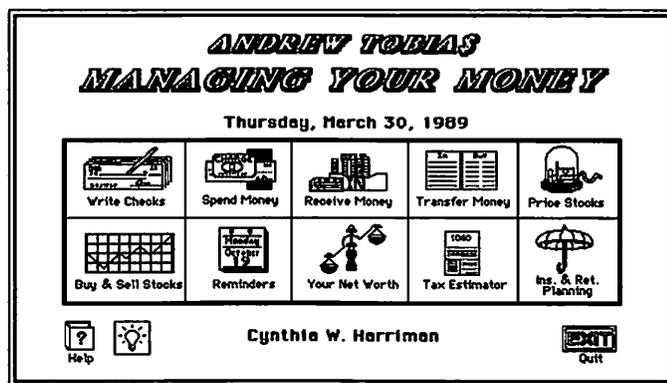


Figure 4.7 *Managing Your Money* has a HyperCard-like opening screen that gives you access to all its different modules and features.

MYM has many more modules than the normal ones you'll use to track income and expenses (Write Checks, Spend Money, Receive Money, Transfer Money) and create a balance sheet (Your Net Worth). As its opening screen shows in Figure 4.7, the program can help you keep track of your stock portfolios, estimate your taxes, and plan for retirement. (Reminders is a little appointment calendar program that seems somewhat out of place in an accounting program.) While the main strengths of the program for business are in the areas we've already discussed, some of these other areas may be useful to you if you're using Managing Your Money to keep a set of personal books as well as your business books.

Managing Your Money is not perfect. Its reports can be a bit confusing until you're used to them, partly because there are so many of them and they can be accessed from so many different places in the program's menus. But most issues are well explained in the manual, which was written by the well-known financial expert Andrew Tobias. His approachable style and sense of humor bring about an improbable achievement: An accounting handbook that's both informative and fun to read.

I've just bought Managing Your Money. The reason I chose Tobias was I had read some of his books, and I like his style. His name definitely sold me. The other thing I liked [about Managing Your Money] was that they had promo disks, so I could take a look at it before I decided to buy.

Gregory de Silva, Opera singer and voice-over artist

Keeping on Good Terms with Your Uncle Sam

I'm assuming your business is what the IRS calls a sole proprietorship—any business activity that isn't incorporated or a partnership—and that you therefore fill out a Schedule C as part of your income tax. Since Schedule C is basically just an income statement, any single-account or double-entry system will make tax time easier by generating a printed summary of your income and expenses, by category, for your accountant or tax preparer.

With this in mind, it's important to set up your bookkeeping system so that your income statement works the way Uncle Sam likes it. Following are a few tips that might help you set up your books to prepare for tax time as smoothly as possible.

Picking Categories That Make Sense

If you use vastly different expense categories than those on the Schedule C, you'll find yourself shoe-horning your data awkwardly into your tax

forms. This increases the likelihood of any or all of three unwelcome circumstances: Your tax preparer will charge you more for your return, the return will contain errors, and you'll get audited. The standard IRS Schedule C categories are:

Advertising	Laundry & cleaning
Bad debts	Legal & professional services
Bank service charges	Office expense
Car & truck expenses	Pension & profit-sharing plans
Commissions	Rent on business property
Depletion	Repairs
Depreciation	Supplies
Dues & publications	Taxes
Employee benefit programs	Travel
Freight	Utilities & telephone
Insurance	Wages
Interest	Other

If you like the IRS's categories, just use the same ones. If you don't, you might consider using the IRS names as aggregate or summary categories, and using the names that really describe your expenses as subcategories that automatically sum into the "real" categories. For instance, you might want to have your own categories of "legal expense" and "accounting" sum up into the IRS category of "professional services." Or you might have three categories of "books," "magazines," and "memberships" that sum up to the IRS category "dues & publications."

Paying Yourself

When you take money out of your business, *don't* record it as an expense. Why not? Let's say you had income of \$40,000 in your business last year. You took \$20,000 out of the business, and had expenses totaling another \$19,000. If you count what you paid yourself as an expense, your income statement will look something like this:

	\$40,000	income
—	<u>\$39,000</u>	<u>expenses</u>
	\$ 1,000	net income

This will look great on your Schedule C, since only \$1,000 will get taxed. But the way Uncle Sam figures it, your taxable income includes everything you paid yourself—or could have paid yourself:

	\$40,000	income
—	<u>\$19,000</u>	<u>expenses</u>
	\$21,000	net income

So you might as well make sure the income statement generated by your bookkeeping program does it this way, too.

Believing this is one thing. Making your bookkeeping program reflect this accurately is another thing. With a single-account system like Quicken, you'll have to create a category for the entry, so that you can write out the check and have your checking account properly decrease. You might call the category IGNORE or something similar. Then, when you print your income statement (category report, in Quicken), tell the program to include all categories in the report *except* the category IGNORE. In Quicken, you'd use the tilde (~) to indicate "everything except" a certain category, like this:

Figure 4.8 Quicken considers amounts you pay yourself as expenses, but the IRS doesn't. If you want your income statement to match your tax Schedule C, put your pay in a category called "ignore" or something similar, then exclude that category from reports.

In *Managing Your Money*, the best solution is a bit more accounting-oriented: You'd actually create a liability account called Equity. In a simple sole proprietorship, equity really just means "everything that's left over for the owner after expenses," so the term itself makes sense. (If you don't like the term equity, it's okay to call your equity account "money I took out" or something more friendly.)

Calling it a liability doesn't seem to make sense at first—after all, money left over is a *good* thing, and liabilities aren't. But you have to remember

that your books look at life from your *business's* point of view, not yours. The fact that you took the money out and spent it on groceries, or clothes, or a new BMW may be a positive thing to you, but your business takes a dim view of such activities.

A Final Note: Don't Mix Business and Personal

As soon as you get your hands on a multiple-account program, you may be tempted to try to put everything you do into one pot. From a human point of view, this makes sense—and in general, I've taken the tack here that whatever you do for bookkeeping should make sense to you and reflect the way you actually do business. Some of the arguments that will undoubtedly go through your head:

- If I'm not incorporated, my business checking account is as much a part of my net worth as my household checking account. I need to have everything all together to get the whole picture.
- Frequently I write checks or make charge purchases that include both business and personal expenses. I might pick up a notebook or a package of index cards for the office when I stop at the supermarket for milk. Or I might pay my phone bill with one check, then go down and total up the calls that were business, and should be charged to my company. How can I do this unless everything's all in one place?

Those arguments do make sense, a fact I know from personal experience. And the whole thing, which is really impossible with a simple program like Quicken, seems enticingly possible with something like Managing Your Money. You shouldn't do it, though. The biggest common-sense reason not to is that no program (MYM included) will let you keep two lists of categories for the same set of books. You'd end up with a huge intermixed list of personal and business expenses, with groceries and lawncare mixed in with office supplies and professional dues. There'd be no way to separate the two out for reports, when you wanted to check the household budget or get a business income statement.

If such logistical reasons don't convince you, you should know that your life with the IRS and with major software vendors will be much easier and more pleasant if you get into better habits that separate your business and personal finances. You'll be in better shape to survive an audit and to pick a bookkeeping program that matches the way you work.

Get a separate checking account for your business, and write two checks if necessary. Get a separate phone line for your business if you work at home. Chalk up the little office supplies you buy at the grocery to your household food budget, and figure it all evens out because your kids use the paper you charged to office supplies for their homework. Once you've changed your habits a little, you'll find that what you're doing can be squeezed into the available computer software a little easier.

Multiple Books in One Program. Just because you must separate out your business and personal affairs doesn't mean you have to use different bookkeeping programs. It just means you have to keep different sets of books. If you run three separate businesses and keep your household accounts, both Quicken and Managing Your Money—and many other programs—will let you keep four sets of books, with four different bank accounts and four different bottom lines. This is the way I recommend you manage your money, with separate accounts in the same program.

Do You Need a Billing Program?

Despite all the emphasis earlier in this chapter on getting to the bottom line, it turns out that the income statement is *not* the most essential financial document that many small businesses need to create. After all, it's unlikely you'll want to print more than one income statement per month—but you may be sending several bills.

It all depends on the type of business you run. In my line of work, any given month may find me working on a book, writing a magazine article or two, and doing a few days of training or consulting. I may end up with a half-dozen bills at the end of the month, none of which is terribly complex. Banging them out on my word processor works fine.

In the course of interviewing small business people for this book, I was surprised by the number of people who use their word processors to send their bills: Over half of the people I talked with, in a wide variety of businesses, do so. And they do it not because they can't figure out a better way, but because it works, and works well.

While this works for some of us, others have very different needs. If you work for several different clients during the month, and bill those clients not only for time but for a long list of expenses, you'll never keep track of what you're owed simply by entering it on paper. You're apt to miss important expenses, and you won't be able to check your clients' outstand-

ing balances when you need to. You need a simple, no-nonsense billing program that's designed for small businesses.

Billing isn't really a problem for me. Most of my sales are done through the cash register, so I don't really need to send bills. When I do, I just type them out in Works, in the word processor. It doesn't take that long. I've learned to quit feeling guilty for not using something fancier. Everyone says, "You're only using Works?" And now I say, "So what? It does the job."

Charlene Anderson-Shea, Weaver

This makes a lot of sense to me, but not to the people who write accounting software. Billing, for some reason, is usually only included in upper-end accounting packages—the ones that have seven modules (Accounts Payable, Accounts Receivable, Payroll, Inventory...) that cost \$600 each. Since these packages are absolutely inscrutable to the average user, and absolutely unnecessary to the average small small business, this just won't do. And even with their high price tags and steep learning curves, many of these programs can send out only one format of bill—the sort of thing you'd expect to get from a hardware store rather than from a consultant—with cryptic descriptions in Monaco or Courier font.

The other end of the scale there's no help for billing either. While most of these so-simple-you-don't-even-have-to-know-accounting packages fit the small business person's needs for bookkeeping much better than the "real" accounting programs, they generally can't handle the generation of a simple bill, in large part because of their origins as household accounting programs.

Billing for Time and Expenses: TimeSlips

At the present time, there's only one program that comes even close to offering an approachable, understandable alternative for billing at an affordable price: a program called TimeSlips. And while TimeSlips isn't really quite what it could be, it's got some great features that will help you figure out what to look for as other billing packages enter the market.

TimeSlips consists of two separate parts, TSTimer and TSReport (the TS in both cases stands for TimeSlips). You use TSTimer to enter all your time and expenses, then use TSReport to print out attractive professional bills like the one in Figure 4.9.

Mason-Grant Company			
Box 6457, Portsmouth, NH 03801			
Invoice submitted to:			
The MacConsortium			
Box 26			
Lexington, MA 02173			
March 31, 1989			
#42			
		<u>Hours</u>	<u>Amount</u>
03/02/89	consulting on direct mail efforts to boost seminar attendance at retreats	3.00	187.50
	For professional services rendered	3.00	187.50
Additional charges:			
03/06/89	photos for new brochure		250.00
03/08/89	telephone calls		42.50
	Total costs		292.50
	Total time and expense charges		480.00
	Previous balance		250.00
	<u>Amount</u>		
3/24/89	Payment - Thank You		(\$200.00)
3/26/89	Credit		(\$50.00)
	Total payments		(\$250.00)
	Balance due		480.00

Figure 4.9 TimeSlips produces a very professional-looking bill, that can include an almost-unlimited amount of descriptive detail.

Entering Time and Expenses: TSTimer

TSTimer is a desk accessory where you can enter your time and expenses, creating a separate slip for each time period or project and one for each expense.

Here's an entry slip for a typical expense. You'd specify the appropriate worker, expense category, and client (more on that below), add a memo of up to 32,000 characters to describe the expense, then fill in the quantity and amount at the bottom.

The screenshot shows the 'TimeSlips' application window. At the top, it displays 'Slip 40 of 40 Inactive (0 slip(s) are active)' and 'Slip Value: \$ 0.00'. Below this, there are three buttons: 'User', 'Expense', and 'Client'. The 'User' field is set to 'Lew' with a radio button next to '62.50'. The 'Expense' field is set to 'photographs' with a radio button next to '0.00'. The 'Client' field is set to 'CEC' with a radio button next to '75.00'. Below these fields, there is a radio button for 'Flat Rate'. A memo field contains the text 'Clean room photos from Stock Boston for sales brochure'. To the right of the memo field are four radio buttons: 'Billable' (selected), 'Unbillable', 'No Charge', and 'Hold'. At the bottom left, there are two date fields: 'Date' set to '3/11/89' and 'thru' set to '3/11/89'. At the bottom right, there are two input fields: 'Quantity' set to '2' and 'Amount' set to '450.00'. On the right side of the window, there are several buttons: 'Mini View', 'Turn on', 'Delete', 'Revert', and 'Help'. At the bottom right, there is a 'Found: 0' label.

Figure 4.10 You record expenses in TimeSlips by entering an expense category, a quantity, and an amount, with more options.

Recording time instead of expenses works very much the same way, only with several additional options. First, as the timeslip below illustrates, you can actually record your time as you work. If you start a job at your desk or pick up the phone to give a client billable consulting advice, you can select the DA, open a new timeslip or one to which you want to add more time, and simply click on Turn On (this button appears as Turn Off while the timer is running). You can leave the whole timeslip visible onscreen, or click on Mini View to shrink the window down to three short lines that fit in the corner of your screen and show client, slip value, and time.

Since you're not always working right at your desk, you can also opt to record your time later; you can jot it down on paper or in your appointment book when you're on the road, then just click in the Spent box to enter the time manually.

Whether you enter time in "real-time" or later, TimeSlips lets you bill any of four rates, and it keeps a running total at the top of the slip. This running total—or Slip Value, as TimeSlips calls it—depends on which of the four billing radio buttons is selected, just below the Slip Value. These in turn depend on the user, activity, and client you've selected.

User, Activity, and Client. TimeSlips lets several users feed data into the same set of bills, a feature that's especially useful in law offices and other

businesses where many people serve the same client. In a very small business, you might leave User alone, but the Activity and Client buttons will be very useful to you.

The screenshot shows the 'ISlimer' window with the following details:

- Slip 40 of 40 ACTIVE (1 slip(s) are active)
- Slip Value: \$ 161.27
- User: Lew (Rate: 62.50)
- Activity: consulting (Rate: 62.50)
- Client: CEC (Rate: 75.00)
- Billable options: Billable (selected), Unbillable, No Charge, Hold
- Description: marketing research on desiccant technology in clean rooms
- Date: 3/11/89
- Time Estimated: 0:00:00
- Time Spent: 2:34:49
- Buttons: Mini View, Turn off, Delete, Revert, Help, Found: 0

Figure 4.11 If you're entering an "activity" (time) instead of an expense, TimeSlips records the minutes, hours and seconds—either automatically with a built-in timer, or manually.

The Client option does just what you'd expect. It gives you a list of all your clients so you can click on the appropriate one. Similarly, when you click on Activity, TimeSlips pops up a window of all the types of time-work and expenses you regularly incur. If you click on Time, a scrollable list of all the different types of work you do appears; click on an activity, and the rate you charge for that kind of work appears at the bottom of the box. (If you were entering an expense, you'd click on Expenses, and a list of all your billable expense categories appears, in a similar way.)

The two dialog boxes are titled 'Select Activity' and contain the following information:

- Left Dialog (Time selected):**
 - Radio buttons: Time (selected), Expense
 - List: consulting, mktg reports, tech support
 - Selected item: consulting
 - Rate: \$ 62.50
 - Checkbox: Taxable
 - Buttons: Select, Cancel, New, Receipt, Delete, Undo, Help
- Right Dialog (Expense selected):**
 - Radio buttons: Time, Expense (selected)
 - List: legal fees, meals, parking/tolls, photographs, postage, supplies, telephone, travel
 - Selected item: telephone
 - Checkbox: Taxable
 - Buttons: Select, Cancel, New, Receipt, Delete, Undo, Help

Figure 4.12 TimeSlips keeps separate lists of your regular Time (on the left, here) and Expense categories (on right); Time categories are associated with a standard fee that you specify.

Once you've entered the User, Client, and Activity, you can see the billing rate you've predetermined for each of these choices, plus a fourth rate called flat fee, as the original timeslip shown earlier indicates. This gives you a lot of flexibility in your bills: you may, for instance, charge a standard hourly fee for consulting, but charge one particular customer more (I charge my big Boston clients a bit more than my local New Hampshire ones, for instance, since there's no travel time involved locally). TimeSlips shows you all your standard rates, with a default of your own choice selected, but you can still override the whole thing by clicking on Flat Rate.

What About Products? While I really like the way all this works, there's one element missing that may be important to you: products. Lots of people—including the ones who wrote TimeSlips, apparently—think that only retail businesses have products, and service businesses don't. But real life isn't like that. Many service businesses charge straight time for some activities, and bill through their expenses; then, in addition, they charge set fees for certain products. Maybe you charge a standard \$500 for creating a pressrelease for clients, or you always charge \$450 for a half-day training session at the client's site. TimeSlips doesn't deal with this well.

Let's say you've created three press releases for a client, at \$500 each. There are two ways you can enter this charge into TimeSlips, each of which has its drawbacks:

- **Number One:** Click on Flat Fee, and fill in a charge of \$1,500. This is easy, but there's no way to make sure you're charging consistent fees; there's no pop-up list that reminds you that you always charge \$500 for a press release. And you must put the entire total in Flat Fee—there's no way to put in \$500, and a quantity of 3, and have TimeSlips compute the total of \$1,500.
- **Number Two:** Pretend your products are "time activities" and the quantities are hours. Just as you would put in "Consulting, 3 hours" and get a Slip Value of \$75.00, you could put in "Brochures, 3 hours" and get a Slip Value of \$1,500, if you have entered \$500 as the predetermined billing rate "per hour" for brochures. When you go to print out your bills, you can ask TimeSlips not to print the hours, so that just the total fee appears on your invoices as "Brochures.....\$1,500".

Both these approaches are workable, but I'd prefer to see TimeSlips add a third button on the Select Activity scroll box, for products. Click it and a list would appear that would let you record a standard charge, like a Timeslip. Then, back on the timeslip itself, this standard charge would automatically

appear in the Amount box whenever you had specified that product, so all you'd do would be to fill in the Quantity box. Then the program would compute the Slip Value automatically.

It's frustrating when a product comes close but isn't quite right for your business. But in all, TSTimer is quite flexible, Mac-like and easy to use. And this is important: Data entry is always the most boring part of any program of this type, and if it isn't easy and pleasant you just won't do it. Then the whole system falls apart.

Sending Bills: TSReport

TSTimer is a DA, because you'll need to get at it all the time, when you're in the middle of something else. TSReport is a regular application, since you'll only need to use it once or twice a month. Unfortunately, TSReport can be a little harder to get the hang of than TSTimer; the program shows its IBM origins in an unMaclike menu structure that can make it difficult for you to remember where you are and what you should do next.

Client Preferences. TSReport has three main menus: Clients, Reports, and Define. Define duplicates TSTimer's ability to enter and edit Client, User, and Activity lists. The other two menus are essential to sending out your bills. You'll start with the Client menu, where you enter more complete information about each client, including full name, address, and phone numbers, and a very complete but confusing plethora of billing preferences for each client, including things like:

- which of the four timeslip billing rates to make the default
- the sales tax for a particular client
- billing terms and interest rate for a client
- whether time should be rounded, and if so, to the nearest how many minutes
- how much of the memo/description from the timeslip should be included on the bill—1 line, 2, 3, or 4 lines, or all of it, up to its full 32,000 characters
- whether to show just totals or to include hours (for time) and quantities (for expenses)

It's important to realize, as you make your way through the jungle here, that these preferences are determined client by client. Luckily, you can pick the settings you've chosen for any client, and tell TimeSlips to make those settings the default for any other client, resulting in a pretty flexible procedure. The whole process can be extremely confusing, but you only do it once for each client, and it's certainly preferable to have these many options

available than to opt for simplicity at the expense of flexibility. (That's a true statement, but somewhat Pollyanna-ish. With better design, there's no reason these options couldn't be available with less confusion.)

I bought TimeSlips at last year's MacWorld Expo. It was really hard to start out; I had to study it for a long time. Part of their problem is that it was an IBM program first. They've done a lot to bring it over to the Mac, but not really enough.

Cheryl Jencks, Graphic design and editing

Entering Payments. Also included in the Clients menu is the Transactions command, which you'll use to enter things like payments that can't be entered into a timeslip. The Transactions command brings up a list of prior open transactions for a customer; then when you click on Add, you get an entry screen where you can enter your payment or any bill adjustment.

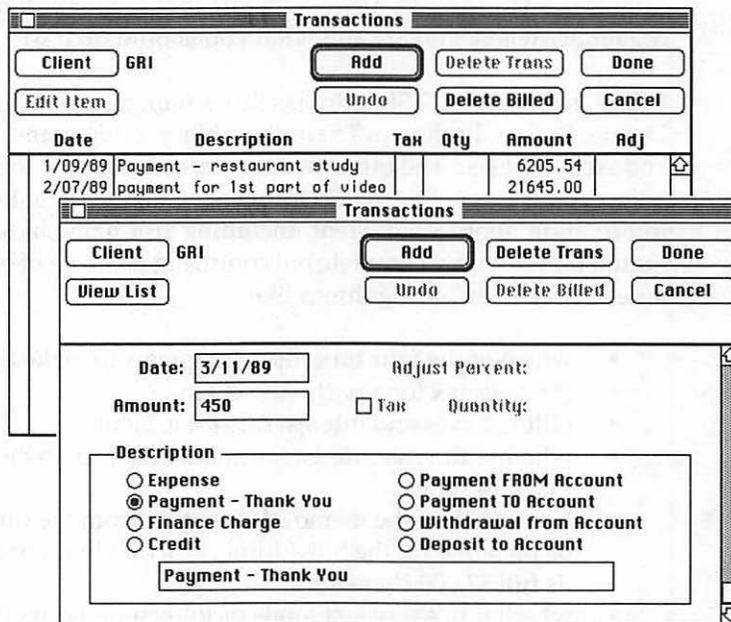


Figure 4.13 Selecting the Transactions command in TimeSlips brings up a log of any transactions that weren't entered with the TSTimer desk accessory. Click on Add, and you can add a new transaction to the list.

Don't try to use this screen as a quick shortcut to batch entering all your time and expenses. There's no way to enter time, and expense entries are

limited, because there's no description field here, and no expense categories. You should really just use this for quick bill add-ons and adjustments.

Get Out the Bills!

All this explaining has drawn a rather simple process out to some length. If your client preferences are all set up and you post payments as they're received, you would skip the Client menu entirely and go straight to Reports when you're ready to print your bills. There, you'd make several choices about which slips you want to print (including hand-picking individual slips from your files, if that's what you want) and choose whether you want to print billing worksheets or bills. Billing worksheets are summary sheets that are useful for making sure everything's accurate before you print out bills.

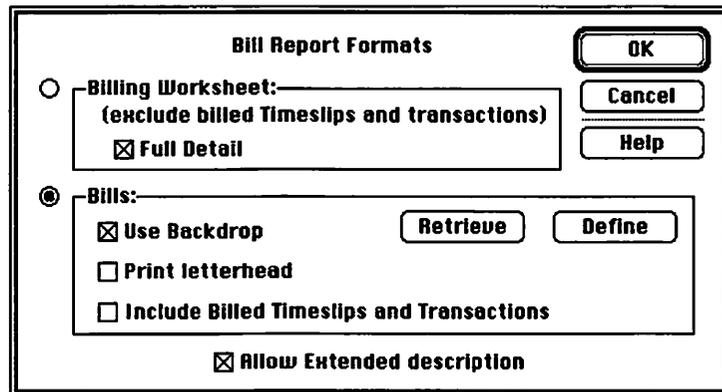


Figure 4.14 TimeSlips can print Billing Worksheets or Bills, with options for each.

If you're printing bills—wasn't that the whole point here?—you can choose to have TimeSlips include a graphic letterhead of your specification ("use backdrop") or simply print the name and address of your company in text from the details you filled in the first time you used the program ("print letterhead"). And, you get a choice of whether to include prior detail from bills already sent, or leave it out.

I won't go on and on with every little feature. But the point here is how flexible TimeSlips is in the way it prints out bills. If you've looked at any other billing packages you'll appreciate this more. Many programs won't let you include descriptive detail on a bill, or will insist you bill everything that's outstanding at the end of every month (including that project you

haven't completed that you don't want the client to be reminded about)—or any number of other limitations. TimeSlips itself used to be limited in only using Courier font until a recent upgrade, but now the program can produce really professional-looking bills, like the one shown earlier in Figure 4.9.

Other Interesting Features

If you're in a larger firm, you'll appreciate TimeSlips features that let you analyse which user is making the most money and on what activities. The program generates quite a few reports and graphs that can point out very quickly who are the star performers and who's dragging everyone else down. There's also a feature for combining timeslips from several different Macs to create one set of bills, something that would be necessary in a law office or design firm where many people collaborate on a project.

Should I Run Right Out and Buy It?

TimeSlips is a good program. Should you get it? The answer is probably yes if you send out a lot of bills and you bill a lot of different expenses through to individual clients. If you send only a few bills a month and most of your work is billed at a flat fee or straight time, TimeSlips is probably not for you. Sure you could still use it, and it would create pretty bills. But you're better off entering your expenses into something like Quicken, so you can get an income statement out.

The ideal, of course, would be if TimeSlips could generate an income statement. When I first started using the program I got the bright idea to put myself in as a client, and put all my overhead expenses—office supplies, phone, all those other things you can't charge to any other client—in as billable to me. Then I figured I'd just ask TimeSlips to print out a summary of all my bills and payments by category, and Presto! I'd have something that would serve me very well as an income statement.

But TimeSlips doesn't offer this as one of its reports, and there's no way to create it yourself, even with the program's User Defined Report option. What's worse, you can't dump TimeSlips data to other Mac database and spreadsheet programs easily, either, which means that all the expenses and payments you've entered in TimeSlips will have to be re-entered in your bookkeeping program before you can get your bottom line. This is without a doubt the biggest failing of the program, one that's especially hard to deal with when the company admits that its IBM version feeds directly into a wide range of popular PC accounting packages.

So, TimeSlips isn't perfect. But there's nothing else comparable in the Mac market right now, so if it meets your billing needs you should take a look at it. However, you should definitely keep your eye on any new products that come out, to see if something else comes along that can do both bills and books.

Three More Programs

In my search for a program that would handle both books and billing in a Mac-intuitive way, I looked at a number of programs that aren't included here. Each time I'd read another ad or review, I'd get excited, thinking that *this* one would be *it*. I'd run to the phone and call the company involved, and talk to the president, the programmer, or the marketing director — in all cases, with someone very familiar with the program. I'd ask dozens of questions, get all the right answers, and ask them to send me a copy of the program, for possible inclusion in the book.

And the program would arrive and it Just Wouldn't Work. That isn't to say it crashed or bombed. The features would all be there, but I just wouldn't feel comfortable with some major aspect of the package. Entering expenses might work just fine, but the method used to get reports wasn't flexible enough. Or the reports and data entry would be great, but the program wouldn't let me go back and make changes a month later. The only programs I felt 90 percent comfortable with, in the end, were Quicken and Managing Your Money; my at-ease index for TimeSlips was about 75 percent, but the program comes so much closer than anything else I still recommend it.

Since you'll see the same ads as I did, and ask many of the same questions, I think I owe it to you to include here three of the products that came the closest to what I was looking for and tell you why they didn't make the grade. After all, I get the software for free, and you may end up spending money for something that doesn't fit your needs—or missing out on something that does, if your business is rather different than what I'm assuming.

Accounting programs make me feel something is very odd about me, myself. I've spent time with: Back to Basics, Dollars and Sense, InHouse Accountant, Quicken, MacMoney, Insight, and SBT. I got where I had this thing about finding a program that would work for me. I'd put each program through a test, use it for a whole month and see how it was. I worry that I may not be a good person to judge these, since I'm both an artist and a very stubborn person. But am I so different from other

businesses? All I want is to know, Where is the money? Where does it come in and where are we losing it?

Mary Churchill, Founder/Director, Puppet Showplace Theater

Dac Easy Lite. Dac Easy uses numbered accounts, so I suspected right off that the program wasn't for me. It's a pretty standard multiaccount program with a rather sad manual, which I took a look at because it promised easy expense management coupled with billing. But its invoicing is heavily skewed to a retail store point of view (the program can in fact be used in "point of sale" mode) and it's impossible to create an invoice that mixes services and products—each invoice must be one or the other. What's worse, invoices are created by simply entering the items in a form which isn't really much improvement over using a word processor: The only advantage is that it keeps an accounts receivable file that summarizes the invoices you've written.

I mention Dac Easy Lite because the price is right and the ads are very compelling, so you're going to wonder about this one. If you're running a retail operation, you might want to take a look at Dac Easy Light; if you're running a service business, you're apt to have the same reaction I did.

MacMoney. MacMoney is a multiaccount program with a lot of good features. Although it uses some accounting terminology, there are some reasonably good explanations of these terms in the manual. But the program takes too many liberties with the Mac interface, and it lacks the "Here, let me give you a hand" feel of Quicken and Managing Your Money. When you're entering a stack of mixed cash, credit, and check expenses, for instance, it's very difficult to change accounts, and if you enter an expense category that doesn't exist it just asks you to try again, rather than offering you your list of categories and a chance to add a new category. All in all, there's that awful feeling that it's difficult or stupid—or that you are if you don't understand it.

Why do I mention MacMoney then? Because the people who put it out are very nice (and caring and support goes a long way in the Mac world) and because I've talked to too many people who really like this program to just dismiss it out of hand. I suspect I'd be in that same group if I hadn't run across Managing Your Money. But you need to know that MacMoney will take some time to get into, and Managing Your Money does about the same things with a learning curve that's a lot less steep.

I bought MacMoney and it's still sitting on my desk. I tried it, but I just kept making errors. Maybe I just never understood the principles, never got a map in my mind of what I was doing. I probably didn't put in

enough time on it. I didn't do anything with it last year, and here it is March and I haven't set up anything. I would like to be able to describe [financially] what I do—its embarrassing when I don't know where thousands of dollars go.

Paul Duffly, psychotherapist

Another program I've been using is MacMoney. I'm real pleased with it. One of the things that it does that saves me a lot of time is writing checks. There's an alarm system in there, and you can put in all your regular bills, and it will tell you which bills to pay when. All you have to do is say, "Okay, pay them all" and it writes out the checks. It also itemizes automatically. I have all my regular performers entered in there, and when I pay one of them it puts the expense in the right category as soon as I click. I have a business degree in accounting, but I like not having to use any of it in MacMoney.

Brian Batastini, President of Magical Entertainment

Bill-It. Bill-It was written by a guy who ran a computer store, and it looks like a pretty good retail package—but it's not what the average time and expenses professional needs. Bills are very noncustomizable, and are not really oriented to a service operation: They look very much like bills you'd get from your hardware store.

Like the MacMoney people, the folks at ShopKeeper Software are wonderful. They're always sending registered users free updates, and offering special touches. For instance, they'll supply you with a utility that will take all the customer records in either Bill-It or ShopKeeper (their other offering) and convert them into a QuickDEX file, so you can instantly find customers' addresses and phone numbers without opening up your accounting software. Consider this one if you run a retail operation.

The Search Continues

If that sounds like the title of a soap opera, it's for good reasons. Looking for *good* accounting software was the most difficult part of creating this book. I stuck with it, though—and not because I wanted to Do You a Great Service. Much as I like to help people, I must confess I was spurred on by my own needs more than anything.

You see, even though I'm a reasonably competent Mac user, I hadn't entirely figured out what to do with *my* finances yet when I started this book. So including a section on accounting was very important to me. I figured that even if I never sold a single copy of the book, at the very least I

would be able to justify taking the time to research solutions to my own business needs.

Can This Business be Saved?

For several years, I had kept my accounts in an Excel spreadsheet, using that program's sophisticated data tables and database statistical functions to create monthly and annual summaries of each category of expense and income on my long list. This was a workable solution in that it gave me a good picture of my bottom line. But since I find accounting about as fascinating as most people, I never got around to writing the necessary Excel macros to create the tables and print out a presentable report each month, so the whole process was somewhat lengthy and discouraging. Which, of course, means that some months I wouldn't do it, until enough months went by that I had to admit it wasn't working.

From Excel to Quicken. Then, on a friend's recommendation, I bought Quicken. Quicken automated the report-generation I needed, and sped up data entry a good bit, too. What turned out to be one of the nicest parts of Quicken was that my husband (the original non-number person) really liked the program, and agreed to do much of the data entry for our corporate conglomerate of household expenses and two home businesses.

Lew was in charge of entering receipts, and I was in charge of figuring out work-arounds for all of Quicken's limitations. I've mentioned them throughout the section on Quicken: We invented the system of check number codes to sneak our cash and credit card transactions into this single-account system, and we used the memo field to separate out expenses and income on his-and-hers businesses that share a business checking account. There wasn't anything we couldn't work out somehow.

On to Managing Your Money. Quicken worked out so well that I think we'd be using it still if Managing Your Money hadn't come along and turned my head. It was like one of those office romances: I started working with MYM for professional reasons, as I was considering including it in the book. But before I knew it, we were in love. Sure we had our spats—for two weeks I railed at the program, as Meca President Daniel Schley will attest—when it wouldn't quite let me keep the whole conglomerate in one pot. (Schley finally convinced me that neither the IRS nor the program really likes business and personal finances mixed to that degree.) But we've settled into a long-term relationship now.

Why am I using Managing Your Money? It offers me Quicken's ease with the multiple-account capabilities we need to handle two VISA cards, cash

expenses, and a checkbook in our personal set of books, plus VISA, cash, and checkbook for our business books (we keep two sets of MYM accounts). The manual makes me laugh (I enjoy Tobias' sense of humor, though some find him too informal), and there are only about three things in the interface that I'd change if I could—mostly places where there's no keyboard alternative to mousing. As an added plus, I've come to enjoy the Schedule C estimator and Net Worth features of the program, even though I didn't notice Quicken's lack of them. And Lew likes it even better for data entry.

But What Ever Happened to Her Bills? You're always left wondering what happened to some key character at the end of most soap operas. But I'll tie up that loose end for you: I'm still doing my bills in Microsoft Works. Yes, I scrawl expenses and time in my appointment book, then get back to the office and hand-create invoices with a word processor (at least I'm merging in the customers' names and addresses from a client database).

This works for me because I only send out five or six bills most months, and each bill usually only has one or two items on it. A paper copy of the invoice goes in my filing cabinet, and is marked paid when payment arrives, almost always within 30 days. If anyone lags behind, "checking my receivables" consists of pulling out the invoices folder and scanning it for unpaid bills. It's very manageable.

A Challenge to Software Developers

This isn't to say I wouldn't welcome the Right Program if it ever came along. All I want is something that lets me enter all my time and expenses, and will spit the data out both to clients in the form of bills and to me, in the form of a reasonable income statement. Here's what this program might look like:

- It would integrate the time-and-billing functions of TimeSlips with the income-statement generating capabilities of a program like Quicken.
- Like TimeSlips, it would let me enter everything I do in a simple desk accessory. Unlike TimeSlips, it would let me include products in addition to time and expenses.
- Like Managing Your Money, it would be a multiple-account double-entry program that worked invisibly. I like having all my assets and liabilities (credit cards, checking accounts, pocket cash) properly adjusted as I spend money, without a great deal of effort on my part.

- Like TimeSlips, it would let me send out attractive bills with any amount of detail, and a mix of time, expenses, and products.
- Like Quicken, it would have a very Mac-like interface, with a sensible menu structure, and the flexibility to request a report on any combination of data I've entered.

I hope some software companies read this book—and especially this wish list. There's still a big hole in the marketplace, and an awful lot of us would buy the product that would fill that hole.

The Human Factor

It's important to keep sight of the fact that, no matter what program you use, keeping a set of good business books and using that information to steer your business to success requires regular data entry and accuracy. Even at its best, this kind of record-keeping is very boring, so you'll be tempted to put it off. There's no way around it: In the end, your books depend on your habits.

My general ledger is just a spreadsheet in Works. I do a breakeven and a profit and loss. I create monthly and quarterly and yearly spreadsheets, then I give it all to an accountant. As far as projections, I could be doing them in Works or in Excel if I took the time and made a real good business practice of taking even a half hour at the end of the day. I think it's just some human restrictions at this point.

Mary August, Graphic artist

5 Phone Dialers, Email, and On-line Services

Practical and understandable ways to use a modem

Telecommunications. It conjures up images of the kid in the movie *War Games*, who almost started World War III by fooling around with his modem. Or of white-collar criminals breaking into the bank's computer to pull off the perfect hands-off heist. At the least, it may evoke uncomfortable associations with an army of solitary cultural castoffs with inch-thick glasses whose entire social life consists of "on-line chats."

There are a number of valid reasons that a lot of very experienced Mac users, who feel quite comfortable and productive with a range of business applications, don't even dabble with communications. It's difficult. It demands the mastery of an obscure lexicon all its own. It's antisocial. It's un-Mac-like. And worst of all, it's unproductive: What can it really offer that will help you run your business?

I'm not going to disagree with most of that. It's true. Telecommunications—which can be defined loosely as anything you do that connects your Mac to something or someone else over phone lines—is perhaps the last frontier of business computing as it exists today. Until very recently, all the trappings of a pioneer experience were there: The paths were poorly marked, the costs of outfitting for the trip were high, and the reward at the other end was an uncertain one.

While telecommunications still has a long way to go to reach its full potential, there are many extremely useful and worthwhile products and services that are past the pioneering stage, and don't require a computer science degree. I'll talk about a few of them in this chapter, including:

- Easy utilities for phone dialing efficiency
- When to use FAX and when to use Electronic Mail
- How to use the only simple Email system in existence
- How to get help with hardware and software problems on line
- When to try other on-line services

If you're still skeptical about whether this chapter could possibly relate to you, think of it this way: You'd be lost without your telephone—you just couldn't do business without it. Telecommunications is just a bunch of services that enhance your use of the phone in business, the way a word processor enhances your handling of words and a spreadsheet helps with numbers. Give it a chance.

The Telephone

One good way to ease into the whole universe of telecommunications is to start with something that illustrates the potential of the Mac/phone line marriage in a relatively simple way. One of the most effective tools I use is a small desk accessory database that acts as an electronic Rolodex™, containing the names, addresses, and phone numbers of all my friends, clients, and other contacts.

It doesn't do much; it's just a list of people, with one simple telecommunications feature: The ability to dial a phone automatically. If you have one of those fancy phones where you can program in perhaps a dozen numbers you dial frequently, you know the idea. But a computer dialer expands that idea, by letting you have an unlimited number of choices instead of just a dozen. And some dialer programs add extra benefits unavailable on any phone, like the ability to create a log of your calls, complete with notes and the duration of each call.

Let's say I wanted to call John Sculley. I open the database, type in "Sculley," and the database turns immediately to his name, address, and phone number. Where I used to thumb through my business card file, find a card (after a long search under both A for Apple and S for Sculley), and then juggle the phone while I dialed, with a Rolodex/dialer I can simply click on a button when the right name and number appear on-screen. My Mac dials the number through my modem, while I hold the receiver.

This generic procedure for quickly locating names and dialing your phone is roughly the same in many popular programs. We'll take a close look at QuickDEX, one of the most popular dialers, so you can get a better idea of how the whole thing works. Then I'll say a few words about HyperCard, a dialer you probably already own.

QuickDEX

QuickDEX, a program I introduced in Chapter 1 for its name and address storing capabilities, is the dialer that I'm using now. I like it because it's

very simple and very fast. Once QuickDEX is set up and your names and addresses are in its database, you simply pull down your DA menu and open the program. The first record of your database appears on screen. Since your cursor is already in the Find line at the top of the screen, all you need to do is type in any part of the desired name or address, and press Return. QuickDEX jumps to the first card that contains your search text.

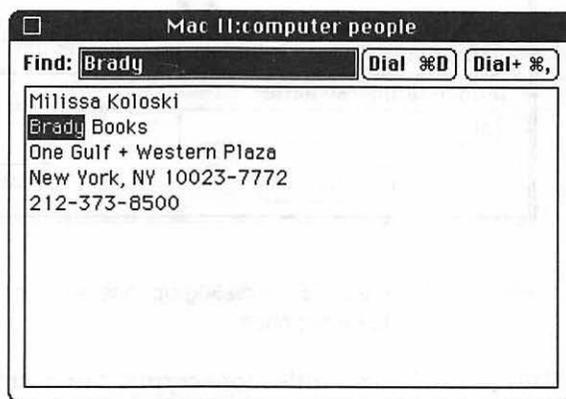


Figure 5.1 QuickDEX stores names and addresses, and finds them almost instantly. Then, you can dial the call over your modem by pressing Command-D or clicking on the Dial button.

In this example, I've typed in "Brady" to call my editor. All I have to do next is pick up the receiver on my phone, and click on the Dial button or type Command-D. Just as if I'd punched the buttons on my phone, I can hear the familiar touch-tone blips, and the call gets dialed. Once it's safely connected, my modem drops off again, unneeded, leaving me with an absolutely normal conversation.

That's the whole process from start to finish, one I repeat at least a dozen times a day. Now that you've seen how quick it all is, let's back up again and look at some of the parts of the process in more detail. I described the process of setting up your QuickDEX files in Chapter 1, so I'll focus here on the features that are used for dialing.

Dialing Details. You can dial with QuickDEX and most other dialers even if you don't have a touch-tone phone. (This is good news. Some programs only work with touch tone, when in fact it's the folks with rotary-dial phones who need an alternative more than anyone!) QuickDEX has a settings screen that helps you customize the program to your situation.

Always start a call with: <input type="text" value="ATDT"/>	Use the... <input checked="" type="radio"/> Modem Port <input type="radio"/> Printer Port <input type="radio"/> Macintosh Speaker
If Dial+, precede this call with: <input type="text" value="1"/>	Speaker Dialing volume (1-7) <input type="text" value="2"/>
If Option-Dial, precede with: <input type="text" value="9,"/>	The local area code is: <input type="text" value="603"/>
If Option-Dial+, precede with: <input type="text" value="102881"/>	<input checked="" type="checkbox"/> Always use Dial + on Long Distance
Terminate the call with: <input type="text" value=";H"/>	
<input type="button" value="OK"/>	<input type="button" value="Cancel"/>

Figure 5.2 QuickDEX's dialing options are very flexible, and only need to be set once.

This screen looks a little more cryptic, but it isn't really, and it illustrates the options you may need in any dialing program. Without rewriting the manual, I'll explain a few of the important ones. The first box is a modem command that almost all modems interpret as ATtention! Dial Touch tone. If you're using a pulse phone (rotary phones and some pushbutton ones—it depends on your phone service), just change this to ATDP—ATtention Dial Pulse. The next three automatically stick any extra numbers in front of the regular phone number on your name card: the first adds a "1" to numbers that are in your area code but are long distance; the second dials a "9" for an outside line, if required; and the third lets you put in a prefix for an alternate long-distance service if need be.

As you can see, no matter how your phone system works you should be able to set things up here so that all of your calls will dial properly without any human intervention. If you must dial extra numbers for long distance, and your phone doesn't have an auto-redial feature, a program like QuickDEX can really decrease the time and aggravation wasted by busy signals, too—it's so easy to keep trying when all you have to do is press Command-D.

Modem or No Modem? QuickDEX and other good dialers work even without a modem—a handy fact for those who don't own a modem, or whose modem is connected to a separate phone line from the one used for voice communications. There are two options for nonmodem dialing: You can use the Mac's own speaker, or a special gadget called a HyperDialer.

To use the Mac speaker, all you do is click “Macintosh speaker” on the setup screen, and the program will generate touch-tone blips from the Mac’s speaker. You have to hold the receiver near the speaker, and your volume must be loud enough for the phone to hear the speaker, so this approach is a bit trickier. Especially if you have a Mac 512 or Mac Plus, with their less accessible speakers, you may want to invest in HyperDialer, an external speaker that sells for \$20 to \$40, and connects your Mac to a touch-tone phone for use with dialing programs. I would tend to recommend HyperDialer more for those who already have a modem but it’s tied up on their second line: If you’re using a single phone line and do not yet own a modem, the cost differential between a \$40 Hyperdialer and a \$110 modem is worth spending for the added functionality of the modem. Buy the modem.

One Final QuickDEX Plus. Although we’re discussing automatic dialing here, it’s worth noting that a program like QuickDEX can be used for lots of other tasks. In addition to the letter-addressing function I mentioned in Chapter 1, QuickDEX is handy for virtually any database or note storage job that you’d like to have available in a DA. Use it instead of the Notepad DA for keeping your to-do list, or taking notes during phone conversations. You could also add a few short notes to any of your name and address cards while you chat on the phone, so that you’ll sound brilliant the next time a customer calls and you ask him whether his son Steve’s over the chicken pox yet. (QuickDEX is limited to a single small screen of notes, so you’ll have to keep it brief.)

QuickDEX also includes a print utility called PrintDEX that lets you dump your files to Rolodex cards or mailing labels, adding one more touch of versatility to the program.

One Final QuickDEX Drawback. As easy as it is to type in names and addresses in QuickDEX, you may already have a customer or contact list in some other program in your Mac, and you may prefer to dump that list into QuickDEX to save the bother of retyping it. Here’s where things get a little tricky.

All databases on any computer consist of little more than the data itself—words and numbers—and separators. These separators (sometimes referred to as “delimiters”) do nothing more than help keep the data organized—they make sure your zip code and phone number don’t get jumbled together, for instance. Mac databases usually use a Tab character to separate the fields of the database, and a Return character to mark the end of a record. Because this system is pretty universally observed, you can dump

data out of a FileMaker database and read it into Excel, or even take records from a database and put them in your word processor.

QuickDEX does not observe these Mac conventions. This means that you'll have trouble importing existing database records into QuickDEX *and* you'll have an even worse time getting data out. The manual does explain how to convert a standard tab-delimited Mac file to QuickDEX format, but you may have a bit of trouble understanding it if you haven't fiddled with text conversions before.

HyperCard's Address Book and Dialer

One good way to find out if a dialer is something you could use would be to try out the one you probably already own: the Address Book in HyperCard. Here's how things would work for the same call to my editor if I were using HyperCard's Address Book instead of QuickDEX:

- 1) Start by launching HyperCard.

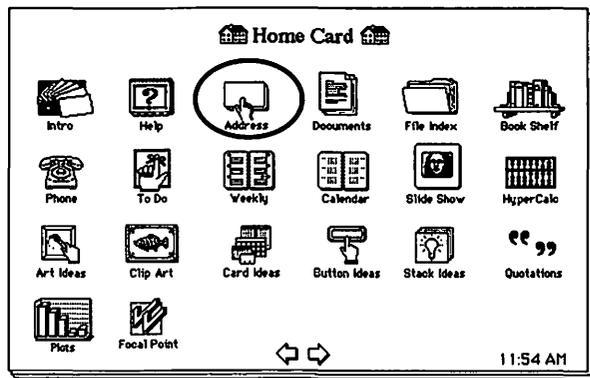


Figure 5.3 HyperCard's Address Book stack has many of the features of QuickDEX but it's a much more cumbersome program to use.

- 2) Once HyperCard is up and running, click on the Address Book icon in the Home Card. It's the one that looks like a Rolodex card.
- 3) Now you'll be in the Address Book. Next, enter the name of the person you're looking for, by selecting Find from HyperCard's Go menu (the keyboard equivalent of Command-F is even better), then typing "Brady" and pressing Return.

- 4) HyperCard will take you quickly to the first person whose card contains the name Brady anywhere on it. If it isn't the one you want (if "Nicholas Brady" pops up instead, for instance), keep pressing Return until you browse down to the right one. Just as with QuickDEX, you should be more specific if you want to lessen the chances of taking the scenic route to the exact card you want. Personally I find browsing quick and easy—easier than spelling names like Milissa Koloski.

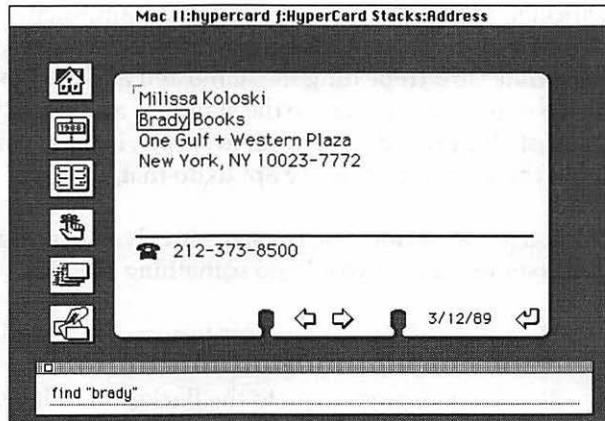


Figure 5.4 One drawback of HyperCard's Address Book is that it can only store one phone number, unless you know how to reprogram in HyperCard to change it.

- 5) Once the right card appears, click on the little phone icon, and your call will be automatically dialed.

As you can see, the process is very similar to using QuickDEX. You can set the Address Book for tone or pulse dialing, or use a speaker instead of a modem, and you can get the program to dial extra numbers for long distance or to get a local line, as well as to ignore a local area code. Its capabilities are very much like those of QuickDEX.

What's the Big Difference, then? There are two differences between QuickDEX and HyperCard's Address Book. Number one, and a very big one, is that Address Book requires you to use HyperCard, while QuickDEX is a desk accessory. Unless you have lots of memory and run under Multi-Finder with HyperCard open all day, you'll have to stop what you're doing and Quit your application every time you want to make a phone call. I doubt you'd find that that would contribute much to your productivity.

Even under MultiFinder, you've got several extra keystrokes or clicks to switch over to HyperCard and then open the Address Book, compared to opening the QuickDEX DA. I can only speak from experience in trying to convince you that these few extra steps make a big difference. I tried Address Book with MultiFinder when it first came out, and I just never bothered to use it. I use QuickDEX all the time.

The number two drawback of Address Book is that it's a lot less flexible than QuickDEX. It's set up to take only one phone number, while QuickDEX lets you enter anything you want, such as home phone and FAX number, in addition to a business number. You can put up with filling out a separate card (repeating the name and address) for each different phone number, or you can change the standard address-book card—after all, the point of HyperCard, according to Apple, is do-it-yourself programming. I don't think most people are apt to do that, though.

Just to give you an idea, the steps involved to add another phone number to the standard card would go something like this:

- 1) Change User Preferences to access the Authoring Level.
- 2) Know enough to go to the Background layer of the card, so that your changes will take effect on all Address Book cards.
- 3) Shrink the existing phone number field, and add a new field.
- 4) Copy the phone button so there's another one near the new field.
- 5) Figure out how to change field levels so that you can Tab to the second phone field right after the first one.

There may be easier ways to do this. I'm a typical user, with no HyperCard programming experience, and it took me about an hour and a lot of frustration to do this. (Which should tell you what you'll go through if you're like me.) User Preferences aren't in the menu—you have to know they're controlled from the last card of the Home stack—and changing field levels (if you can figure out what to look up in the manual) is completely counterintuitive: you put something later in the Tab order by selecting Bring Forward from the Objects menu.

These instructions weren't meant to lead you step-by-step through this process so much as to convince you that QuickDEX is a lot easier for most people. Even after I figured out how to do it, I went back to using QuickDEX.

Automatic Dialer Features

Given that two programs like QuickDEX and Address Book can be so similar and yet so different, what's the best way to assess such programs before you buy? To make sure you find out what you need to know, here is a list of some of the features you should look for in a combination address book/dialer program:

How do you access the program?

Is it a desk accessory or a full application? How many key-strokes does it take from the time you decide to make a call until you can hear the phone being dialed? Can you use keyboard shortcuts for all of the steps, or do you have to grab the mouse at some point?

How does it dial your call?

Does it require a modem? Can you use your speaker or a gadget like HyperDialer instead?

How does it handle area codes?

Is it smart enough to know your local area code, and skip it on any local calls? How easy is this to change if you're traveling to another part of the country with your Mac?

How many phone numbers can you include in a listing?

Most people have both work and home numbers, and perhaps a FAX number as well. Can you record them all, or is there just one space for a phone number?

How rigid is data entry in general?

Are you restricted to filling in a form, or can you record anything you want on each person's card? Can you use the program to keep track of notes, lists, and other data that have no relation to names, addresses, and phone numbers?

What are the program's import and export capabilities?

How easy is it to get data in and out of the program? If you have already recorded names, addresses, and numbers someplace else for some other purpose, can you easily pour them into your address book?

Can the program dial numbers that aren't in its address book?

Any program should allow you to easily type in a number that isn't in the book, so you can dial it quickly without making

a permanent entry. Better programs will also allow you to select any phone number from any document anywhere on your screen, and then execute the Dial command. This is especially nice for accessing phone numbers in existing spreadsheets, databases, and word processing documents. QuickDial, from the QuickDEX folks, has this capability.

Can the program keep a phone log of your calls?

Many programs—including Borland's SideKick, Mediagenic's FocalPoint, and a QuickDEX add-on—not only dial your calls, but also keep a list of every call you make, logging its date, time, duration, the number called, and maybe even the name of the person called and a few notes about the conversation. If you need to keep track of billable calls, or sort out your phone bill when it arrives, look for a program with this feature.

Does it feel right to you?

This is a very touchy-feely question, so I've left it till last. But it's probably the most important criterion of all. Dialing a phone is something you do repeatedly—maybe even a dozen times a day. If your dialer program isn't super simple and easy to access, it won't really help you work. It may be worth a few extra clicks and scrolls to open up your favorite word processor or spreadsheet. A dialer will just lie unused if the way it works isn't absolutely transparent to you.

Moving the Mail: What's the Best Service to Use?

Letters developed in the pretelephone era as a substitute for face-to-face conversation. Today, with the telephone, they play a different role, acting as the second part of the spoken-and-written one-two punch that is business communication.

Think of it: You almost never send a letter *instead* of calling someone or meeting with them (unless you're avoiding them...). You send letters to confirm that everyone said what they thought they'd said, to capture and store verbal transactions for later reference, or to share what was said with others who weren't present at the conversation. You might also create letters and other written documents to help you convey nonverbal information: plans and diagrams, for instance.

To work effectively as an adjunct to conversation, though, written words need to be as concurrent as possible with the spoken words they support.

That's the reason that many businesses gave up the regular mail system and moved to services like Federal Express; it's the reason that many of those same businesses are now moving some of their mail from FedEx to FAX and to electronic mail (Email), a system where messages can be sent directly from your computer to any other computer in the world.

None of these systems—FedEx, FAX, Email—is the “right” mail system for you to use in your business. I use all three, and I suspect most businesses have the same needs. Each suits different circumstances:

- If you're in the middle of a phone conversation and the person on the other end just isn't understanding your point, you can sketch a quick diagram and pop it in a FAX machine. Your colleague will receive it in seconds, for the cost of a phone call, and in no time she'll say, “Oh. Now I see what you mean.”
- You've worked for four days on the layout of a client's annual report, and the only thing left is to add quite a number of figures and charts to support the report's financial information. Since your client is generating this data from a spreadsheet anyway, you have him send it by Email, so you can work with the files without having to retype them.
- You have a 52-page lease from your landlord that you'd like your lawyer to review right away, and your FAX can only feed one page at a time. You call FedEx to take the whole mess away for next-day delivery.

You can figure out for yourself when you need a courier from Federal Express or some other national or local service. But here are a few summary thoughts on Email and FAX:

Use FAX for “reactive” work:

- To get someone else's written reactions and comments on your work.
- To communicate with people who don't have a computer and modem.
- To send documents that weren't created on the computer.
- To share written documents while you talk.

Use Email for “interactive” written work

- When you want someone else to make suggested changes to your work
- To collaborate with someone else who is using the computer for his part.
- To avoid telephone tag in voice communications.
- When you want to send a document to a large groups of people: Email makes it easy (perhaps too easy!) to “copy” the same document to a number of people.

Email is great for documents that need to stay “live”—in editable form as they go through several stages of work. FAX is great for documents that are “frozen” on one end or both—either they’re not generated by a personal computer, or don’t need to be used again on one at the other end, or both.

FAX and Your Macintosh

For a FAX machine, you can get either a dedicated device, or you can get something called a *FAX modem*. While a FAX machine takes printed documents and sends them over phone lines; FAX modem takes electronic files from inside your computer—without printing them—and sends them to another FAX machine or FAX modem.

If you’re a heavy computer user, this may sound like a sensible system: why not eliminate the middle man (the printer), since you use your computer to create almost anything you might want to FAX to someone else? Don’t buy that argument—and don’t buy a FAX modem. Here’s why:

- You must leave your computer on all the time in order to receive FAXes. Even if you’re a typical Mac user who has the machine on 12 hours a day, imagine how awkward it would be if your phone only worked when your computer was on!
- There’s no advantage to having incoming documents arrive in electronic form: You won’t be able to edit them in your word processor; all you can do is print them out, substituting your own printer for this part of the FAX process.
- You may have to buy a separate modem for other computer communications tasks; many FAX modems can’t double as regular modems.

These arguments reflect the state of FAX modems as I write this in 1989. Already things are starting to get better: one new model stores up to eight FAX pages in an electronic mailbox if your computer’s off, and more FAX modems are able to function for normal modem chores. But for now, a dedicated FAX machine makes much more sense, and can be had for only a bit more money than a FAX modem.

Unless you have special software like BackFAX that lets your FAXmodem run in the background [under MultiFinder], you basically have to turn your \$5,000 Mac into a high-priced FAX machine every time you’re expecting a FAX. You have to have the FAX software loaded and running, and sit there waiting. You can’t use your machine for anything

else. And images you receive are enormous: one page can be as much as 200300K. A three-page FAX can take up immense amounts of file space and may take up to 20 minutes to print out on a LaserWriter. You're talking total tie-up, on both ends.

The only really good thing about the FAXmodem is that the image is really nice. You install special fonts in your System, so when you send to a conventional FAX machine, the recipient gets excellent quality—they'll rave about it.

Keith Thompson, Newsletter publisher

An Absolutely Personal Aside

Get a FAX machine. I resisted this for a long time, thinking I wouldn't really use one much, and that it would be difficult to use. But I started to get more and more of those calls where people say, "I'll FAX it to you. What's your FAX number?" I used the outpatient FAX service at my local Sir Speedy quick-copy store for a few months, but it just wasn't the same: I had to go pick up the FAXes, and I had to pay for each page.

Get a FAX machine (and an extra phone line to go with it). They're very easy to use (you lay your document down, dial the phone number, then push the send button); you'll wonder how you ever got along without it. I know this has nothing to do with the Macintosh, but it has everything to do with running a professional, efficient business, so I just had to put it in.

Electronic Mail: MacNet

If, as I mentioned above, you're collaborating with colleagues on computer-based projects, you'll want to explore the benefits of electronic mail. Although there are a few other reasons you might want an Email program (see Electronic Libraries, below), this is the most important one.

Just as you know you need a FAX when enough people say, "Can I FAX it to you?", you'll know you need Email when enough people say, "Can I send you the file?" Maybe this is happening already: maybe you're constantly having to get together with a colleague to exchange floppy disks, or you've been sending them through the mail optimistically labeled "Please Hand Stamp." (Maybe this has never happened to you—in which case I won't be offended if you skip right to the next section.)

But you may have seen Email as a daunting area, one that would require you to know a lot about modems and baud rates and protocols; one that

would result in nothing more than larger phone bills and a smaller self-image. This has been true in the past, largely because these services were designed to be used by anyone, with any kind of computer, in a decidedly least-common-denominator approach. This meant that:

- Most services can display no more than 40 characters across the screen, since some low-end computers can't exceed this.
- Most services use no graphics whatsoever, since different computers handle graphics in very different ways.
- Most services require you to type cryptic commands, instead of using the pull-down menus and icons you're used to.
- Most services let you send text messages only, rather than reports with formatting, spreadsheets with formulas, or newsletters with graphics.

For many Mac users, the culture shock just isn't worth it. (First there's all that jargon to remember, and *then* they expect us to give up everything that's Mac-ish. Sheesh!) There is one service, though, that was designed specifically for Mac users, and runs with a great Mac interface. Its called MacNet, from Connect, Inc., and it uses Mac menus and icons, and can send fully formatted files as well as text messages. What's more, it lets you connect not only to other Macintosh users but to PC users who use its sister product PC/MacNet, and to users of other personal computers on other Email services. I'll show you how it works, so that you can get familiar with a useful service, and so that you will know the yardstick by which Mac users will want to judge any other service.

Getting Started with MacNet

Let's say you're collaborating with another Mac user on a 40-page marketing report, and you've decided to use Macnet to send work back and forth. First, you'll both need to buy a modem and cable. Phone wires, as they currently exist, are designed to carry phone conversations rather than computer data. The modem's job is to change your computer signal into a phone signal; on the other end, your partner's modem changes the phone signal back into a computer signal as the data arrive at his computer.

Don't deliberate unnecessarily over which modem to buy. Buy any brand, but check two things first: It must be Hayes compatible, and it must be able to work at a minimum of 1,200 baud. "Hayes compatible" means that it understands the same commands as modems made by Hayes Micro-

computer Products, a leading modem maker and industry standard. It doesn't mean you actually have to buy a Hayes modem, which, while it's a good modem, is usually much more expensive than the "we-try-harder" brands.

The "baud rate" of a modem describes how fast it can send and receive data; it's loosely equivalent to how many bits per second the modem can handle. (For estimation purposes, eight bits make up each byte in a file, and each byte represents a letter, so a nine-letter word like "Macintosh" would take 72 bits (9 bytes of 8 bits each) .) If you can afford a 2,400 baud modem, spring for it. But a less expensive 1,200 baud modem will be adequate unless you're sending huge graphic files back and forth—then you'll want the twice-as-fast 2,400 baud modem. (There are utility programs that compress files to save you up to half the transmission time of sending large files. I use StuffIt, an \$18 shareware program from Raymond Lau.)

The modem has two connectors—one for the cable that connects it to your Mac's modem port (the one with the little phone icon), and the other for a piece of phone wire that connects it to the nearest phone jack. The modem does not need to have its own line. Pop out to Radio Shack and get a two-way phone-jack adapter, so that both your modem and your phone (and even an answering machine) can share a line.

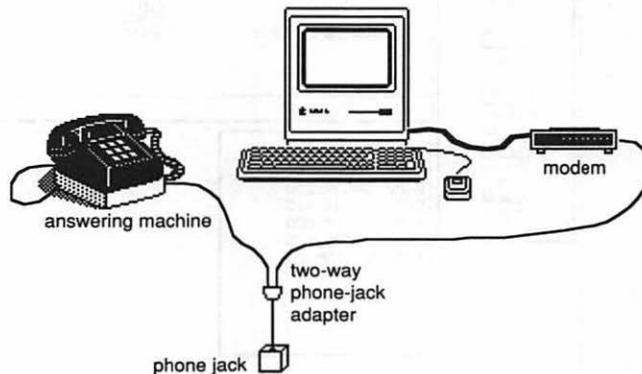


Figure 5.5 A second phone line is not required: You can plug your phone, modem, and answering machine all into the same phone jack without any problem.

Once everything's hooked up, follow the instructions in the MacNet manual to put the MacNet software on your hard disk, and to get a few

simple set-up choices set the way you want them. I won't duplicate the manual here, as it's clearly written, but basically you're asked to tell MacNet whether you have a touch-tone phone or a pulse one, and your modem's baud rate. It's quite simple, and you do not need to know any telecommunications jargon beyond the meaning of baud rate—which I just told you—to get things set up right.

This is a big advantage of the MacNet system: Many Email systems require you to use a general telecommunications program, most of which are full of jargon and options you may be hard put to understand (I am). Connect, Inc. understands that you don't want to become an on-line hacker; you simply want to get on with your business as efficiently as possible.

A Sample MacNet Session

So, with everything set up, you're ready to send a file to your colleague. With your modem on, you'll double-click on the MacNet icon in the Finder, launching it as you would any other program. Shortly you'll see familiar Mac pull-down menus and a series of reasonably understandable icons:

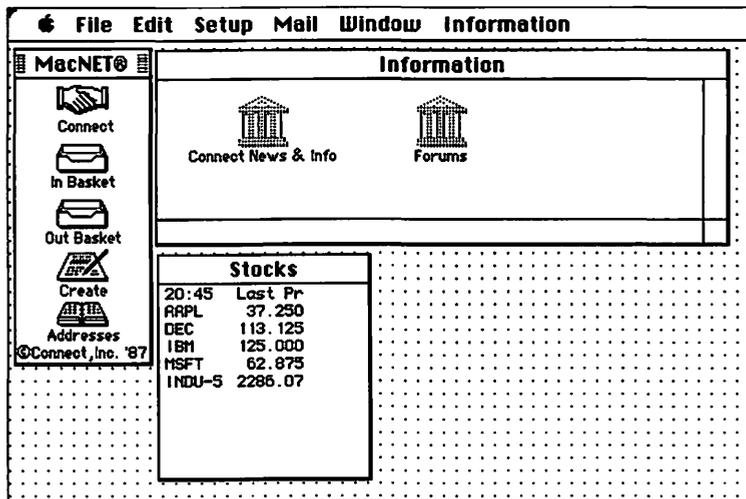


Figure 5.6 MacNet uses understandable icons to connect to its service, send or receive mail, create a letter, check an address, or join an on-line forum.

The icons on the left are all involved with sending and receiving mail; those on top are your gateway to software support and other on-line information. (Those are bonuses you get, along with MacNet's Email capa-

bilities. More on that in the next section of this chapter.) Notice that the top icon on the left says Connect. You'll click on this when you're ready to actually hook into MacNet. However, it's usually easier and cheaper to get your mail ready to send before you actually connect. (Even though MacNet's not expensive, it's easy to get rattled when the meter's running.)

Let's say you're done with a part of the report, and you're ready to exchange information with your colleague. You might create a letter that looked something like this:

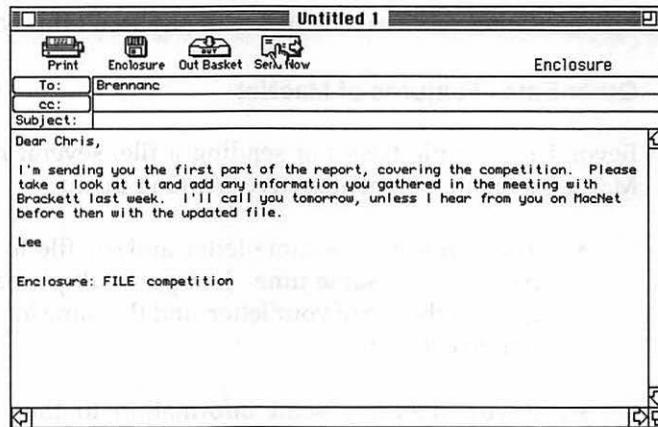


Figure 5.7 A typical MacNet letter consists of a text message, with or without an enclosed file. Enclosed files can be in any format.

Several important features of MacNet are apparent in this single screen.

- You don't have to use cryptic account numbers for addressing your messages. Each subscriber picks his or her own ID. Most people use their last name with the first letter of their first name: Chris Brennan, here, has chosen an ID of BRENNANC.
- You can enclose any kind of Mac file with a letter. Your colleague on the other end will be able to read whatever you send: If he does not have the appropriate program to open the file, you can tell MacNet to create a graphic image of the file—an uneditable on-screen piece of paper—that he can read.
- All you need to do when the letter's complete is click on Send Now, as shown above. MacNet will automatically dial up the Connect Inc. computer and send the letter and its enclosed file to the person it's addressed to.

Actually, your letter and its enclosed file go to the huge computer that Connect Inc. keeps in California. There, it's kept in an electronic mailbox, until Chris signs on to collect his mail. Picking up mail is even easier than sending it: As soon as you click on the Connect icon, any mail that's waiting for you is automatically sent over the wire. Each letter shows up on your screen in its own window, just like a word processing document would; you can save it on disk or print it out (usually after you've disconnected).

While there's lots more that MacNet can do (as you'll see below), that's really all you need to know to make productive use of its electronic mail service. Other services like MCI mail just aren't this easy.

Other Email Features of MacNet

Beyond the simple basics of sending a file, several more features make MacNet's Email system attractive. Among them:

- You can send the same letter and/or file to more than one person at the same time. Just put multiple names in the TO: space at the top of your letter, and the same information will be sent to everyone.
- If you regularly send information to the same groups of people, you can enter their names once, designate them as a group, and automatically address mail to everyone simply by typing the group's name in the TO: space. MacNet will look in your own personal address book and see who's included in the group, to save you retyping a long list every time.
- You can check to see who's read the mail you sent by looking in a folder labelled "mail that has been sent," in your Out Basket.
- You can use MacNet with PC users who have bought PC/MacNet. The service is exactly the same, and works identically on the PC under Windows. Be aware that, although PC and Mac users can read each others' letters without any problem, enclosed files may have to be translated before your applications can read them. (I recommend my previous book, *The MS-DOS—Mac Connection* (Brady 1988); for a complete discussion.)

MacNet Gateway to MCI Mail

In the very early days of the telephone, those who picked up the phone could only communicate with others who were customers of the same

phone company. Our interstate—and now international—system, where anyone can talk to anyone else, around the country or around the world, came later.

Email is today where telephones were at that early stage. Individual Email services are just starting to make the transition from a system where subscribers can only communicate with other subscribers of that same service to one where you can send files to anyone else, on any service. In early 1989, MacNet initiated a connection—known in Email circles as a *gateway*—to MCI Mail, a very popular Email service.

With the MacNet/MCI gateway in place, you can send a message and even a file to someone who subscribes to MCI's Email service. And they in turn can send a message to you on MacNet. It's basically a very simple forwarding service. Your message might look like this, instead:

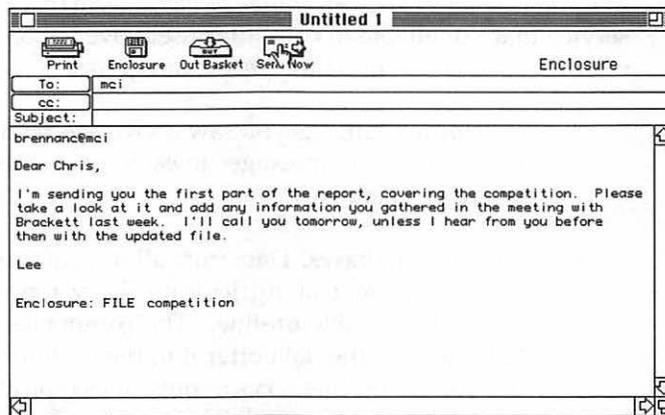


Figure 5.8 If your colleagues use MCI instead of MacNet, you can have your messages forwarded to their MCI mailboxes over MacNet (and they can contact you the same way).

First, you would put "mci" in the TO: space, to tell MacNet that the message should be sent through to MCI. Then the first line of the text area must contain the recipient's MCI ID, followed directly by @MCI. This line is used by MCI to deliver the message to the right "mailbox" when it enters the MCI Email system; the line is then stripped out so the recipient never sees it.

On the MCI end, your colleague will use a similar system to tell MCI that he wants to send to you, passing both your MacNet ID and the fact that

you're on "Connect" (MacNet goes by its corporate identity beyond its own borders). Except for the fact that MCI is not as Mac-ish and friendly to begin with, the whole procedure is relatively simple. The only difficult part happens when you want to send files rather than just simple messages: Since the MCI service cannot normally handle formatted files, MCI users will have to buy special software like Lotus Express (for the PC) or Desktop Express (for the Mac) to receive files or send them.

The system does work, and it's not too difficult. But one thing you might include in any message you send through the gateway is a plug for MacNet. Your life will be easier if you can convince anyone with whom you regularly correspond electronically that they should get MacNet.

What Is an On-line Service?

MacNet is what's called an *on-line service*, a term that basically includes any service that's available to computer users over phone lines. The services offered typically fall into three major categories:

- **Electronic Mail.** As you saw above, electronic mail lets computer users send messages to each other through a system of electronic mailboxes.
- **On-line Databases.** Data from all sorts of sources—AP News, U.S. Department of Agriculture, Dow Jones, and hundreds more—is available on-line. The companies and institutions that originate the data offer it to the on-line service company for a fee; the on-line service companies typically offer access to several dozen different databases, either for a flat hourly fee, or for fees depending on which database is being used. These services can be thought of as on-line libraries, offering either the information itself or bibliographic listings of where it can be found in books and magazines at your local library.
- **Forums and Bulletin Boards.** These two similar services are a cross between electronic mail and on-line databases. Typically, these services let you post a public message—just as you would on your neighborhood supermarket bulletin board—that others can read and respond to. This is a great way to get help with hardware, software, and maybe even business problems by posting a question then waiting to see who answers. Or, you can learn a lot simply by browsing through the questions and answers other people left.

Different on-line services offer different combinations of these services. MCI Mail, for instance, offers electronic mail, with a few other mail-type services thrown in, such as FAX and TELEX transmission. Dialog doesn't offer any electronic mail or forums, but includes over 200 different databases you can access, many for some rather steep hourly fees. CompuServe, perhaps the most widely used personal computer on-line service with over 350,000 subscribers, includes literally hundreds of services and forums as well as Email. MacNet offers a few databases, many forums, and electronic mail.

I'm using this library database, BRS Colleague, that's been astounding. I'm able to search all these databases from home, looking for journal articles or references to textbooks on particular subjects. It lets you search by word or combinations of words, or by authors. That's important, because a lot of the information that I'm looking for cuts across many disciplines.

It's pretty simple to use, but I'm glad I'm not paying for it out of my own pocket. The hardest part is getting hooked up to it, but once you're hooked up, there are so many prompts it's easy. Having the database makes a big difference. It means I'm better informed about things I ought to know. I can do this while I'm at home, without being away from my family, then the library gets the articles for me.

Paul Duffly, psychotherapist

Problems with On-line Services

Before you get all excited, let me reiterate that the potential of this type of service is way ahead of the reality. It *would* be wonderful to have fingertip instant access to all the knowledge of the world from our own personal computers. But that's not the way it works today. The biggest problems are:

Complex Information Structure

Many of the services—especially the on-line databases—are immensely complex. In order to find the information you need, you must learn special search skills to help you navigate through the service. Dialog, for example, recommends that you take its day-long how-to-use-Dialog seminar before you can find the data you want in its databases cost-effectively. (It can be done without the seminar, but you will waste hours of time, and a great deal of money, and raise your blood-pressure level by several notches.)

The services are very sequential: Like digging through folders in the Finder to find something, you must work hierarchically through most on-line services, narrowing down your request at each step to get what you want. As you hone in on the desired information, you're limited to seeking according to specific criteria mandated by the service. For instance, I went to look for a reasonably-priced used Mac for sale on the Boston Computer Exchange's area of CompuServe. Since I could only search its database by price, manufacturer and type of equipment (disk drive, printer, monitor, etc.) I had to slog through 62 Apple II listings to get to the Macintosh choices. There was no place where I could specify, "Oh—just the Macs, please."

This hierarchical information structure also means that "close ain't good enough," as they say. If you don't get what you want, you must usually back up a few steps in the hierarchy and make a completely new request—you can't "go sideways" to find information that conceptually ought to be "right next to" the information you found.

If you've ever used a library with closed stacks, you know what I mean: With closed stacks, you must specify an exact book title and author to the librarian, who takes about five minutes searching for the book, then comes back and says, "It must be out. I couldn't find it." You can't say, "Well all right. Give me whatever you do have on this topic"; you have to make out a whole new and very specific request, and start over. With open stacks, you go look for the book yourself. If you don't find it—or it doesn't turn out to be as interesting as you'd hoped, you can browse the shelves yourself until you find something better.

To be fair, with most of these services, if you know exactly what you want and where it is, there are ways to tell "the librarian" that you want a range of possibilities. But this gets very complex, and is somewhat akin to learning to speak Urdu.

Text Interface

Most of these services, as I mentioned in conjunction with electronic mail, have an absolutely atrocious text interface that can be very hard for Mac users to stomach. While it's true that these are not difficult interfaces—you're usually picking a number from a menu, over and over again; only a few insist you type commands—they're tedious. In some cases, there's an add-on product available that can be used as a front end on the Mac: MCI Mail has one called Desktop Express, and CompuServe offers its own CIS (CompuServe Information Services) Navigator. In other cases, though, there's no alternative to slogging through a complex text interface.

Even when there is some sort of Mac add-on that is supposed to make your life easier, check out what it actually does. Desktop Express, for instance, actually substitutes entirely for the text interface of MCI Mail. CIS Navigator substitutes a nice graphic interface only for using CompuServe's electronic mail and its forums. If you're doing electronic shopping, getting stock quotes, and other services, you're thrown back to the world of text. If you're a regular CompuServe user, Navigator has other features that save you on-line time, too—but it's not a complete interface for CompuServe.

Keep in mind that text-versus graphics is not the only difference between the Mac interface and that used on many other computers. It's also part of Apple's programming guidelines that programs should be nonmodal (which basically means that all choices should be available at all times and that the same actions should always produce consistent results), and that your working rhythm is built on a pattern of "select something-do something," sometimes referred to as noun-verb syntax. The fact that on-line services limit your choices, beep at you when it "isn't the right time" to do something, and often use a different working rhythm makes them especially counterintuitive for people who feel most comfortable with the Mac. PC users may feel a lot more at home with on-line services, due to the different syntax and inconsistent text interface of most PC programs.

High and Unpredictable Costs

Many services are expensive. Some of the databases on Dialog cost over \$100 an hour to use, on top of Dialog's own access fees. CompuServe and MacNet both charge by the hour, with CompuServe at \$12.50 an hour and MacNet at \$4 or \$8 an hour, depending on the time of day. Many services charge a flat minimum fee per month, whether you use the service that month or not. MCI Mail doesn't charge for the time you're connected to its computers, but instead charges by the message, usually about 50¢ for a simple text message and a few dollars to send a three-page article.

Luckily, most services have arrangements with special telephone networks so that many people can access them with a local phone call. If you're in a major city, virtually any service is available to you without long distance charges. In a large town, some services will have local numbers and others won't. In small towns, you'll have to call the nearest big-town number—which can be expensive, since intrastate long-distance rates are often quite steep. Any service you subscribe to will provide you with a list of all the possible phone numbers you can use to access the service. Price out your options: Sometimes calling the nearest out-of-state number costs less than an in-state one.

Wherever you live, using on-line services can mount up. I check my mail on MacNet daily, and send maybe eight messages and two files a week; my monthly bill is about \$30, which I consider reasonable. If you went onto CompuServe for an hour a few times each week to check the forums for tips and chat with other users, though, your bill would be \$100. Except in the rare case of a service like MCI Mail that charges by the unit, the meter is always ticking as long as you're on-line, and it mounts up.

Too Sloooooow

These services are frustratingly slow: If you log onto any on-line service, you won't see the sort of instantaneous response you're used to when you work with your own spreadsheet or word processor. In text-based services, information scrolls on screen at a leisurely pace, punctuated after each screenful by a "Press <<CR>> to continue" message. While you drum your fingers and mutter, "So let's get on with it, okay?" the service spoon-feeds you one screen after another.

In part this is because the average modem speed of 1,200 bits per second is really very slow. When you consider that data move across an AppleTalk network at 230,000 bits per second, or between your Mac and a SCSI hard drive at up to 1,200,000 bits per second, it hits home that data entering your computer via modem really crawls. And 2,400 baud, while it's twice as fast, is still awfully slow in comparison to drives and networks. Even faster modems exist, but in most cases your phone lines garble data transferred any faster, or the service itself uses slower modems (on the other end) so the data couldn't arrive any faster if it wanted to.

In fact, the services themselves can be so slow that your 1,200 baud modem will sometimes be waiting for the service, rather than the other way around. On-line services use large mainframe computers, the performance of which varies according to how many users are hooked up at any time. You'll often see a marked difference between the performance of a service during peak business hours and late in the night (which is, of course, why most services charge less at off-peak hours, to spread the load).

Eye Strain

After an hour on a service like CompuServe, you'll feel like you're going blind. Information scrolls on-screen line by line at 1,200 baud, and it's just human nature to read it as it comes: It's what you just asked for (hopefully) and you're impatient to get on with things. The human eye was not designed to read moving letters in 9-point Monaco font, and services don't give you a choice of your screen font. Things are a bit better on a graphical

service like MacNet: Information arrives slowly, but you usually won't see anything until the whole screenful is ready, and a scroll box gives you access to additional information, in place of the "Press <<CR>> for more" message of a text service.

The culprit here again is speed: when you quickly scroll through a spreadsheet or word processing document, you don't feel seasick because the information reappears quickly, and there's no temptation to read it before it stops. But it's unlikely to improve until our country's entire phone system has changed over to fiber-optic cables designed for high-speed data transmission in addition to voice.

Into the Jungles of On-line Services

You'll have to judge according to your own circumstances whether it's worth overcoming the very real obstacles to use on-line services. In an effort to settle this question for *The Macintosh Small Business Companion*, I polled users across the country who were nice enough to volunteer to tell me how they used the Mac in their small businesses. I found only one user of on-line services, and he was a volunteer on the service.

So, failing that, I decided I'd have to get the information on my own. I then explored areas of MacNet that I hadn't yet seen, and got a subscription to CompuServe—a temporary complimentary account from their marketing folks, which let me explore everything without worrying about the cost. While the information I sought was not all business-oriented, the issues and answers I encountered in hours and hours of on-line experimentation will, hopefully, help you decide whether services like these will help your business.

Travel Reservations

CompuServe offers at least three services that are designed to help you find the flights you need for business and pleasure travel. I tried three of them—the Official Airline Guide (OAG), Eaasy Sabre (American Airlines' service), and TravelShopper (a TWA service). Since all three services offered listings for all the major airlines, not just for one company, I set out to find the best flight for an actual upcoming business trip to New York and Austin, Texas.

All three services turned out to be too time-consuming and frustrating, although TravelShopper was the least irritating. I wanted to say, "Find me the cheapest flight you can that leaves sometime in the morning." OAG and Eaasy Sabre wanted me to specify an airline and airport (by code, please:

and LaGuardia and Kennedy are not interchangeable) to start. Then I could see a list of possible flights. Finally I could ask to see the fares for all the flights on the list, one at a time, then check on fare restrictions one by one.

TravelShopper let me see both flights and fares at once, and seemed less cryptic to me. And it's probably true that there are more direct ways to use Eeasy Sabre and the OAG to get what you want: After all, that's basically what travel agents are using when they tap all the keys on their little terminals. But travel agents are trained to do this sort of thing, and I was just a typical intelligent-but-bewildered user. In the end I called up my agent, and got the flight I needed in about ten minutes.

Since I don't give up easily, I went back into TravelShopper and the ABC Hotel Database to try to find hotel rooms in France for an upcoming vacation. In this case, TravelShopper failed me: My requests for listings under \$50 in a few medium-size cities in France were returned with SORRY THERE WAS A PROBLEM WITH YOUR REQUEST. Typically cryptic: I had no way to find out whether there weren't any listings in the database that met my criteria, or if I had pressed the wrong key in making my request.

The ABC database was better, but still typical of a sequential on-line search. I started by picking Europe from a list of countries, then typed in France for my country choice, and Carcassonne for the city. It found several, so I decided to narrow down the search by price:

```
CompuServe                QK0-100
1 Display Hotels List
2 Narrow by Price Range
3 Narrow by Exact Hotel Name
4 Narrow by Hotel Chain
5 Narrow by Location/Amenities

6 Restore Previous Selection Set
7 Begin a New Search
8 Exit Search

Enter choice 12
```

This in turn lead to a screen that offered me a chance to roughly specify my budget needs. (See figure at top of following page).

Choosing to see the cheapest listings didn't give me hotel descriptions—instead it sent me back to the “see listings, narrow by...” menu in the previous step. There's no way to make more than one choice from this

screen (say, to get all Hiltons under \$100), which is all too typical of the tedium of on-line systems.

```

All prices reflect current
information and are subject to
seasonal fluctuation, currency
adjustments and other changes
without notice.

1 High      ($100 and above)
2 Medium to High
3 Medium    ($50 to $100)
4 Low to Medium
5 Low      ($50 and under)

Enter choice 15

```

Now I asked to see only those in the city center:

```

CompuServe          QK0-115

1 At Airport      8 Air Condi.
2 At City Center  9 Telephone
3 On Beach        10 TV
4 Resort          11 Bar/Hotel
5 Business Ctr.  12 Fitness Ctr
6 Conf. Center    13 Restaurant
7 Entertainment  14 Coffee Shop
15 Parking/Hotel 22 Handicapped
16 Outdoor Pool  Facilities
17 Indoor Pool   23 Porter 24 hr
18 Golf          24 Casino
19 Tennis        25 Babysitting
20 Motel         Services
21 Watersports  26 Pets Allowed

Enter choice or <CR> for more 12

```

And finally, after one more trip back to the “see listings, narrow by...” menu, I got to see my listings. (See figure at top of following page.) At first just their names appeared, but I could specify details, one at a time, with a trip back to the list of names after each one. I wished for an “expand all” command and a scroll bar, so I could browse through the whole list with details, but it wasn’t possible.

I did find some choices in the ABC database, but the prices and descriptions were better in the copy of *Let’s Go: France* I picked up at my bookstore the next day. I had spent about \$7 on-line for one session; the guidebook

cost me \$11.95, but I could read it in my hotel room on a rainy day, and I could keep it for future use, unlike the session with the database.

```
ARCADE HOTEL
5 SQUARE GAMBETTA, 11000 CARCASSONNE,
AUDE, FRANCE
Tel: 68.72.37.37 Tx: 505227
Location: City center

Accommodation: 48 Rooms
Rates
    Single with bath: $29
    Twin with bath: $30
Credit Cards: Carte Blanche, Visa
Facilities
<In Rooms> Direct dial telephone
<In Hotel> Bar, self parking, facilities for handicapped
```

Shopping

Next, I tried shopping for a few business and personal articles on-line. A client had given up waiting for a Mac laptop, and had decided to put up with a DOS one, just to have *something* on the road. So I dialed into the Boston Computer Exchange, a service offered on CompuServe by one of the leading used-computer companies in the country. This was one jaunt that didn't work out too badly. I got frustrated, though, as I mentioned above, with the limited querying capabilities of the system, but being able to see the choices and details on each one was highly preferable to trying to call the BCE by phone, and keep all the options straight in my head. BCE's system is set up so that when you find a few listings you like you enter your name and phone number, and any questions you have about your possible choices, and an employee calls you back the next day to chat.

Shopping for the used computer made sense because there was no easy alternative; used computer stores and private sales are few and far between, and this on-line service offered a better way, especially since it provided for human interaction to step in at the appropriate time. In contrast, there's not much sense in shopping for most things on-line. For example, Brooks Brothers (the classic uppercrust clothier) is now on line with selections from the store's catalog. Even though I needed a new blouse, I passed on sending \$50 to the Brothers, when I couldn't even see what the blouse looked like. And I would never buy computer software on-line when I can make an 800-number call to Mac Connection, talk to a knowledgeable human who will answer all my questions, get a good discount, and get nextday delivery.

```

22 Kaypro 2000 EL (Laptop) $675.00
23 Morrow Pivott (Laptop) $800.00
24 NEC 9201-A (Laptop) $375.00
25 NEC Multispeed (Laptop) $850.00
26 NEC Multispeed (Laptop) $750.00
27 NEC Multispeed (Laptop) $1175.00
28 NEC Multispeed (Laptop) $800.00
29 Panasonic FH 2000 (Laptop) $850.00
30 Radio Shack 100 (Laptop) $360.00
31 Sharp PC-4502 (Laptop) $1200.00

enter choice 1 26

Boston Computer Exchange

Listing #22009          Date: 3/01/89
Type: Laptop          Age:
Mfr: NEC              Qty: 1
Model: Multispeed

Memory:      640 K RAM
Disk Drives: 2 @ 720 K
Monitor:     LCD Monitor

DESCRIPTION: Par + Ser Port, Manuals
Price:      $750.00 (US)

Refer to #22009 to inquire about this listing.

```

Figure 5.9 You can shop for used computer equipment on CompuServe, in an area run by the Boston Computer Exchange.

I'll feel a little warmer toward on-line shopping when the graphics and text capabilities of on-line services—and their speed—improve to the point where full-color catalogs from all my favorite stores can be available on-line. When I can say, "Do you have it in another color?" When I can ask questions interactively about a piece of software's compatibility with Multi-Finder or my favorite DA. In the meantime, I'll only shop for things I can't get better, cheaper, and easier some other way.

Computer Support

Both MacNet and CompuServe offer hardware and software support from many major vendors. Here's the way it works. Support people from many of the major software and hardware companies maintain their own special areas of MacNet and other on-line services, where users can post questions. The support people check in regularly to see what questions people have left, and answer them. Sometimes a user who comes to leave a question answers another user's question. In this way, these sections are a lot like a specialized user group (see Chapter 10 for more on user groups).

You find the right group you need by working your way down a hierarchical system of folders, to gradually focus in on a particular company. When you first log on to MacNet, you'd click on the Forums icon on the opening screen. (Shown in Figure 5.10, on following page).

That leads you to too many layers of folders to get to where you want to be. Clicking on Forums would show you a list of choices (Business & Pro-

fessional, Education, GoverNET Forums, Health & Human Services, News & Media, Personal Computers, and Anonymous Forums (Private); you'd open the Personal Computers Folder and then you'd choose Macintosh.

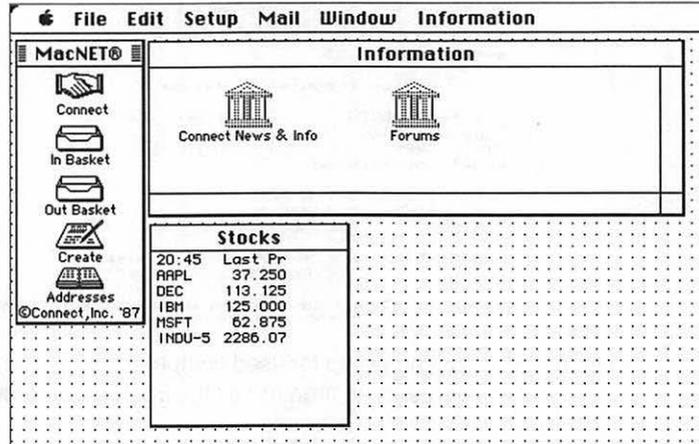


Figure 5.10 If you select Forums from MacNet's opening menu, you can access dozens of on-line question-and-answer areas run by leading software and hardware vendors.

Finally—almost there. A list appears of all the Macintosh-related forums. This list is changing all the time, as more and more companies decide to get active on MacNet, but this is how it looked as I write this.

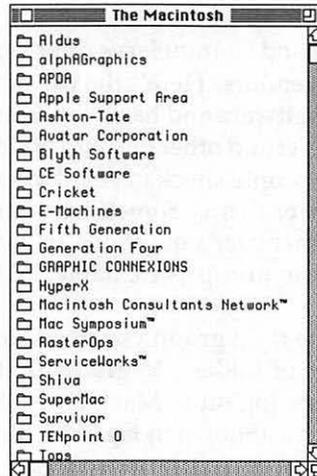


Figure 5.11 Companies join MacNet's software support forums all the time. This list shows some of those available in Spring, 1989.

Now it's a question of your needs: What's your problem, and what information are you looking for? When I was working on a big project in PageMaker last year, I used to pop into the Aldus forum from time to time, and find tips and shortcuts that Aldus had posted, questions from users, and solutions and bug notices, many of which were pretty useful.

Let's say you're using Suitcase, from Fifth Generation Systems, and you're having some strange problems every time you run PageMaker. You'd double-click on the Fifth Generation folder, and open it up, to be greeted with (at last!) something more than another folder:

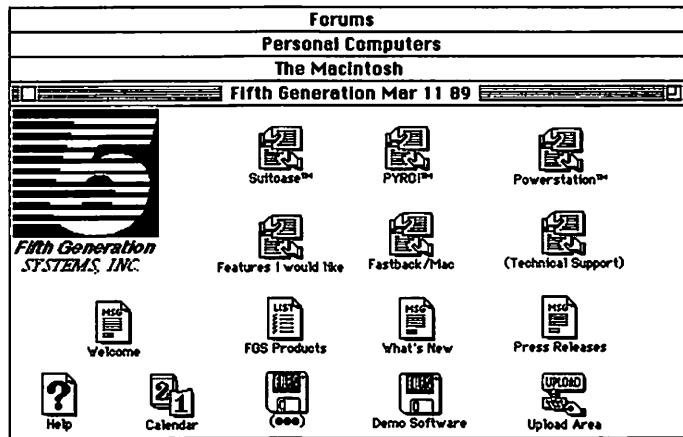


Figure 5.12 Most on-line support forums are a lot like this one run by Fifth Generation Systems.

The Fifth Generation Forum is typical of the better software support forums. There are areas for each of the company's major products (Suitcase, PYRO!, Powerstation, and Fastback/Mac). There is access to demo versions of some of Fifth Generation's products, and copies of press releases and announcements. There are areas like Welcome and Help that give you information about how to find what you need in this particular forum. This is very important, because the information you need *won't* be in your manual. While Connect, Inc. puts out a good manual, the nature of on-line information is such that it's always changing. As new services are added, information about them is put on-line—*not* in updates to the manual.

Since you have a Suitcase question, you'd double-click on the Suitcase icon, then pick an appropriate-looking entry from the list displayed. Each entry represents a file; the original questions are listed along with any answers that have already been posted (these are the ones with R>> for

“Response” next to them). If you double-click on any entry, the file will open up, giving you text information in a window that may give you the answer you need.

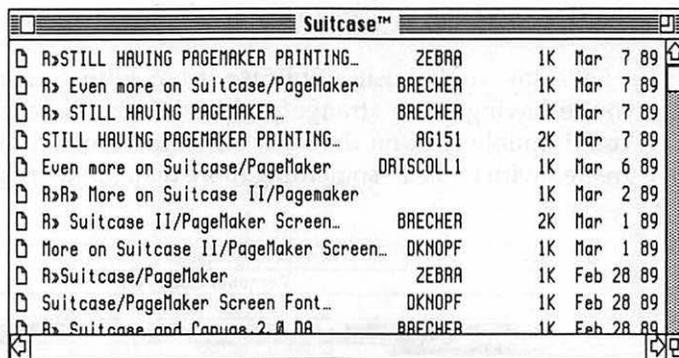


Figure 5.13 Inside the Fifth Generation support forum on MacNet, you can scroll through a list of questions and answers relating to the company's popular Suitcase program.

I'll stifle the urge to say, as so many computer manuals do, “that's all there is to it.” The whole process can take quite a while, because MacNet does not support something called “threading,” a common feature on many services. Threading creates a link between related entries on a forum, so that, for instance, this ongoing inquiry/response dialog about PageMaker could have been followed by opening the earliest entry, then issuing a command to “thread” to the next one. Many of CompuServe's discussion areas support threading, which can help you find related information.

Final verdict: While the process is interesting—and may even be cheaper than a long distance call at MacNet's \$4-per-hour off-peak rate—you may have gotten your answer a lot quicker if you simply called Fifth Generation's support phone in person.

MacNet has been wonderful for me, mostly because I really like being able to keep in touch with some colleagues on the West Coast. It took me awhile to get into the routine, but now I find it very comfortable. And the price is right: I pay less for a month of MacNet than I would for a day's phone calls to the West Coast. I've tried to use the information services on MacNet. When I was having trouble with my Apple FAX Modem, I told it to find everything on AppleFAX. I downloaded it all, but 90% of it was irrelevant. That's always the way.

Martin Dalglish, Consultant to international businesses

Isn't There Any Hope?

There's one thing that all the above on-line services have in common: They compete with existing alternatives that are quicker, cheaper, easier, or more informative, and in many cases all four. You're a business person, and your goal is to get something accomplished as efficiently as possible. Few telecomm services meet that goal. If services like these intrigue you, and you consider the time you spend with them recreational or educational, that's great. But don't kid yourself into thinking they're much help to your business.

Does anything make sense now, with on-line services still so primitive? I think so—but the exact services depend on each person's individual circumstances. If you live near a major library and can get hold of the references you need, it's hard to justify learning Dialog. If you work as a freelance writer out of Broken Arrow, Wyoming, being able to get on-line information to flesh out your articles makes sense, and justifies the time spent learning enough about Dialog or some other database. You have to look at your needs, at both the services that exist and the available "real" alternatives, and make your own decision.

To end all this on a positive note, here are two I offer as candidates for services that might make sense to a wide range of Mac small-business users.

Apple Support Forum

Apple has not traditionally provided direct support for their hardware and software; you're asked to turn to your dealer instead, and some dealers are better than others. If you haven't got access to a good dealer, a knowledgeable friend, or a great user group, an on-line forum may be your only hope for finding answers to your Mac questions.

Apple's support forum on MacNet has an opening screen similar to that of the Fifth Generation forum and most others, as you can see in Figure 5.14. The latest version of the System software is always posted, as shown here in the upper right corner; you can double-click on it to have a copy (slowly) downloaded from the Connect computer in California right into your Mac. (I don't recommend this unless you have no other source for System upgrades. Downloading will take over two hours at 1,200 baud.) The best places to get information and ask questions are in the Product Support and Specs Area and the Discussion Area. Apple posts its official bug reports and such in Product Support, but some of the best user-to-user exchanges go on in the Discussion Area.

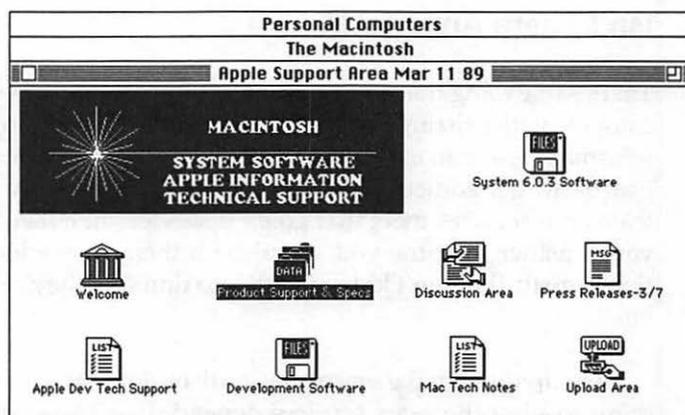


Figure 5.14 Because Apple generally offers support only through its dealers, and dealer support varies so widely, Apple's on-line support forum can be a helpful alternative when you can't get the answers you need about Apple products.

What if you didn't know which of these two areas had the information you wanted, and you didn't want to browse through both of them? You can get MacNet to search any folder or group of folders for information on a particular topic using the "Keyword Search" command in MacNet's Information menu.

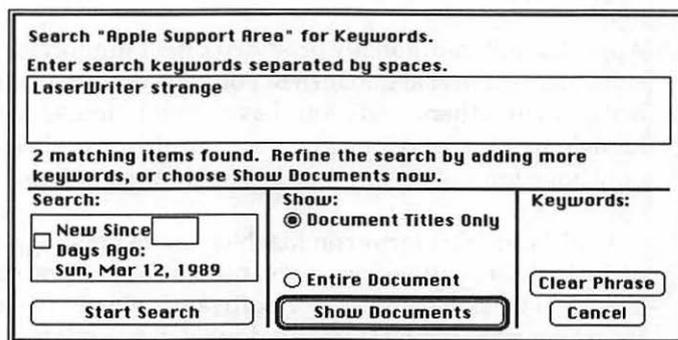


Figure 5.15 Find the information you need on MacNet is made easier by its keyword search feature.

Let's say I'm trying to figure out how come my LaserWriter NT occasionally "burps"—sounds like it's starting to print in the middle of nowhere, for just a few seconds. If I put in "LaserWriter" or even "LaserWriter NT" as keywords, MacNet would undoubtedly find dozens of matches, and I'd have to wade through a very long list of unrelated files to find the informa-

tion I needed. So I've asked for "LaserWriter strange" which will give me a list of any file where these two words appear—no matter whether they're right together or not. While this means that the list would include a file where someone wrote, "Don't you think it's strange that Apple charges so much for the LaserWriter?," it's the only way to come close to what you want.

So, after I enter the keywords and click on Start Search, MacNet looks at the actual text—not just the titles—of every file in the designated area, and reports back to me. The designated area is important in this kind of searching: If I asked for this search right after I clicked on the Forums icon in MacNet's opening screen, the search would have included every single forum on the whole service. MacNet will come back with its findings, as you see here where the message says "2 matching items found." Then, when you click on Show Documents you'll get a list like the one we saw when we browsed in the Fifth Generation forum. Only this time, the list only includes two files, both of which are likely to contain information you need. The second one turns out to answer your question perfectly:

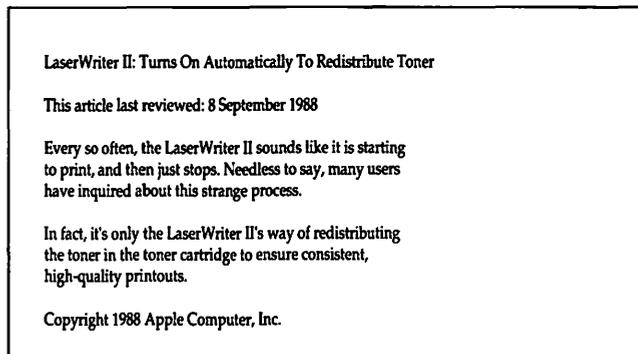


Figure 5.16 Apple often posts information on-line that is not found anywhere in its manuals. Here's the answer to a question that perplexes a lot of LaserWriter II owners.

MacNet's Search command has some other features that add to its flexibility. For instance, if you're frequently searching the same areas for information on the same topic, you can tell MacNet to give you just what's new since last time you asked, to save you time.

Even with all the features in the world, there will be a lot of times when you won't be able to find an answer to your question. Then you'd probably want to ask a question yourself. Here's how you could do this:

- (1) Open the Discussion Area
- (2) Pull down MacNet's Mail menu, and select Create Mail BB. A mail form appears that is identical to the one used for electronic mail.
- (3) Leave the address and cc: lines blank, and fill in a subject on the subject line. Remember that this is all users will see when they browse a list of files in the forum: Make it as descriptive and compelling as possible so people will open your file. "A Stray Question" would be a bad choice. "Laser Noise from the Twilight Zone" would probably get the attention you wanted.
- (4) State your question clearly in the text area of the form. If you're having compatibility problems, make sure to include vital statistics about the versions of the programs you're running, and what version of the System you're using.
- (5) Choose Post to "folder" from the Mail menu. The name of the folder or area you're currently in will appear on the menu instead of the word folder.

That's all you have to do. And you don't even have to come back in a few days to see if anyone has posted a response to you—answers will be sent to you personally in your own MacNet mailbox. There are no guarantees. Although the two fellows who oversee this area of MacNet are employees of Apple, that's almost a coincidence: Their MacNet work is not part of their official job. They may find an answer to your question, or another user might. But you may have to be patient for a few days.

Patience is a virtue that you should have in large supply if you plan to regularly use an on-line support service. Since it is impossible for me to convey the timing of each step in the search for support, you need to know that, as I worked my way down each level of MacNet's folder structure, there was a perceptible delay of several seconds while my computer took in the next screen from MacNet, and got ready to display it. The work pace on-line—in almost any service from any company—is in fact very reminiscent of my first single-drive 128K Mac. Adjust your expectations accordingly before you venture into on-line services.

The Working From Home Forum

One area that might interest those of you with offices in your homes is the Working from Home Forum on CompuServe. This is a discussion area for people who want to discuss the issues involved in running a home busi-

ness, with libraries of information and articles available also. The best part of the forum is its "conversation" area, though. When you log on to it, you'll be shown a list of all the topics currently available, and how many messages have been left in each area, similar to the partial list below:

Working From Home Forum Subjects Menu	
Subject (* msgs)	
Section 1 - News & General Info	
1 Mailorder Responses? (26)	15 Help! (3)
2 INTRODUCTION (1)	16 nont (1)
3 Home Office-NYC/Laura (6)	17 Home Telephone Use (2)
4 Visa/Mastercard BARGAIN (3)	18 Typesetting (2)
5 TRPCIS (4)	19 Phone Solicitors (6)
6 Tough to Negotiate (18)	20 Mail Boxes, Etc. (1)
7 MS Word Conversion? (26)	21 PC Tools Deluxe (4)
8 Junk Fax (5)	22 AGRIPRENEURSHIP (6)
9 Stamp Rebellion (1989) (1)	23 Home computer for sale (1)
10 clipping service? (6)	24 MS Word Conversion? (2)
11 Legal Hassles (21)	25 IRS & magnetic media (5)
12 More Marketing Info (9)	26 Which FAX to buy? (3)
13 Hello (2)	27 Answer Machine Behavior (5)
14 Database Research (1)	

Figure 5.17 Discussions on CompuServe's Working From Home Forum are organized into topics, a small portion of which are shown here. You pick a number to tap into a lively give and take on any topic.

When you pick a topic, you open up a dialog on that topic that can get rather lively. One I "eavesdropped" on the other night, for instance, started with a fellow who was starting his own business and wanted to know how he can find out about any licenses and permits he needs. Some respondents were supportive, and offered hints from their own experience. But the fellow set some people on edge by his complaint that there should be one place where he could go to get all the city, state, and federal requirements fulfilled. A few people who joined the conversation told the man to stop whining, and said he wasn't ready to run his own business if he couldn't take a little bureaucratic run-around.

I don't mean to imply that you should only join in on a forum if you take a masochistic pleasure in having people yell at you. Even the people who took issue were really very nice; my point is that the conversations are very real, and a lot of give and take is involved.

The couple who manage the Working from Home Forum, Sarah and Paul Edwards, are columnists for *Home Computing* magazine. They'll often chip in their suggestions and solutions to questions from "callers" too. I found the Working from Home Forum to be highly approachable (I'm referring to

content—it's still a typical slow, text-based product) and the potential source of lots of good tips. Those of us working at home can sometimes feel somewhat isolated, and it's tough to find fellow home-office people, since they're each in their own homes. Again the measuring-stick holds: If there's no better alternative, an on-line service can really make sense.

On-line information was really helpful when I was setting up my business. I had exchanges with different people about putting together business plans on Working from Home and USEN [The International Entrepreneur's Network]. Had a real good exchange with Laura Douglas on Working from Home. She operates a marketing group out of her house, and she helped us a lot on how we should market our business: on writing press releases, on how to approach people on selling properties. You'd probably pay a lot if you contracted for that.

Tom Ballard, Business consultant to the mining industry

Conclusion: Stay Tuned

Alvin Toffler, author of *The Third Wave* and *Future Shock*, says that commuting "is probably the most anti-productive thing our society does." He goes on to explain that gathering workers into large buildings was necessary in the past, when it was cheaper to bring workers to the machines and goods than it was to bring tools and goods to the workers. But, he concludes, when information is the main "goods" and personal computers, phones, and copiers are the "machines," this is no longer true.

Toffler's got the right idea, and in the long run, moving information over telephone lines will be the most efficient way to do business. It's important that you know where the field stands now, and that you keep your eye on it as on-line services mature. Someday there is no doubt that on-line services will be a part of your life.

For now, though, I must conclude that the Emperor has no clothes. Oh, he may be standing there in a pair of socks, and maybe a hat, but for the most part, he's stark naked where it counts. Telecommunications still has a long way to go.

6 Printers

Laser quality at less-than-LaserWriter prices

The wide range of home and small business users I talked to while preparing this book almost all stated that the one big expense they did not regret was for their laser printer. “It lets me look like I’m a big company,” was the universal response, “when it’s really just me.” Despite the investment—buying a laser printer can double the typical expenditure for a Macintosh—these people did not regret their decision.

It’s unfair, though, for me to say categorically that you *must* buy Apple’s LaserWriter if you’re serious about your small business. (I know I insisted in the introduction that you buy a hard disk—no exceptions—but a LaserWriter costs five to six times as much as the typical hard disk!) So what can you do if you want the results of a LaserWriter without the expense? You may want to investigate lower-priced printers that approach the quality of the LaserWriter. There are alternatives that are definitely worth considering. But the issues you’ll want to understand in order to spend your money wisely are many:

- What fonts and sizes can it use?
- Can it handle all the graphics you want to do?
- Can it be used with more than one Macintosh?
- Will it require a RAM upgrade for your Mac?
- Is it compatible with your software?

Printing with a Mac has always been relatively simple, since all Mac software is designed to work with both the ImageWriter and the LaserWriter. But as soon as you get involved with any other printers—even, in some cases, other Apple models—you need to have your eyes wide open.

In this chapter I’ll discuss all these issues in a *Consumer Reports* fashion, then take a specific look at the pros and cons of used LaserWriters, other PostScript printers, the General Computer Personal Laser Printer, the Apple LaserWriter SC, and the Hewlett-Packard DeskJet. You may be able to get excellent printing results for a lot less money than you think.

How a Quality Image Gets Its Quality

Virtually all popular printers use dots to make up text and graphics. Dot matrix printers like the ImageWriter create dots by pushing pins into a ribbon. Inkjet printers like the HP DeskJet create dots by squirting ink through a nozzle. And laser printers create dots by melting toner particles (a mixture of plastic and carbon black) onto paper.

Resolution

The most common yardstick for printer quality is resolution, which is usually measured in *dots per inch*. This makes great sense when images are created from dots. Imagine a one-inch photo of Amelia Earhart in the newspaper. Normally, such a photo consists of thousands of miniscule dots, presenting a relatively clear image. But if the same one-inch photo were created from only a hundred dots—a grid 10 dots by 10 dots—you wouldn't be able to distinguish between Ms. Earhart and her airplane.

It's just the same with printers. Different printers use different dot densities, and therefore create images of differing quality. Some examples:

<u>Printer model</u>	<u>Resolution</u>	<u>Dots in each sq. in.</u>
ImageWriter LQ (draft)	72 x 72 dpi	5,184 dots
ImageWriter, normal print	72 x 80 dpi	5,760 dots
ImageWriter, best quality	144 x 160 dpi	23,040 dots
ImageWriter LQ (NLQ)	144 x 216 dpi	31,104 dots
ImageWriter LQ (LQ)	216 x 216 dpi	46,656 dots
LaserWriter (all models)	300 x 300 dpi	90,000 dots
Varietyper VT600	600 x 600 dpi	360,000 dots

These figures remind you of the effects of multiplication: A 600 dpi printer has twice as many dots *in each direction*, resulting in four times as many dots, and a corresponding increase in clarity. (You should realize that I just threw the Varietyper—a high-end cross between a printer and a typesetting machine—in for comparison purposes. I won't be saying anything more about it in this chapter because it's too expensive.)

So What Else Matters? In a perfect world, you'd be ready to buy your printer once you understood the issue of resolution. You'd just pick the most dots per inch you could afford, and this would be a very short chapter.

But it turns out that there are several other issues that come into play in printing, issues that can make one 300-dpi printer very different from

another in speed, in print quality, and in its graphic capabilities. To understand these issues, it's necessary to delve a little bit deeper into what actually happens when you create—and subsequently print—text and graphics on the Mac. Although this involves a bit of jargon, I think it's really important, so I recommend you read this section before you move on.

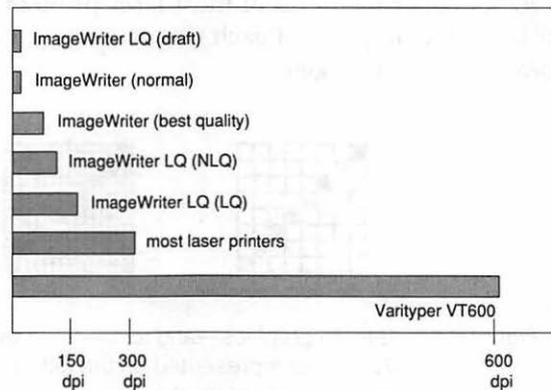


Figure 6.1 Number of dots per square inch of several different printer-models. The more dots per square inch, the higher the printer's resolution and the clearer the printed image.

Bitmaps and Objects

Even though all the printers in this chapter express graphics and text by forming patterns of dots on paper, the way those graphics and text were originally created makes a big difference in the quality you'll get on the page. In the Mac creation story, instead of Adam and Eve, we have *bitmaps* and *objects*. Everything you do on the Mac originates as either one or the other.

Bitmaps. A *bitmap* image appears on-screen as a pattern of small dots and is stored in memory and on disk as a simple dot pattern, too. When a bitmap is created on the Mac's screen, each inch of the screen consists of a grid of 72 square dots by 72 square dots, each dot turned either "on" or "off" to represent a particular image.

When a bitmap image gets printed out, the printed image likewise consists of a grid of dots at roughly the same 72 dots per inch (72 dpi). Printed on an ImageWriter, bitmaps look about as they do on screen, since the ImageWriter uses a grid that's 72 dots high by 80 dots wide for each inch. (Actually, ImageWriter output doesn't look as crisp as the Mac's own

screen, but that's related to the fact that the ImageWriter uses round dots and the Mac screen uses square ones.)

Bitmaps still don't change much when they're printed on a higher resolution printer. Because bitmaps are stored as simple dot patterns, the adjustment process consists of little more than clumsy multiplication: Printing on the 300-dots-per-inch grid of most laser printers, bitmap images just use four laser dots in place of each original screen dot. The resulting image appears to be very jagged.

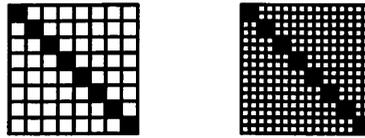


Figure 6.2 Bitmap graphics—and fonts—start out as screen images, at 72 dpi, as represented on the left. Printing them at 300 dpi, as represented by the smaller dots on the right, does not improve their quality.

Objects. Objects are stored in the computer's memory differently—as mathematical formulas that represent the images geometrically. If our diagonal line has been created as an object, it is remembered as a line that starts at a certain location, has a certain length and thickness, and is at a certain angle. Within those parameters, the line gets drawn at the best resolution possible, according to the output device. On the Mac screen, at 72 dpi, the line may look a bit jagged, but on a laser printer at 300 dpi the line looks smoother. And the same line can even be printed on sophisticated typesetting machines of over 1,000 dpi, for an even smoother look!

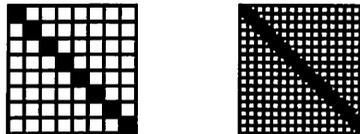


Figure 6.3 Object graphics are shown on screen at 72 dpi, just like bitmaps. But when objects are printed at 300 dpi, they are able to adjust and take advantage of the greater number of smaller dots, as the grid on the right illustrates.

One way to think of this is to say that bitmaps are static images, while objects are dynamic ones. Once you draw a circle in a bitmap program like

MacPaint, the dots that make up the shape become unrelated splotches on screen: There's no way to resize the circle or squeeze it into a more oval shape. While you can click individual dots on and off to edit your circle, you can't readily reshape it as a distinct entity on screen—and neither can your printer when it comes time to put it on paper.

Objects, with their geometric definitions, can be resized and reshaped at any time. In MacDraw, if you create a circle, you can later select it and stretch it or move it; a simple click on any part of the circle selects the whole thing, because it is one related object rather than a series of dead dots. And when it comes time to print the circle, your printer can reinvent the shape to print with the highest possible resolution.

Don't Forget Fonts. I said earlier that everything your Mac creates on screen is either a bitmap image or an object. This doesn't apply just to graphics that you create in some paint or draw program: it applies to text, too.

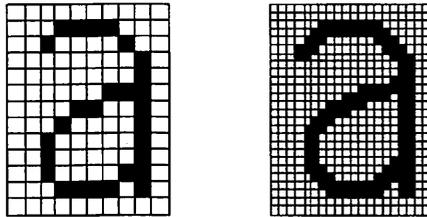


Figure 6.4 Bitmap fonts, like the one on the left, will look similar on any printer. "Object" or "outline" fonts will take advantage of the higher resolution available on a better printer, and will print out much more smoothly.

On screen and on the ImageWriter, one font looks pretty much as good as another. On a laser printer, though, only "object" fonts will automatically take advantage of the higher resolution available and come out looking smooth; bitmap fonts will usually look jagged in comparison. You won't hear the term "object" fonts, however: instead, you'll hear these more versatile fonts called "laser fonts" or "outline fonts" or sometimes "PostScript fonts," while bitmap fonts are often referred to as "screen fonts" or "ImageWriter fonts."

It's especially important to consider the way a printer creates fonts. If all you ever do is graphics, you can elect to use a MacDraw type program instead of a "Paint" one, to make sure you're creating objects that can take advantage of the printer's full resolution, instead of bitmaps, which can't.

When you're creating text, though, things get trickier. All the fonts that come with the System, the ones you normally install in your Font menu with Font/DA Mover, are screen fonts—bitmaps. They can print dots on your screen or on paper at 72 dpi—but they can't do much more than that.

If your printer uses outline fonts, the screen font is used to make your screen readable, and to trigger the use of the outline font. Let's say you create a document in the Times font. When you go to print on a printer with outline fonts, the printer in effect says, "Ah, Times! I'll go see if I have a mathematical formula for that." The printer looks in its ROM chips (where built-in outline fonts are stored), or on disk for the proper font, and uses the outlines to make great text. If you create a document in Chicago (a bitmap font) the printer can't find outlines for that font. So it slaps together a rough bitmap based on the 72 dpi screen font.

Although some printers use a tricky system to create better-quality bitmap fonts (see *LaserWriter II SC* below), you must have outline fonts to get the best quality and the most flexible range of font sizes. The only way to get outline (object) fonts is to buy a printer that has them built in, or to purchase special fonts from a software company and keep them on your hard disk (these are called *downloadable fonts*). And even then, some printers don't allow you to use downloadable fonts.

What's the Point of Bitmaps? If objects are so great, then why does the Mac even bother with bitmaps? In part, it's to make our lives easier: Creating complex graphics with objects, as in MacDraw, can be trickier for the average user than creating bitmaps in a program like MacPaint. It's great that the Mac supports both bitmaps and objects, so we can pick the best of each to suit the task.

The main reason, though, is to make the Mac's own life easier. No matter whether images originate as bitmaps or as objects, the Mac always has to translate them into bitmap form in order to display them on screen, since the screen—like a printer—works by forming patterns of dots. If information is already in bitmap form, this simplifies the Mac's job.

What Is QuickDraw?

The special graphics language the Mac uses to produce the screen bitmap you see is called *QuickDraw*. It's built into every Mac Apple sells. As you create each word or graphic with your keyboard and mouse, the information—both bitmaps and objects—gets stored in memory in a special numeric code. As you scroll around a document, any words that need to appear on screen are translated from that numeric code into QuickDraw.

When you're working on a document, usually only the part you can see on screen has been translated into QuickDraw. The rest of the document lies in memory, in numeric code. (Just as the light in your refrigerator really *does* turn off when you shut the door, words or images really *do* disappear when they scroll out of sight.) As you make changes in your document—scrolling to another section, or changing fonts and sizes, for instance—you may notice a slight delay, as QuickDraw figures out how to represent what you've just done as a screen bitmap.

You'll notice a longer delay if you select Print from the File menu. The Print command tells the Mac to translate your entire document into QuickDraw code. With few exceptions, this happens no matter what printer you're using. Then, your printer driver translates the QuickDraw into bitmap instructions your printer can understand, telling it where to pound on the paper, or where to stick toner dots. Here's the whole process:

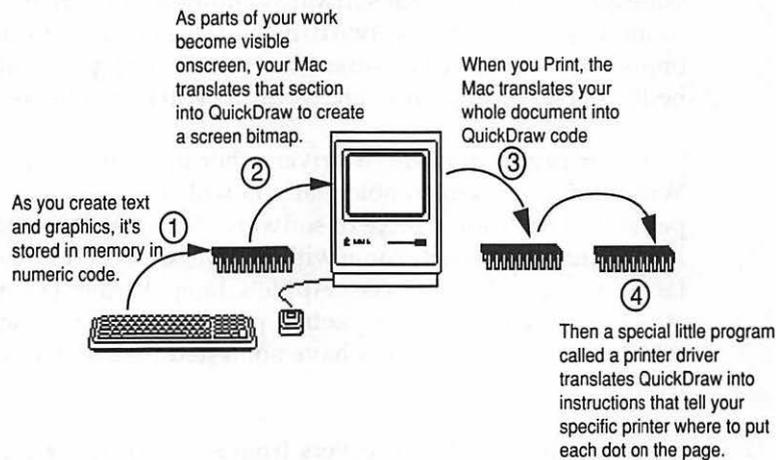


Figure 6.5 No matter what software or what printer you're using, the same general steps are used virtually every time the Mac creates a printed page.

Understanding these steps is important because different printers translate from the Mac's own QuickDraw to their own printer instructions in different ways. Some use the capabilities of Apple's QuickDraw language itself to "talk to" the printer. Others use an industry-standard language called PostScript. Still others use their own proprietary language. Each of these approaches has different capabilities and limitations, so it's important to be aware that all this is happening each time you select the Print command.

What's a Printer Driver?

Your software doesn't really "talk" directly to your printer; instead it interfaces with a printer driver, a small program that translates your document into a stream of data that your printer can understand.

Picture a scene at the UN: One delegate is talking Japanese, and another is speaking Spanish. In between is the translator, who must understand what both parties are saying. If the translator misunderstands a key phrase, war may break out. Printer drivers work the same way: they must know the language of the printer and that of the software, and intermediate between the two constantly. If they miss some key instructions, bombs result.

Apple's ImageWriter and LaserWriter drivers do very well on this score. They were written by Apple, so it's not surprising they speak the "language" of the ImageWriter and LaserWriter quite fluently. And they're so widespread that all major software vendors make sure their software communicates well with these two drivers. If the printer you choose uses either one of these drivers (and some other printers do), your software is likely to be 100 percent compatible, and your life will be made easier.

If your printer requires a driver other than the ImageWriter or LaserWriter driver, it is inevitable that you will, at some point, run into incompatibilities with some piece of software. One step down the compatibility ladder are printers that come with a driver designed by the printer manufacturer: these drivers—like Apple's ImageWriter LQ and LaserWriter SC—can "talk to" their respective printers well, but since they're not as widely used, many vendors have not tested their software for compatibility.

Other printers rely on drivers from someone other than the manufacturer. These present the biggest compatibility risk of all—especially the risk of incompatibility with present or future versions of the Apple system software. Test the specific software you plan to use, and look both ways before you cross this street.

Checklist for High-quality Mac Printers

With the most basic background information out of the way, you'll be able to better understand the criteria by which you'll want to judge various printer options. Use this checklist to help you in the decision making process:

Do I need 300 dpi resolution?

300 dpi is today's office standard, for any business that deals with other big businesses and corporations. If you're in a less office-related line of work—plumbing, electrical work, or whatever—a lower resolution may be fine.

Do I need larger fonts?

All the printers in this chapter can print in very nice quality in the sizes of text you need for a typical business letter. Some printers are limited in their ability to print fonts larger than 24 points, except as jagged bitmaps.

Do I print a lot of bitmap graphics?

Since bitmaps are tied to the original 72 dpi image you see on screen, they will often print very jaggedly at 300 dpi. With some printers, you can smooth a bitmap image so that it prints more attractively.

Do I need PostScript?

If you're a graphics professional (design, advertising, desktop publishing, etc.) you must have a printer that uses PostScript, since many sophisticated graphics programs require PostScript for their special effects.

Will the printer be compatible with all my software?

Virtually all software is compatible with the ImageWriter and LaserWriter, since you use printer files—or drivers—that come with your system software to run these printers. Other printers may require other drivers, and compatibility can be a problem.

How fast does it print?

Some printers, due to their lack of internal memory or other factors, may take a very long time to print a page. You may need to buy an extra program called a spooler, or add extra memory to the printer or to your Mac, in order to avoid being rudely interrupted every time you print.

Can it connect to more than one Mac?

If you're on your own, this isn't an issue. If you have employees or a partner, you need a printer that can be networked.

Can it handle the paper sizes I use?

What about envelopes and labels?

Make sure your letterhead works well with the printer you're

considering, and that you can print envelopes and labels as needed. Some printers have contorted paper paths that jam easily with anything except standard 20# copier paper. Lawyers: Find out how the printer handles legal-size paper.

What's the effective cost per page for consumables?

A bargain printer can turn out to be much more expensive than you thought if it requires special paper or if you have to replace expensive toner cartridges or ink bottles every other week. While you're at it, find out if the process of changing consumables is messy, or takes a long time.

The rest of this chapter will look at the specific pros and cons of the most popular high-quality printers on the market today for use with the Mac. I'll arrange the printers roughly by price, so that you can start at the bottom if you're on a really limited budget. Although the prices you'll pay when you read this are bound to be different than those in effect as I write, I'll include ballpark prices because you need some means of judging each printer's relative value. But just make sure to take these figures with a grain of salt, and—like those sometimes misleading automotive MPG figures—use them for comparison purposes only.

Non-Apple PostScript Printers

Apple's LaserWriters are among the most expensive PostScript printers on the market. If the information above convinced you that you *must* have PostScript because of the kind of work you do, look at some alternatives.

PostScript Version

All PostScript printers are almost certain to print at least 300 dots per inch, so resolution is not likely to be an issue. And all PostScript printers handle sophisticated graphic effects about as well. So the main thing you should check for is whether the printer uses Adobe's own PostScript, or a clone version of PostScript. For most purposes, both the "real thing" and clones will work identically. If you can get a really good deal on a clone, you might consider it. But be aware that there may be hidden risks in your access to a full range of fonts.

Two major typeface vendors exist in the country at this time: Bitstream and Adobe. Adobe PostScript printers can use both Bitstream and Adobe fonts; non-Adobe printers can use the Bitstream ones, but cannot use Adobe

fonts. While both printers also have access to fonts from several smaller competitors in the typeface market, this may also change. Adobe is now licensing its technology to many of the independent type houses, so their fonts may soon have the same requirement for Adobe PostScript that Adobe's own fonts now have.

This is not likely to be an issue for you unless you are in the typesetting business, since most businesses can get along fine with just a few fonts. But if you can get an Adobe PostScript printer for about the same price as a non-Adobe one, why limit your possibilities? Adobe PostScript is the industry standard, and is likely to be so for the foreseeable future.

Other Issues

Beyond that consideration, check to see what outline fonts are built into the printer's ROM. You should be able to see examples of all of them in the printer's manual. With PostScript, you'll be able to print any font in any size you want. Also, check the printer for the amount of memory it contains—1 Megabyte is a bare minimum—and make sure that it has an AppleTalk connector. Some PostScript printers designed for the PC market don't have any way to connect to AppleTalk, a requirement for using a PostScript printer with the Mac.

One good example of a PostScript printer is the QMS PSJet Plus, which has a street price at this time of about \$3,000, considerably less than Apple's LaserWriter NT. It has all the fonts of the Apple printers, and the same two megabytes of RAM, as well as an AppleTalk connection. Since it has an earlier version of Adobe's PostScript than that currently in the LaserWriter NT and NTX, it is a bit slower, a fact that will be most obvious if you regularly print very complex documents or files with many different fonts.

Buy a non-Apple PostScript Printer If... you need a PostScript printer for typesetting or advanced graphics work, but don't want to pay Apple's high prices.

Used LaserWriter or LaserWriter Plus

Apple replaced its original LaserWriter and LaserWriter Plus with the LaserWriter II NT and NTX in 1988. While the newer models are faster and have better sheet-feeding and envelope-feeding capabilities, the original LaserWriters are still very fine machines, and can be the way to go if you can find a good used price.

Fonts

The main difference between the LaserWriter and the LaserWriter Plus is that the latter has more outline fonts built into the printer. The differences are:

<u>LaserWriter</u>	<u>LaserWriter Plus</u> (same as NT and NTX)
Courier	Courier
Helvetica	Helvetica
Σψμβολ (Symbol)	Σψμβολ(Symbol)
Times	Times
	Avant Garde
	Bookman
	Helvetica Narrow
	New Century Schoolbook
	Palatino
	<i>Zapf Chancery</i>
	♣*■*⊗⊙▼▲(Zapf Dingbats)

Given that you can buy outline fonts as “downloadable fonts,” if yours is a typical business the LaserWriter will probably do fine; you’ll want the Plus if you’re running any kind of desktop publishing business. And if you can get a LaserWriter and a Plus for nearly the same price, certainly the extra fonts would be the tie-breaker that would point to the Plus.

Mileage

The LaserWriter and the LaserWriter Plus look identical from the outside, especially since some LaserWriters have been upgraded to Plusses. Get the printer itself to tell you which model it is: Every time any Apple LaserWriter starts up, it spits out a page that tells what model it is, how many copies that particular printer has printed, and what version of ROM chips it uses to interpret the PostScript language.

Definitely check out this test page—it’s like checking the mileage of a used car, or a horse’s teeth, before you buy. This test sheet, for instance, comes from a LaserWriter that has already printed 12,561 copies, using Version 1.0 of the LaserWriter ROMs. The page count is pretty obvious, at the bottom of the page. The ROM version is a bit more hidden, and is always found in the corner of the line graph. Version 1.0 of the ROMs is the earliest (found principally on the LaserWriter rather than the Plus); I’ve never seen a Version 2.0; Version 3.0 is best, because the chips contain a more efficient version of PostScript that will print a bit faster.

You should realize that the page count measures how many pages have been printed since the printer's main circuit board was installed. If the circuit board has been repaired or upgraded, this counter is sometimes set back to 0. There's another counter deep inside, in a part called the Preconditioning Exposure Assembly. This counter is always supposed to stay with the printer during any authorized repairs or upgrades. But you'll have to get a dealer to read it.

Don't go to this bother unless you're suspicious of the deal. You can tell just as much about the printer's use from its environment as from its page counter. If you buy a used LaserWriter from a big company that's owned it three years, it's likely to have higher "mileage." Apple recommends that LaserWriters be refurbished after they've produced 100,000 copies, a procedure for which Apple dealers charge around \$600. If you're buying the printer from an individual or very small business, page count should not be an issue: It would take over 13 years for a business that printed 20 pages a day, every day, to reach 100,000 copies!

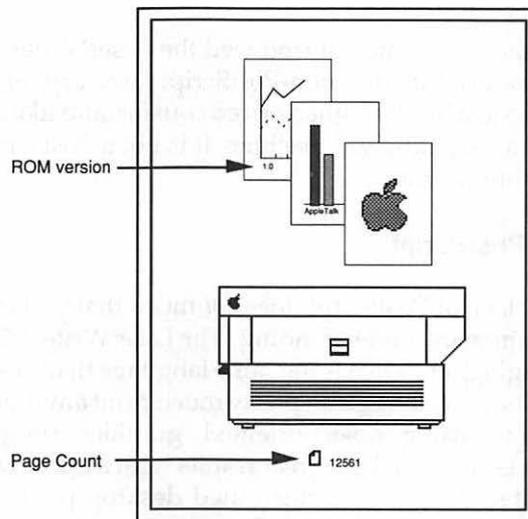


Figure 6.6 Apple's laser printers generate a test page on start-up, which tells you how many pages the printer has created in its lifetime, and what version of ROM is installed.

I couldn't do without my LaserWriter. I do publishing, so I have to have high quality. I really spent a lot, so I've been careful to take real good care of the printer — I've only made 6,000 copies in two-and-a-half years. But

I've been changing my attitude lately. I figure it's going to last 200,000 to 300,000 copies, and I'll want a new model before I get to that many pages, so I'm starting to use it more as a copier now, for multiple copies of documents. It's almost the same price as going down to the print shop.

Ryan Thompson ("Captain Fiddle"), musician

Beyond the wear and tear of too many copies, there's not much else you should be concerned with. The LaserWriter is a pretty reliable printer. All of the sensitive components get replaced every time you change the toner cartridge (they're built into the cartridge), so there's not much else that can go wrong. If you find a seller who's upgrading or moving, go for it.

Buy the LaserWriter or LaserWriter Plus If... you need Adobe PostScript, you feel more comfortable with Apple brand equipment, and you can get a good deal from someone who's upgrading.

LaserWriter II SC

At the same time it introduced the LaserWriter II NT and the NTX, Apple introduced its first non-PostScript laser printer, the LaserWriter II SC. It looks just like its higher-priced cousins, and like them, prints at 300 dpi. But it is a very different machine: It is not a PostScript printer, and it does not use outline fonts.

No PostScript

The lack of PostScript does *not* mean that you can't print any graphics—a common misunderstanding. The LaserWriter SC uses QuickDraw for all its imaging; since this is the same language that's used to create screen images on the Mac, the SC can pretty much print anything you can see on screen. If you're using object-oriented graphics programs like MacDraw or MacDraft, you'll get great results with a QuickDraw printer like the LaserWriter SC. Even sophisticated desktop publishing programs like PageMaker can print on the SC, although a few small features may be lacking. You're not likely to bump up against a brick wall on the graphics side of the LaserWriter SC unless you're doing high-end graphics work with programs that require PostScript like Adobe Illustrator or Aldus Freehand. In that case, this printer is not for you.

No Outline Fonts

The lack of outline fonts means that you may be limited in the number of fonts and sizes you can use, and may be a much more serious drawback for

routine business use. When a printer uses outline fonts, the printer generates perfect fonts in any size from about 4 points up to the maximum size your paper will fit. The only fonts you need install are a few sizes of screen fonts to make your on screen characters more readable.

With the LaserWriter SC, you'll have to install normal size fonts—9 point, 10 point, 12 point, or whatever you regularly use—in order to see your screen clearly; then you'll also need to install a font four times the size of any font you want to use. As you cover all the likely sizes, fonts start to take up a lot of room. Here are the file-sizes in bytes for each of the sizes of the Times font that Apple makes available with the LaserWriter SC:

<i>Font</i>	<i>Space on disk</i>	<i>Needed for...</i>
Times 9	6,494 bytes	9-point screen
Times 10	7,232 bytes	10-point screen
Times 12	7,126 bytes	12-point screen
Times 14	7,924 bytes	14-point screen
Times 18	9,334 bytes	18-point screen
Times 24	12,286 bytes	24-point screen
Times 36	22,702 bytes	9-point printing
Times 40	30,848 bytes	10-point printing
Times 48	41,214 bytes	12-point printing
Times 56	55,138 bytes	14-point printing
Times 72	73,010 bytes	18-point printing
Times 96	150,528 bytes	24-point printing

If you install every size of Times that Apple offers, you'll be limited to nothing larger than 24-point type, and you'll have filled up 368K—a third of a megabyte—of your hard disk with just this single font. If you want the same 11 font families available on a LaserWriter NT, that will come to around four megabytes—if you can get the larger sizes of some fonts, which are not readily available. You'll be giving up a lot of hard disk space, without getting anything close to the flexibility of outline fonts: You still won't have the larger-than-24-point sizes you may need for newsletter headlines and so on.

One final limitation of scaled bitmaps is worth mentioning, too: You will be limited in your use of the Page Setup box's enlarge/reduce function. With most other laser printers, you can specify any percent you want, from 25 percent of original size to 400 percent above original size.

But with the LaserWriter SC, you're limited to 25 percent, 50 percent, 75 percent and 100 percent — because the printer cannot scale its fonts to any other sizes. I use reduction regularly to squeeze just one more column of numbers onto a spreadsheet or some such task, and would feel severely

limited by this. But if you're comparing this limitation to the ImageWriter's inability to print anything but 100 percent or 50 percent, you may feel it's a good deal.

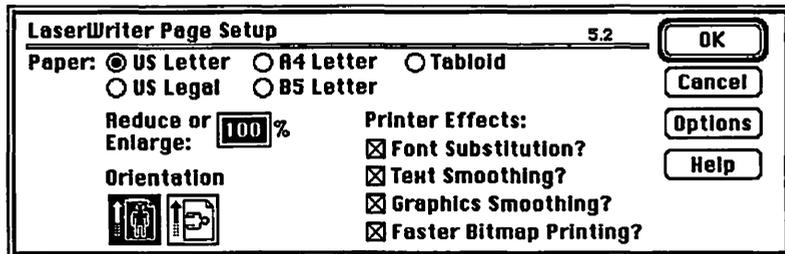


Figure 6.7 The LaserWriter SC is limited to only four reduction and enlargement options.

For this kind of work, we need high-quality printing. I think we made the right decision to buy the LaserWriter SC. When we bought it, we ran some tests versus the [General Computer] PLP. The SC was a little overpriced, but it seemed much faster than the PLP, and it has been nice and fast. I couldn't handle it if I had to drop out of my application to print all the time.

Anyway, we thought we'd use the LaserWriter SC for now, then upgrade it to PostScript after about a year when we could afford the extra money. Apple does sell an upgrade. After using it all these months, though, we've been very satisfied with QuickDraw. We don't feel any need to upgrade to PostScript. We would like more fonts. We just have the fonts that came with it, and you need fonts four times bigger than the one you want in order for them to come out right.

Martin Boling, Industrial Sales

SCSI Connection

This is where this printer gets its name — from the fact that it connects to your Mac through the SCSI (Small Computer Systems Interface) port. On the one hand, this is an advantage, since data travel much faster through a SCSI connection than they do over an AppleTalk network. And you can still use an external SCSI hard disk or scanner or other peripheral at the same time as the LaserWriter SC, since the Mac is designed to let you “daisy-chain” up to seven devices off the single SCSI port.

On the other hand, there are two drawbacks to using a SCSI connection. First, you'll have to keep the printer quite close to your Mac (SCSI cables are usually three-to six-feet long, and there's a technical limit of about 20 feet to the total of SCSI cabling on your system) and second, the LaserWriter SC can't be connected to a second Mac at the same time. As long as your business is just you, this won't be a problem. But if you ever decide to take on a partner or hire employees, the non-network nature of the LaserWriter SC would be a problem.

The Good News

On the plus side, the LaserWriter SC has the same improved envelope-feed and single-sheet feed of the LaserWriter II NT and NTX. And if, down the line, you decide you want to upgrade to the multiuser PostScript NT, your dealer can change your SC into an NT. But the changeover is very expensive (about equal to what you originally paid for the LaserWriter SC), and you'll probably be better off selling the printer and buying what you need from scratch, if your needs change.

Buy the LaserWriter SC If... you can't find a used LaserWriter or LaserWriter Plus, and you produce primarily business letters with simple graphics and just a few fonts in relatively small sizes.

GCC Personal Laser Printer

The Personal Laser Printer, or PLP, from General Computer Corporation invites comparison to the LaserWriter SC. Both are 300 dpi laser printers that use the QuickDraw language. Neither can print PostScript special effects in programs like Illustrator, Freehand, or CricketDraw. Both do much of the work of processing a page within the Mac, rather than within the printer. Both are designed primarily for single users, although a network upgrade for the PLP's normal SCSI connection is available. But there the similarities end. In performance, the SC and the PLP have some very noticeable differences that you need to be aware of if you're considering purchasing either one.

Outline Fonts

The biggest difference between the two QuickDraw lasers is that the PLP offers outline fonts. This means that you can have any size font you want, in comparison to the SC's very real limitations, and that you can reduce and enlarge your page image in any increment. The choice of fonts offered by

GCC is comparable to those included with the old LaserWriter, although the fonts themselves have different names and slightly different line-weights and shapes because they were created by BitStream, a different company. GCC offers additional fonts as a \$200 option, giving you a few more than the LaserWriter Plus and the LaserWriter IINT printers include.

While the ability to use outline fonts makes the PLP much more versatile, the PLP slows down considerably when it deals with text, especially when several fonts are mixed on the same page. Graphics speed along quite nicely, but text—due to the QuickDraw-to-outline-then-back-to-bitmap process necessary—can be quite pokey. Admittedly, there is a draft option on the PLP that gives you ImageWriter-quality output very quickly, if you're printing for your own eyes only and are in a rush.

Toner Trials

Another big difference is the way the PLP handles toner and other replaceable parts. All of Apple's printers and the HP LaserJet enclose the toner supply and the photosensitive drum in a plastic cartridge that is easily pulled out and replaced. If you've ever used a personal copier, you're probably familiar with the simple routine.

The PLP, on the other hand, separates the toner bin from the drum. The rationale for this is that it cuts costs: The drum is expensive and needn't be replaced every time you run out of toner, as is done with the cartridge approach. Great theory, lousy implementation. It's very easy to spill toner all over everything when you're changing it, and you must be very very careful not to scratch the surface of the drum as you install it yourself. *MacUser* describes the problem best:

I had a paper jam one day ...and must have bumped against the toner cartridge. The result, the next time I opened the machine, was an evil cloud of black dust over me, my Mac II, my desk, my office walls, the LaserPrinter and my disposition, as the toner cartridge let go. It was not a cleansing experience that one would cherish forever. It was rather like cleaning up after a thousand monkeys changed a million typewriter ribbons.

Neil Shapiro, MacUser, April 1988

Quit Your Program, to Print

The biggest problem with the PLP is that it relies on the Mac entirely for all its processing. While all of Apple's laser printers have at least one mega-

byte of memory and a Mac-equivalent CPU, the GCC PLP has neither. This means that, on the average Mac with a single megabyte of RAM installed, you'll get a message that says "Out of Memory" almost every time you try to print. You'll be asked to quit your application or else spool the file for later printing.

If you regularly fine-tune documents by printing a finished version then making small changes and printing again, or if you've used other printers, though—including the LaserWriter SC, which has its own memory—you may be seriously disgruntled by the PLP's inability to print anything but the simplest document interactively.

If you've been running down to your neighborhood laser shop to print special documents, you might not mind this: You can proof in draft mode, quickly and easily, then click on the "Later" button to tell your Mac to save the finished version in a special print queue. Continue working, then, when all your files are ready to print, go back to the Finder and run the PLP's special Print Manager program to actually send the files to the printer, while you break for lunch.

Of course, the problem goes away if your Mac can offer the extra processing power the PLP lacks. Add extra memory to your Mac—an extra megabyte should take care of all your printing problems. And the extra memory can be used for running programs, using MultiFinder, or whatever else when you're not printing, too. What's more, since the PLP's performance is tied so closely to the Mac's own capabilities, running the PLP from a Mac II or from a regular Mac with an added accelerator board will result in much faster printing.

We have two Macintoshes, one downstairs with an ImageWriter that everyone uses, and one upstairs. The one upstairs has a Personal Laser Printer on it, and it's only for the art director and for people who ask very nicely. The art director uses the PLP for flyers and study guides, for notices, and for good letters. He loves it. There was a little problem at first, and we couldn't place the trouble — it just crashed all the time. But once we got new software for the PLP, it worked fine. We only have one Megabyte of RAM on that machine, so it has to go to the print manager for almost everything. But my art director just puts a whole bunch of things in the spooler and prints them all at once. It's working out beautifully.

Mary Churchill, Founder/Director, Puppet Showplace Theater

Buy the GCC PLP If... You create documents that require the extra fonts and font sizes not available on the LaserWriter SC, and you have at least

two megabytes of RAM in your Mac. Make sure you don't require PostScript—an upgrade is available, but at a steep price.

Hewlett Packard LaserJet II

I'm including the HP LaserJet II in this chapter because so many people ask why the LaserWriter is so much more expensive than the LaserJet, and what the real differences are between these two printers. It's a reasonable question: The LaserJet dominates office culture in the PC world, and its ads are plastered all over computer magazines and the business section of your Sunday paper, at prices of around \$1,800. Why can those PC users get a decent laser printer for this price and we can't?

Differences Between the LaserJet and LaserWriter

It all depends on your definition of "a decent laser printer." The LaserJet prints at a resolution of 300 dpi, using many of the same components found in the LaserWriter II. It handles paper and envelopes almost identically to Apple's printers, and uses the same toner cartridge, resulting in the same per-page costs.

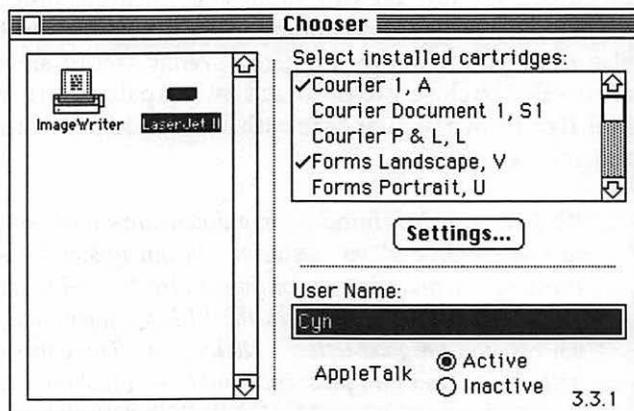


Figure 6.8 The third-party printer driver MacPrint lets you connect your Mac to an HP LaserJet, and control printing options through the Chooser.

That's where the similarities stop, though. The LaserJet II is not a PostScript printer; it doesn't have an AppleTalk connector to allow more than one Mac to connect at the same time; it contains only 512K of RAM to

the LaserWriter NT's two Megabytes; it uses a third-party driver; and it's limited in its fonts. Some of these drawbacks may not even matter to you. PostScript is most important to design professionals; it's not necessary for routine business output. You can get devices like the Shiva NetSerial that allow you to attach a serial printer like the LaserJet to an AppleTalk network.

The three final issues of RAM, compatibility, and fonts are harder to ignore, though. 512K of RAM is sufficient for text, but is only enough to print half a page of graphics at 300 dpi. You'll have to buy extra RAM for your LaserJet, or restrict yourself to mixed graphics/text pages. Drivers are another very iffy issue. Neither Apple nor Hewlett-Packard makes a driver for the Mac/LaserJet duo; you'll have to turn to third-party vendors, with their attendant risk of greater incompatibility. While such drivers have improved immensely over the first ones I looked at three years ago, some still don't have the features Mac users take for granted, like the ability to print sideways ("landscape mode") from any application. And even something that works well today is not guaranteed to work with tomorrow's new blockbuster word processor or next month's version of the Mac system. There is a risk.

Font Issues

On top of that, the LaserJet's handling of fonts means that you must make a hard choice to use this printer: Either limit yourself to very few fonts and print quickly, or print very slowly with access to a wide range of fonts.

The LaserJet, as it's used in its native PC world, makes use of two different kinds of fonts: A very few internal fonts in ROM, and fonts you add by buying ROM cartridges that slide into the side of the printer. These internal and cartridge fonts are *not* outline fonts as in the Apple LaserWriter; instead, they are high-quality 300 dpi bitmaps much like the finished product of the LaserWriter SC's reduce-the-biggies process. Because all fonts—whether they originate as outline or bitmap—exist as bitmaps just before they're put on paper, you'll get just as good quality as with outline fonts on another printer. What you won't get, though, is flexibility in your choice of sizes.

The LaserJet has only two built-in fonts, comprising a few sizes of Courier and a quick-and-ugly draft font called Line Printer. (In the font-starved PC world, people say the LaserJet has six fonts: Courier 12 portrait, Courier 12 landscape, Courier 10 portrait bold, Courier 10 landscape bold, Line Printer 6 portrait and Line Printer 6 landscape.)

If you buy HP's add-on cartridges to supplement these few fonts, you'll pay over \$150 per cartridge and get only one or two additional typefaces in three or four different sizes. Cartridge A, for example, includes Courier bold 12 point, Courier light 12 point, and Line Printer light 8.5 point; B includes a version of Helvetica in 14.4-point bold, and "Tms Rmn" (HP's Times Roman) in 10-point medium, 10-point bold, 10-point italic medium, and 8-point light, along with a symbol set. Some third parties supply less expensive fonts for the HP, but you'll still have some additional expense. Luckily, the best drivers available for the LaserJet are able to bypass the printer's internal fonts and create bitmaps from scratch, in much the same way the LaserWriter SC does—by taking larger sizes and reducing them, to get a high-quality 300 dpi bitmap. Don't forget that all this takes a good deal of work on the driver's part, and slows down printing considerably.

MacPrint

MacPrint is one such driver for the LaserJet. Actually, the product is made up of three main parts: a cable, drivers for the LaserJet II, LaserJet IID, and DeskJet (see below), and a font utility. The font utility is used to create the screen fonts you need to "trigger" the printer's own internal fonts, should you want to use them. Theoretically, this would be a good idea: Printing with the HP fonts gives you the greatest speed (less than a minute per text page) and the best quality.

But the limited number of fonts available means you're unlikely to do this. Instead, you'll use the LaserJet as if it were a LaserWriter SC: You'll create your own bitmap fonts by scaling down fonts four times larger than the one you want. MacPrint does this for you, and does so in very good form. Its homemade bitmaps are equal in clarity to the HP's own fonts, when the four-times-larger fonts are available. (When they're not, MacPrint tells the LaserJet to use a font twice as large as the desired output, and prints at only 150 dpi.)

With this system, you'll be hard put to tell a page of Times or Palatino from the LaserJet from the same page printed on a LaserWriter—if the page is all text, or text and object graphics. If your pages include bitmaps, you'll find the LaserJet output rougher, since MacPrint does not offer smoothing.

No matter what you're printing, the process will be rather frustratingly slow—about three-and-a-half minutes for the average text or mixed text and bitmap graphics page. You can get around this by printing your documents in Low Quality, for speedier output at an average of over half a minute per page. The Print command offers you the options of High (300

dpi), Medium (150 dpi), and Low (75 dpi) from any application that uses the standard Print dialog box. (Be aware that some popular programs like Word bypass the standard dialog box, and can't use this speedy shortcut.)

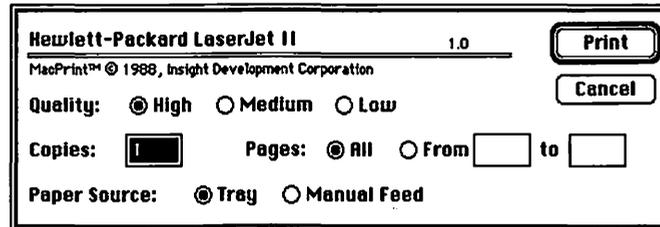


Figure 6.9 Selecting High Quality produces a beautiful page—in about three-and-a-half minutes. Low Quality takes less than a minute to produce a draft-quality page.

Another tack you can take is to buy a spooler. Insight Development, the makers of MacPrint, recommend the SuperMac SuperLaserSpool as compatible with their product. (Spoolers, as you may recall from Chapter 1, return the use of your Mac to you before your printer's finished printing.)

Buy the LaserJet II If... You need one printer that can be used with a Mac and a PC, and you don't mind the risk of current or future incompatibilities with Mac software. Since the "street" price for a LaserJet is the same as—or a bit more than—the PLP, most people are probably better off with the PLP than with the LaserJet. But don't get out your checkbook until you've read the next section on the DeskJet: It may meet your needs just as well for not much more than a third of the cost of any other printer discussed so far.

Hewlett Packard DeskJet

The most exciting high-quality printer alternative to come along yet for the Macintosh is the Hewlett-Packard DeskJet. Who would have thought that a non-Mac nonlaser printer could offer anything like the compatibility and quality of the DeskJet, at a ridiculously reasonable cost? After working with this printer it amazes me that anyone would ever buy an ImageWriter again, when the DeskJet costs just a very slight amount more and produces such better quality output.

The DeskJet presents such a radical departure from anything previously available that I'll take a bit more space with it, and describe it in a bit more depth than I have the others.

How It Works

The DeskJet is what's called an *ink jet* printer, which means that words and images are put on the page by spraying little dots of ink from a nozzle onto the paper. In the case of the DeskJet, the dots are at a resolution of 300 dpi, so they produce very nice pages, with no special paper required. The little \$18.95 plastic ink cartridge is very easy to install, and lasts about 500 pages. Both object and bitmap graphics will print fine on the DeskJet; as with all Mac printers that print with greater resolution than that of the Mac screen, though, it will print object graphics much more cleanly than bitmaps. The DeskJet is not a PostScript printer, so any program that counts on PostScript for special effects will not work well. Stick with PostScript and accept no substitutes if you're a graphic arts professional.

DeskJet Fonts

Like the LaserJet, the DeskJet has built-in 300 dpi bitmap fonts instead of outline fonts, in the DeskJet's case limited to a eight different varieties of Courier, without even the ability to do italics.

As with the LaserJet, you can buy additional fonts for the DeskJet, as add-in cartridges you plug into the printer. While the DeskJet cartridges are a bit cheaper than the LaserJet ones (under \$100 per cartridge) your costs will skyrocket if you want a wide range of fonts, and even then you'll be hard put to mix fonts in the same document as you'll only be able to access those on a maximum of two cartridges at once. (A cartridge usually consists of several sizes each of about three different typefaces. But even though these cartridges include a lot more than the LaserJet ones, you may have to have two cartridges just to get big headlines and small text in the same cartridge, as each cartridge holds a rather strange mix.)

Calling on the HP's own fonts results in high-quality text at a reasonable speed (45–60 seconds for a full page of text). But it's unlikely you'll be doing this often, for three main reasons: The DeskJet is limited to 12-point Courier and 6-point Courier internally, cartridges are expensive, and the HP fonts don't offer the same special-character capabilities as the Mac.

This last point is worth elaborating. Mac fonts usually include not only the characters shown on each key on the keyboard but also special characters accessed by holding down Option and other keys: characters like ©, ®, ™, ¥, and so on. The PC-oriented fonts inside the DeskJet only include some of these characters. While MacPrint tries to make bitmaps on the fly of the ones it doesn't have, results are erratic—sometimes it works and sometimes it doesn't. Spacing often goes awry in documents with special characters,

especially foreign languages. I was not able to print any acceptable documents in French, for instance—something that will matter much more to some people than to others.

It's just not worth using the HP's own fonts. Even though you can use MacPrint with the DeskJet as well as with the LaserJet, you're better off ignoring MacPrint's ability to call up the DeskJet's internal or cartridge fonts, and create 300 dpi bitmaps. The process for this is, again, identical to the LaserJet: Just install fonts four sizes bigger than those you want, and the MacPrint driver will shrink them down to what you want.

The speed problem with printing high-quality bitmap fonts on the LaserJet is even worse on the DeskJet, though. The average page takes about four- and- a- half to five minutes, an absolutely unworkable and unacceptable period of time to a business that's trying to be productive. You'll face the additional expense of buying a spooler if you use the MacPrint driver. MacPrint works just fine with the DeskJet, but so does a competing product—the Grappler—that comes with a free spooler.

Grappler LS with Built-in Spooler

Another solution is to buy something called the Grappler LS, from Orange Micro Inc. (Don't confuse this with Orange Micro's other product, Grappler LQ). Grappler LS consists of a cable and two disks of fonts, and special drivers for a wide variety of PC-compatible printers.

Grappler (with one exception, explained below) builds its fonts as bitmaps, using fonts three times bigger than the desired size. Although you might think this would result in less dense, less well-formed characters than MacPrint's four-times-bigger approach, the output of the DeskJet with Grappler is as good as MacPrint's—which is to say, that of a laser printer.

Solving the Speed Problem. Like MacPrint, Grappler takes four-and-a-half to five minutes to print the average page in bitmapped fonts. But where MacPrint offers only the "Medium" and "Low" quality options to get around this speed problem, Grappler offers two better ways to get around this unacceptable situation. First, it has a very fast draft mode, which automatically accesses one of the smallest sizes of the DeskJet's built-in Courier font, spitting out your page in about 45 seconds and saving ink in the process. You're likely to use draft for everything you print except final going-out-of-the-office copies. Draft uses the same line breaks and page breaks as shown on your screen, making it fine for proofing business letters and reports. But it just omits any graphics it encounters, so you won't find it useful for graphic proofing.

Grappler's other big speed solution is its spooler. The spooler utility, which you can turn on and off from your Control Panel, returns the use of your Mac to you almost immediately after you execute the Print command. It's absolutely necessary to have a spooler with such a slow printer, so it's a real bonus that this spooler is included at no extra cost.

Getting Connected. Because of its fast draft option and its spooler, Grappler is probably a better value than MacPrint for most people. But getting up and running with any non-Mac printer can be a challenge: when you're working with a computer from one company, software from a second, printer drivers from a third, and a printer from a fourth, it's inevitable that no one manual will cover every step of the process involved in getting up and running. This seems especially true of the Grappler/DeskJet combination, so I'll include the whole procedure here. I won't try to replace the two manuals, but I'll mention a few problems you're apt to run into, and how I solved them when I set up the DeskJet.

- (1) Plug in the DeskJet and cable the printer to your Mac with the Grappler LQ cable. If you're wondering where the connections are on the printer, look underneath it. Plug in the power cord first, because you can't get at the connector after the printer cable's in.



Figure 6.10 The HP DeskJet has small switches on the front of the printer that must be set as shown here to work properly with the Macintosh.

- (2) This is the part that I couldn't find anywhere in the manual, and it's absolutely essential to operation: You must change the setting of one little switch on the bottom front of the DeskJet.

These switches are called DIP switches, and they will be in the down position when your DeskJet leaves the factory. With the printer off, you need to take a pen or a paper clip and slide the fifth switch on the right-hand set of DIPs (switch B5) to the up position. (I finally called a friend who has a DeskJet.)

- (3) Stick the Grappler LS Utilities and Fonts disk in your Mac. Drag the LQ ImageWriter icon and the Grappler LS icon from the disk into the System Folder on your hard disk. Then open the LS Config

Folder, find the HP DeskJet driver file, and drag that from the floppy into the System Folder on your hard disk.

- (4) Select the Chooser from the Apple Menu, and select the LQImageWriter as your printer. Whether the printer port or the modem port is selected depends on which of the two ports you put the Mac end of the Grappler into. Either one is fine—but Chooser has to be set to indicate which one you chose.

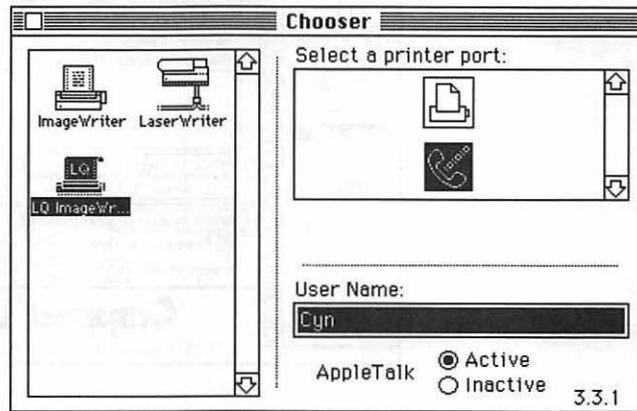


Figure 6.11 Go to the Chooser to make sure you've selected the right printer, and indicated the port it's connected to.

- (5) Now turn on the Grappler LS, using your Control Panel. Go to the Apple Menu and select Control Panel, then click on the LS icon. You'll see a box of choices that let you control the way you use the DeskJet with Grappler (shown in Figure 6.12.)

Make sure you click the On button under Grappler LS at the top of the screen. It's up to you whether you turn the Spooler on or not. When you're printing you'll definitely want this, as I'll explain later. But when you're not printing, the spooler will occasionally allow your fingers to type ahead of what shows on the screen, as it steals CPU time to check for files to be printed. If this bothers you, you can always come back here at any time to turn the spooler off.

- (6) When all this is done, return to the Finder and Restart your Mac. This step is essential to make sure that the Mac notices all the new stuff you've dumped into your System folder.

- (7) After your Mac starts up again, install the fonts that come with the Grappler as you would install any other fonts. (If you use a program like SuitCase or Font/DA Juggler, use your usual procedures as outlined in that program's manual. If not, use the Font/DA Mover as explained in your Mac manual.) The whole thing should work together just fine now.

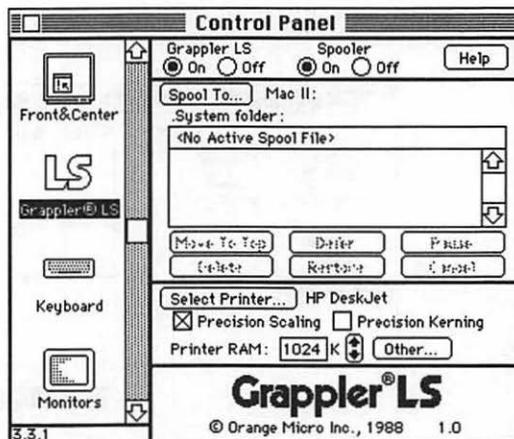


Figure 6.12 Grappler's options can be controlled through the Control Panel.

Ready to Buy? A Few Caveats

While the DeskJet is a great alternative for a large number of people, there are a few things you'll need to know if you're contemplating this printer. First, while text and object graphics can look almost as fine as LaserWriter output, bitmap graphics will not look as good. Apple printers use smoothing to eliminate much of the "jaggies" in a bitmap image, and at this point neither MacPrint nor the Grappler can smooth. Smoothing is a function of the driver, not the printer, so ask around and you may be able to find another product—or an improved version of MacPrint or Grappler—that can smooth.

You will also want to know that some software that uses its own special Print and Page Setup dialogs cannot print in the faster draft/low-quality modes. I'm using Word to write this book, for instance, and it can't print to the DeskJet in anything but let's-wait-around-for-five-minutes mode, even when I use a special trick (hold the Shift key down while choosing Print or Page Setup) to bypass Word's proprietary dialogs.

Another caveat is that pages printed on the DeskJet are not as durable as pages from a laser printer. This makes sense: Ink sprayed on paper can smear when it gets wet, while plastic toner fused to a page is not going to budge as easily. If you get a DeskJet, don't dash out to your car in a thunderstorm with an important report under your arm.

Don't buy the DeskJet if you're in the graphics business, since it doesn't use PostScript, and hasn't enough memory to print a full page of graphics at 300 dpi. And don't buy it if you regularly create long reports (or book manuscripts!). With either MacPrint or the Grappler, the DeskJet clocked in at a pretty consistent speed of about four-and-a-half-minutes for each page, for both text pages and for mixed text and graphics pages (when you create fonts as bitmaps, they're really just a kind of graphic pattern). In contrast, the LaserWriter NT took anywhere from about 45 seconds for a simple text page to about two minutes and twenty seconds for a page with a few large bitmap screen shots in it.

That's a considerable difference in speed, but while you should be aware of the issue, your own work will determine whether or not this will be a problem. If you don't print all that much in a typical day, Grappler's spooler will remove any inconvenience the printer's slow speed could cause. If, on the other hand, you regularly create long reports (or book manuscripts!) even spooling won't help with a printer that takes almost five minutes for every page. There's just a limited number of five-minute periods in a workday, and you won't be able to get the volume out even if you *do* get the use of your Mac back promptly thanks to spooling.

The DeskJet II, a new model for \$200 more, is said to be five times faster than the original DeskJet discussed here. I didn't test it, as it was introduced just as this book went to press. Be aware that the speeds Hewlett-Packard advertises are for using the printer with an IBM-PC; the translations required with a Mac printer driver may (or may not) diminish this advantage. Definitely look into the new model, though.

Buy the DeskJet If... Your print output consists largely of short business letters and a few spreadsheets. Buy it if you can't afford a laser printer, and need high-quality output. The DeskJet lists for \$750, with a "street price" of about \$600, on top of which you'll pay between \$100 and \$150 for a cable-and-driver product (such as MacPrint or the Grappler). That means that for a few hundred dollars more than an ImageWriter II, you get a printer that handles paper well, prints beautifully, and is whisper-quiet.

I'm very happy with the DeskJet. I haven't had any compatibility problems, and I run everything you can think of—PageMaker, MacWrite,

Draw II, MacPaint, Excel, and Works. I get frustrated with the speed problem even with the [Grappler] spooler. I have so little memory that my Mac still slows down when something's happening in the background. Except for the speed, it works better on the Mac than on the IBM. It's not the fastest thing in the world, but without question I think it's the most bang for the buck.

Robert Duquette, Commercial real estate broker

The Cheapest Option I Can Offer

A printer expert I know recommends that anyone who can't even afford the DeskJet look into the Panasonic 1124, a 24-pin dot-matrix printer. This printer has a resolution about equal to the 216 dpi of the ImageWriter LQ, Apple's best-quality dot matrix printer. Since the Panasonic was designed to connect to the parallel port on an IBM PC (a port not found on the Mac), you'll need another Orange Micro product, the Grappler LQ, to connect the printer to your Mac. The Grappler LQ cable and driver work together to convert the serial output of your Mac to the parallel format expected by the printer.

Together, you'll pay under \$500 for the Panasonic 1124 and Grappler LQ. For your money, you'll get much better quality printing than the normal ImageWriter, and much better paper handling: You can feed single-sheet letterhead into the printer without having to remove your normal continuous-feed paper.

Buy the Panasonic 1124 If... You're saving your money for a laser printer, and in the meantime you've been tempted to buy an ImageWriter. It's a great interim solution while you build your bank account up.

Which Is Best for You?

No one printer is best for every Mac user. If you're a graphics professional, you need PostScript. If you print dozens of pages a day, you need speed. If you work with others, you need networking. You know your own needs best, and must make the ultimate decision. To help you make that decision, here's a final wrap-up of costs and considerations for each of the 300 dpi printers in this chapter, with the LaserWriter NT added as an upper-end benchmark.

Cost Comparison

Prices fluctuate widely for computer equipment, but a comparison can still be helpful to put your options in context. Figure 6.13 shows how our printers stack up.

All prices include original purchase at a typical discounted "street" price, three years' consumables (toner, drum, ink, etc., at 3,000 pages per year), and any add-ons that I, in my subjective wisdom, think are essential. So you'll know what add-ons I included:

LaserWriter NT	no add-ons
Non-Apple PostScript	spooler
Used LaserWriter +	no add-ons
HP LaserJet II	1M RAM upgrade, driver
LaserWriter SC	no add-ons
GCC PLP	extra fonts; 1M extra RAM for Mac
HP DeskJet	1M RAM upgrade, driver

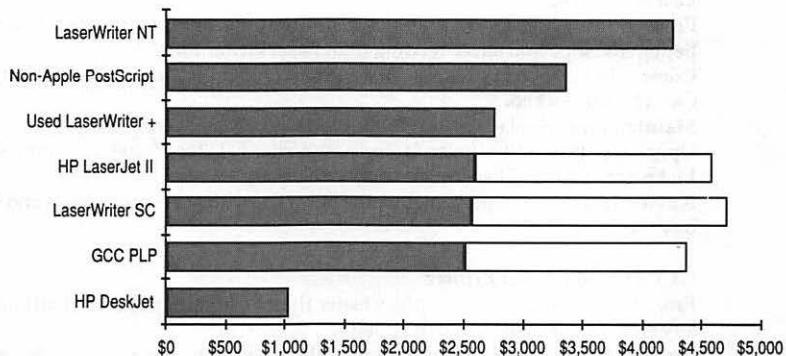


Figure 6.13 Comparison of prices for popular printers. The white bars on three of the printers shows the total cost including optional PostScript upgrade.

I got a really good deal on a LaserWriter, but I'm still not sure if there's a rational answer to the question of whether I can justify it. There are probably two possible answers: The printing time is significantly reduced, and the noise is significantly reduced. People should be aware that not having an ImageWriter clacking in the background is a big advantage. Whether that's worth several thousand dollars is the question.

Martin Dalgleish, Consultant to international businesses

Features Comparison

The chapter itself went into each printer in depth. So that you can compare them all in one place, though, here's a final recap of some of the most important considerations for each 300 dpi printer in the chapter.

Non-Apple PostScript Printers

Pros: Good selection of outline fonts usually built in. PostScript. Cheaper than Apple.

Cons: Varies according to printer.

Maintenance: Varies according to printer.

List price: Starting as low as \$3,995, often heavily discounted as low as \$3,000.

Advice: Make sure printer has an AppleTalk connection. Check the features of a specific model against the checklist earlier in this chapter.

LaserWriter Plus

Pros: Good selection of outline fonts built in. PostScript. Can connect to several Macs.

Cons: Doesn't feed envelopes well.

Maintenance: Replace toner/drum cartridge (\$100) every 3,000 pages.

List price: Discontinued. Used prices approximately \$2,500-\$3,000.

Advice: Contact a user group and get the word out that you're interested in buying. LaserWriter (earlier model than Plus) can often be had for even less, if you can live with just a few fonts, or are prepared to buy downloadable ones.

LaserWriter SC

Pros: Prints QuickDraw graphics faster than PostScript printers. Faster than GCC PLP. Better envelope and sheet-feeding than LaserWriter Plus.

Cons: No PostScript. Uses scaled bitmaps fonts: You must store 4x larger fonts on disk. Can't be networked.

Maintenance: Replace drum/toner cartridge (\$115) every 4,000 pages.

Upgrades: PostScript upgrade (to LaserWriter NT) for \$2,699 (discount \$2,200).

List price: \$2,799. Discounted to about \$2,300.

Advice: If speed is important, buy the SC; if the widest choice of fonts and sizes is important, buy the GCC PLP.

GCC Personal Laser Printer

Pros: Prints QuickDraw graphics faster than PostScript printers. Outline fonts can print at any size. Comes with its own spooler.

Cons: Slower than the LaserWriter SC. Frustrating to use with 1M Macintosh. Fonts aren't built-in, and take up much disk space.

Maintenance: Replace toner (\$29) every 1,500 pages. Replace cleaning magazine (\$89) every 10,000 pages. Replace drum (\$110) every 20,000 pages.

Upgrades: PostScript upgrade for \$2,299 (discount \$1,875); network upgrade for \$499.

List Price: \$2,099. Discounted to about \$1,700.

Advice: Depends on your Mac for print processing. A good printer if you have 2M of RAM or more in the Mac. Even better with a Mac II, SE-30, or a Plus/SE with accelerator card.

HP LaserJet II

Pros: Less expensive than most Mac laser printers. In draft mode, very fast.

Cons: Slow printing (about 3 1/2 minutes per page) in anything but draft. No PostScript. Requires special third-party printer driver (\$149). HP internal and cartridge fonts are unsuitable for most Mac users. Scaled 4x larger bitmaps require much hard disk space, and make printing slow. May not be compatible with some software. Extra RAM required to print full-page graphics. Serial (single-user) connection.

Maintenance: Replace toner/drum cartridge (\$115) every 4,000 pages.

Upgrades: 1M RAM \$310 (discount); PostScript upgrade \$2,795 list (\$2,000 discount).

List Price: \$2,595. Heavily discounted to about \$1,800.

Advice: No real price advantage over QuickDraw printers like the GCC PLP and LW SC, with greater compatibility risk. Not recommended unless you need a printer that works well with both the Mac and the PC.

HP DeskJet

Pros: Least expensive way to get 300 dpi output. In draft mode, very fast.

Cons: Slow printing (about 4 1/2 minutes per page) in anything but draft. No PostScript. Requires special third-party printer driver (\$149). Scaled 4x larger or 3x larger bitmaps require much hard disk space, and make printing slow. May not be compatible with some software. Extra RAM required to print full-page graphics. Serial (single-user) connection.

Maintenance: Replace ink cartridge (\$18.95) every 500 pages.

Upgrades: 1M RAM \$310 (discount)

List Price: \$795, discounted to around \$600.

Advice: If you're printing a few dozen pages per day or less, buy the DeskJet while you save for a laser printer. For the lowest-cost solution, use Orange Micro's Grappler LS for a printer driver, because it comes with its own spooler at no extra charge.



Mary Churchill
Founder and Director, Puppet Showplace Theater

Mary founded Puppet Showplace Theater 15 years ago. She lives “above the store,” where her organization uses two 1 megabyte Mac Plusses (each with a 20M hard disk), an ImageWriter II, and a General Computer Personal Laser Printer. Most of Puppet Showplace Theater’s work is done in MacWrite, FileMaker, ReadySetGo, and PageMaker.

In our case, we’re an arts organization, the only permanent puppet theater in New England. We give shows here every weekend for the public, with different puppeteers from all over New England, and we publish a directory of puppeteers: If there’s a school that needs someone who does dinosaur puppets, we’ll tell them who to call. We’re not an agency, we’re a collaborative—it’s more like a user group.

The Mac is popular among puppeteers all up and down the East coast—puppeteers are graphic artists, and many of them come into puppetry through design. Unlike actors, puppeteers tend to do everything themselves: they create their own puppets, do their own sound, lights, even their own stage. When I go into a school to do a show, I carry in 300 pounds of equipment—on top of everything else, I’m a truckdriver, too. The Mac fits in well with the kind of person who is able to do everything, who doesn’t specialize. It’s just perfect for a small collaborative

business like ours where we all take turns doing everything, and we need to be able to train volunteers quickly to help out.

We're doing a lot with FileMaker now. For one thing, we're running a national festival we'll be putting on this summer. For that, we have a mailing list of all the puppeteers in America. We have preregistrations and registrations—we're expecting about a thousand people—tote bag and t-shirt sales, and people being hired. We're putting everything in FileMaker. When I first got started with FileMaker I didn't quite know what a database was. Teaching it to the people who work with me, I have to keep repeating to myself that it's a dual system, that there are records and there are layouts, and how much you can do with each one.

We're very pleased with FileMaker, but there was one glitch we found with printing labels on the ImageWriter II. It would start to print, then labor, and sort of hiccup. If we were only doing 30 names, it wouldn't have mattered. But we were doing over 2,000, and every third name at the top of each page was illegible. I didn't know what to do; there wasn't anything in the manual. Then I went back to the FileMaker Newsletter (The FileMaker Report, from Joe Kroger, Elkhorn Publishing, P.O. Box 126, Aromas, CA 95004). It comes out every month, sort of. I went back to the very first issue, from January '87, and it said to always print in draft mode. It turns out that, if you use the buttons on the ImageWriter to put it in Courier or Monaco, instead of doing it in your software, it doesn't even look like draft. All of a sudden all the labels stay in place, and they look beautiful, and they go fast and it's wonderful.

We're managing all our mailing lists in FileMaker now. We were using a program called BulkMailer, and it was working out very well for us for two years. But then Apple upgraded the System, and I guess the BulkMailer people hadn't followed the rules or something, so their software didn't work so well anymore—it got slower and slower. It was time for a change anyway; BulkMailer wasn't flexible enough for us. It had a limited number of fields, and I wanted to put in all kinds of codes to keep track of where we got names from. I got pretty good at the coding, but I had to do things like put a code in the date field [which I wasn't using for a date] because I ran out of fields. With FileMaker, if I need another field I just make one.

I have not put the Showplace finances on the computer yet. We have a bookkeeper once a week, and because we're nonprofit we have an accountant who goes over everything once a year. So many accounting programs use all these terms, and they don't let you go back and change things or erase things once you've posted them. I don't know if they do this for the IRS, or if they think it protects you—if someone who works for you is going to steal, he's going to figure out how to do it anyway. I feel as though these programs are working too hard, trying to do

everything. Really, almost every business has an accountant or a bookkeeper. All we really want to do is keep everything recorded.

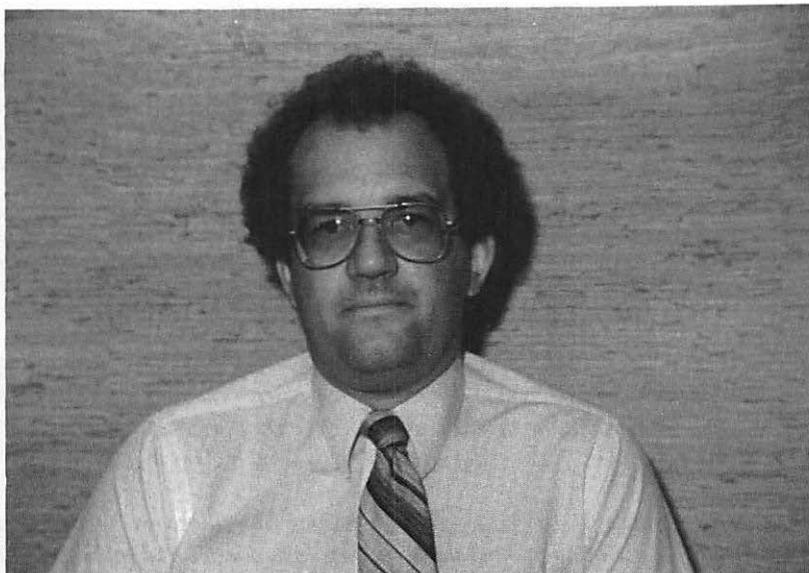
Accounting programs make me feel something is very odd about me, myself. I've spent time with: Back to Basics, Dollars and Sense, InHouse Accountant, Quicken, MacMoney, Insight, and SBT. I got where I had this thing about finding a program that would work for me. I'd put each program through a test, use it for a whole month, and see how it was. I worry that I may not be a good person to judge these, since I'm both an artist and a very stubborn person. But am I so different from other businesses? All I want is to know, Where is the money? Where does it come in and where are we losing it? And I want to know this all the time.

Now I'm using FileMaker for my personal finances, for my own puppetry, and for some real estate I own. With FileMaker I have complete control. If I make a report and my accountant says, "That mortgage should be down here. It's a liability," I can change it. I just redesign it. This is working very well for me.

Keeping up is a challenge. Sometimes I go to my user group and sometimes I don't, depending on my schedule. Like last month I had some time, and I decided I needed to know more about DAs, so I went to a meeting and I learned a lot. Now I know how to put them in and out better, but I really don't need 25 DAs. Sometimes all the hoopla about DAs and CDEVs and INITs—it's just that, hoopla. They're kind of fun, but we have to get on with our work here.

You're always a little nervous about trying anything new. You're afraid that if you just upgrade one thing, nothing else will work right anymore. I find that you really have to set aside at least two weeks to learn a new program, and unless there's some big gap in what you're using now, it isn't worth it. I don't want three or four databases. I just want one, that works.

I used to read everything—MacWorld, MacUser, MacWeek—and so many more. I used to get everything, but now I'm beginning to calm down. For a while it all looked so possible, and now I think you have to decide, are you going to go into computers or are you going to go back to your own business?



Jeffrey Berg **Lawyer**

Jeffrey Berg's law practice in Cedar Rapids, Iowa covers everything from wills to court cases, bankruptcies to estate planning—just as you'd expect from a sole practitioner in an average small city. He and his secretary use an SE and a Mac Plus, an ImageWriter I and a Brother HR35 daisy-wheel printer for finished product. When we talked in the spring of 1989, Jeffrey was in the process of going in with a small group of lawyers who also use Macs.

I got my first Mac—an old 512—in September 1985, and I've used it in the business right from the start. I've been a lawyer for about 20 years, and we used to use an AB Dick Word Processor. The reason that I liked the Mac was that I could get into it right away without learning a bunch of crazy commands. I was fascinated with how easy it was to use.

There are three or four programs I find most useful in the work I do. I have an old copy of [the database] Reflex, that I use to keep track of clients—to keep all their vital information, case file numbers, date a case was opened, and so on. I also use Reflex for my own specialized bankruptcy work. It works very well for me: I used the appropriate fonts to create a self-contained bankruptcy form. I'm certain that if I owned a more powerful database program I could eliminate a lot of the steps I go through now for finished product, but I feel some accomplishment in getting [a bankruptcy] done on my simple program.

I find [the outlining program] More to be a really neat program which I don't use enough. I use it to keep track of deadlines, for one. I have an alphabetical list of all my cases, and under each one when I have something I have to have done, I make a note under that case. Then I can sort them and check up on the status. More is also very helpful with clients, to help them visualize the steps in a case. I put things in tree form to show someone all the steps of a bankruptcy, what happens next, or for complicated wills to show how property will get distributed. And it's really great for outlining arguments for court cases. The outlines are easily stored on disk and are often useful to look back at when a similar set of facts needs to be argued.

A new program that is reducing many of my stress headaches is Timeslips III legal billing. It's an extremely easy program to utilize and understand and it's very reasonably priced for being as powerful as it is. Prior to Timeslips I had been using Rags to Riches billing module which was THE WORST program I have purchased yet. It was so buggy that I never knew from month to month what I'd have to do to get my bills out. Timeslips is a real Cadillac at a Chevy price.

I don't have complicated billing—I'm a sole practitioner—but I think it's important that things be easy. I need to free up my time to do legal work, not administrative work. Timeslips is great because I don't have to train any one person to do it—anyone can do it. I'm not relying on one person to know everything. People create their own little kingdoms if they're the only ones that know how to do something. They'll hoard their knowledge.

I use Excel and MacInTax for financial work. Excel is great for comparisons of assets and debts in divorce cases. It's easy to quickly compare values and calculate totals, then make quick alterations if the values change or there are additions to the property list. I've bought several templates from Heizer [Heizer Software, Box 232019, Pleasant Hill, CA 94523] and they're pretty good. The price is right, once you've bought Excel. And you don't have to be an expert to use them—I'm not all that good at it, and I get through them.

MacInTax is very simple to use for tax preparation—I do about 50 forms a year. I don't have to worry about calculation errors, and everything's automatically brought forward from the other forms to the 1040. Its drawback is it's a little slow to print and on-screen. If I did more forms, I'd have to find a faster program. Maybe a template from Heizer.

I'm still looking for specialized legal applications for the Mac. I bought an estate planning program early on from a guy in Colorado. That's when I learned my lesson on never buying anything without getting a demo first! It was slow and terrible. I demanded my money back, but I never got it. I didn't want to go to the trouble of suing him in Colorado. So maybe I'll do it all myself. The reason I bought a 70 meg hard disk was because I fully intend to write the last great

Hypercard legal application, integrating everything you'd ever want to do in a law office into a simple stack!

Terry Gildersleeve Industrial Marketing Consultant

Terry does marketing research and creates sales literature for industrial companies from an office in his home. His research work could benefit from quick and easy access to on-line services—but as these services exist today, he finds them unusable. Terry does his work with a Mac II, a Jasmine MegaDrive for backup, and a LaserWriter NT.

I used a PC for years, when I worked for a company that sold industrial dehumidification equipment. Lotus 1-2-3 was like an extension of my brain. I did all my notes and correspondence in 1-2-3, in addition to number work. That program really changed my life, because I'm not a numbers person, and for the first time in my life, the columns added the same way across and down—that's just not something I can do!

The big step about the Mac is that I can use more than one program without having to worry about relearning it. The last time I counted, I had 12 applications on my hard disk, and I feel pretty comfortable with all of them—ReadySetGo, MacDraw, Stella, Works, Quicken, Excel, and a bunch of others. Now that I make my living as a consultant, ReadySetGo has become an extension of my brain. The reason I like it as opposed to other programs is that it's very intuitive for someone who is comfortable with MacDraw, someone who did not come out of a publishing background.

I think the reason PageMaker is better known is that it is perhaps more intuitive for publishing professionals. But I find ReadySetGo extremely intuitive and powerful for the technical sales literature I create, which combines text and graphics. I feel the same way about it that I felt about 1,2,3: every time I run up against a barrier, there's a way to get around it if I just look in the manual. There just aren't any limitations. I can do anything.

Telecommunications is not like that at all. I've tried Dialog, and even took their course. The people that run the courses are wonderful. I'm convinced they have a map in their heads of all the information and where it's likely to be. There is no doubt in my mind that they can find any information that's in there. If I needed to know the names of all the metal-plating operations within 50 miles of Knoxville, Tennessee, I'm sure they could get the right zip codes from one database, then go into the Business Yellow Pages database, and do a join to put it altogether. But normal mortals can't do that.

There are three main problems with on-line databases. First, they're slow. They're just too slow. Second, they're too expensive. The problem is that the whole thing is set up so you pay for attempts, not necessarily for results. You don't have any idea what you're looking at in terms of costs before you start. I want unlimited search time, and then you pay for what you download. People don't like to pay for time—I know my clients don't. They want results. Would you pay your broker for the time he takes thinking about stocks? No—it's stupid.

But the worst problem is that the structure of each database is different. It's like you're at the mouth of a mine, and someplace in that mine is gold ore. And it's dark, and they don't give you a map. And on top of that, all the signposts are in a different language in each mine, and you can't even see the signposts until you get right up to the intersection. It's just stupid: Every minute you're in there, in confusion, you're paying. You're paying for frustration, not results.

I could use this kind of information in my work. I'd like to be able to ask questions like, "How much natural gas was burned last year drying corn?" or find out the perm value of five different materials—how much water vapor do they pass? If I could just type in my question, and get an answer for about \$15, I'd use it several times a week. It would be addictive. I know it would help me, and I know I could get my clients to pay for it. But the way it is now? No way.

Cheryl Jencks

Graphic Design and Editing

Cheryl runs Words Worth from her home in Monterey, California, where she does graphic design, editing, desktop publishing, and word processing. Her Mac sports a 50M hard drive, with an additional 45M removable cartridge hard drive and a FAX modem.

I've been self-employed since 1980. My business started out doing word processing, typing, and editing, on an ancient Xerox 800 word processor—a huge console thing that ran on magnetic tapes. I had gotten to the point where I could get the most out of it, when it broke down in 1985. Then for a little while I did temp work, and consulted with legal firms on their word processing needs. But mostly they just heard what I had to say and kept on doing what they were doing before. An incredibly conservative bunch. So I knew I had to get another machine and get back to word processing and editing.

I bought my Mac in the fall of '86, mostly for word processing. It wasn't until after I had it a while, after I read all the books and magazines, that I realized how much more it could do—and how much more I could do, with it. I did some work for

nonprofits, to get a chance to learn how it all worked, doing newsletters, business cards, small booklets. Along the way I picked up some new technology, learned all the terms like kerning and leading, and started taking classes at a local college, in graphic design and typography. The Mac really changed me from a word person to a graphic person. Without the Mac, I wouldn't be in this line of work.

As my work increased, I started looking for something that would handle my billing—something that would get me away from all those little yellow slips of paper. I've read a lot of reviews of Mac accounting software. A lot of them don't offer invoicing at all, and the ones that do are mostly inventory-based. That's why I like TimeSlips, because it's real time-billing, and that's what I do.

I bought TimeSlips at last year's MacWorld Expo. It was really hard to start out; I had to study it for a long time. Part of their problem is that it was an IBM program first. They've done a lot to bring it over to the Mac, but not really enough. It's been tremendously helpful in organizing things. I love turning on the timer when I'm working, and knowing how much I can bill for what I'm doing. It's very flexible. When I first got it, TimeSlips would only print out in Courier. That was depressing—sort of embarrassing when you're in desktop publishing. They've just fixed that in the most recent update. One other thing I still don't like is that there's no audit trail, so you've got to keep hard copies. It's too easy to change expenses after you've already sent bills. That's not very good.

Overall I feel happy with TimeSlips for billing, but what I would like most is a program where I could enter expenses and time and have it put in a format where I could use it for taxes, or take it to my accountant. I understand that on the IBM version [of TimeSlips] there's a real close link with an accounting program. It would be great in TimeSlips if you could categorize the time slips, in Schedule C terms. I've been looking at MacInTax, but I've decided it wouldn't save me that much time. It just keeps you from making adding mistakes. So I'm doing everything else by hand, and taking it to an accountant. I was doing it all myself, but I got so depressed by federal depreciation and California depreciation that I went to an accountant.

When you're working with graphics, you need a lot of disk space. I was running with a 20M hard disk, but that was not enough to have on line. Now I'm working with a 50M hard drive and a 45M removable cartridge system. I thought the removable hard drive would solve all my storage problems. The idea is great—the cartridges are three for \$250 or so, and you can slip them in and out like huge floppy disks. One reason I bought it was because I teach a class—I thought it would be convenient to set up a cartridge with my class stuff, and just take it along. It's a great idea for backing up, too, as long as you're fairly confident it's going to work. But I've found they're not reliable enough for day-to-day use. I've had to reinitialize the thing three times in the course of three or four months. It's been

working well for a while now, but I don't have a System on it. I'm just using it for clip art mostly at this point.

Getting the Mac was the best decision I ever made. Working at home, on the other hand, has its down side. It's important to set up hours for business, and make clients stick to them. I don't answer the phone before 9:00, because if I do, they'll keep calling earlier and earlier. At home, you just can't get away from it: Whenever you're in the house you worry about your work. But I really do like the flexibility. I guess when I think about it, even if I had an office someplace, I'd still need another Macintosh so I could work at home.

Martin Dalglish

Consultant to International Businesses

As president of Waterloo Associates, Martin provides managerial and advisory services to international businesses, on improving their American operations. The English equivalent of a CPA, Martin's company "helps other companies who have met their financial Waterloo," as he puts it. Martin recently upgraded from a Lisa to a Mac II, which he uses with a LaserWriter NT, Apple FAXmodem, Excel, Word, and dozens of utility programs.

My use of computers started when I left a consulting firm to go and run a company involved with corrosion control of industrial equipment like oil rigs and pipelines. I found relatively few typical MBA types to do the analysis, so I bought a Hewlett-Packard and a spreadsheet program to do the analysis myself. The company was losing a half a million a month on two million dollars of sales. Being able to get into the data and use a spreadsheet was just an incredible revelation for me.

When I sold that company I bought an Apple II, with Multiplan, which I used for two years. But I got increasingly frustrated at my inability to remember commands. In Multiplan on the Apple you have to remember everything, or you have to go and look it up. I was attracted to the Mac idea, but I thought MacPaint and MacWrite were a joke, so I waited until Microsoft released Word and Multiplan. Then, in 1985 I bought a Lisa, just when Apple started calling it the Mac XL.

Now I spend almost all my time in Excel, doing financial analyses. Excel is what enables me to do what I do. Before PCs, the analysis that I do typically took an elapsed time of a month while a "computer expert" (who knew nothing about what I was trying to accomplish) and I explored the data. Now I can do it myself. I love the speed, the ease with which I can go between the numbers, and the graphical interface. Pictures of numbers are so much more meaningful than the numbers

themselves. Even though the graphs aren't that easy to manipulate, the instantane-ousness is wonderful.

Because I use Excel so much, I quickly got interested in automating things that required too much mousing around, and learned about macros. I don't see myself as a computer person. The issue for me is, at any particular level, when do you get frustrated with the amount of time it takes you to do something? In every endeavor there's usually a faster way to accomplish something. I got to the point in Excel where just resizing the column width or bolding got to be an irritation rather than fun, and I figured out I had to use the macro language to make those things into key commands.

FileMaker is another good example. I've just started using FileMaker, really, for my work as secretary of the Oxford and Cambridge Society of New England. I'm beginning to get frustrated at switching between one format and another format to print out some records. I'm aware that there's a macro language in FileMaker, too, but I don't understand it at all. When I get frustrated enough I'll put in the half day or full day or whatever it takes to learn it. I guess that's what happens when you have your own business. You end up learning something when you need it to do something special; you don't just learn it for learning's sake.

Another area I needed to learn to run my business was telecommunications. I got into that for sending Telexes. In the mid-80s, the way you did transatlantic business was by Telex. I had the choice of either having a noisy Western Union clacker in my office, or finding some other way. I decided it was better to get a modem and [Western Union's] EasyLink [service]. It was very transparent on the other end—both for sending and receiving, my clients had no way of knowing they weren't dealing with a conventional Telex machine. I'd send things up on EasyLink every day—I really liked it.

Now I have no more use for Telex. I use FAX exclusively. Almost everyone in Europe has switched from Telex to FAX, and I insist that any new clients I get have a FAX. I bought the Apple FAX Modem as soon as it came out. The idea [of a FAX modem] is very neat, but I've had a lot of problems. I feel I'm being penalized for being an early adopter. I think when you're deciding whether to buy a FAX modem or a FAX machine you have to stop and think, are you predominantly a sender or a receiver? I am predominantly a sender, so I think it's a much more elegant solution. The documents are already in my computer, and they come out much nicer. But receiving is very klutzy with the Apple FAX, so I use a service bureau.

MacNet has been wonderful for me, mostly because I really like being able to keep in touch with some colleagues on the West Coast. It took me awhile to get into the routine, but now I find it very comfortable. And the price is right: I pay less for

a month of MacNet than I would for a day's phone calls to the West Coast. I've tried to use the information services on MacNet. When I was having trouble with my Apple FAX Modem, I told it to find everything on AppleFAX. I downloaded it all, but 90 percent of it was irrelevant. That's always the way.

I've always found the utility and database sections of telecommunications services very difficult to do. Gathering information from any of these things is really impossible, and should be approached with much trepidation. I'm a Compuserve member, but I never got into it. I thought that Delphi would be easier, so I bought the book on Delphi, but I get confused by the hierarchy. One thing I do a lot which I'd like to do on-line is manage my retirement funds. I've tried Dow Jones and the others, but there's always something that doesn't do quite what I want. It turns out easier to just pay my son to take notes out of the New York Times every Saturday morning.

I think you have to have a very understanding family to work at home. I suspect it's impossible before your children are school age, unless you have a soundproof room with a lock on the door. One of the guys I work with has two young children, and when we're on the phone the screaming gets very distracting.

Storage is another big problem that impacts on your family. It's very difficult to throw material away. How long do you keep all this stuff? Corporations typically have storage spaces, and someone whose job it is to figure out what to throw out when. When you're on your own, you feel you have to keep absolutely everything. And the supplies—I buy envelopes 500 at a time. Window envelopes, envelopes without windows—where the hell do you keep them? It gets worse the longer you're on your own.

Maybe it's time to retire. Using the Mac has made it possible for me to do well enough that I'm thinking of moving South in four years, when my daughter starts college. Do you know any Apple dealers anywhere in the Caribbean?

7 System and Finder Essentials

Understanding and controlling the programs that control your Mac

While the first six chapters of this book focus on things you really *want* to know, the next three chapters zero in on things you really *ought* to know. Most of us know that the System and Finder are essential to Mac operations—but know very little about the functions of these fundamental files. This chapter outlines everything the productive Mac user needs to know beyond the basics, answering questions such as:

- What causes System bombs?
- Why don't some documents open when you double-click on them?
- Why do new diskettes have to be initialized?
- What's the best way to avoid disk swaps?
- What are CDEVs and INITs? Why do I care?
- How can I use as many desk accessories as I want?
- What are the trade-offs involved in customizing my System?

You can't use the Mac without using the System, and you can't use the System well without understanding it.

Skip This Section

This section's for those who don't really know how the Mac's operating system works. In it, I'll review the ten most frequently-asked questions about the System and Finder. (Everyone else should skip to the section of this chapter called "Start Here Instead", found on page 213.)

Why Does a Computer Need an Operating System?

If someone asked you right now to explain what you were doing, undoubtedly you'd say "reading a book." While that's true, it's only part of the story: as you read, you're pumping blood throughout your body, breath-

ing, maybe humming or tapping your toes. All things you're unaware of, while you're very conscious of the fact that you're reading.

Reading is the "application" you're currently running, while the rest of your unconscious, automatic operations comprise your "operating system." Just as you couldn't read unless your circulatory system and nervous system were functioning properly, your computer can't run any applications unless its operating system is working properly. The only difference is that the operating system on a computer sends data around the computer, instead of oxygen and blood.

Whenever you use your Mac, three things must be open and available at all times:

System

Finder and
other Applications

Data

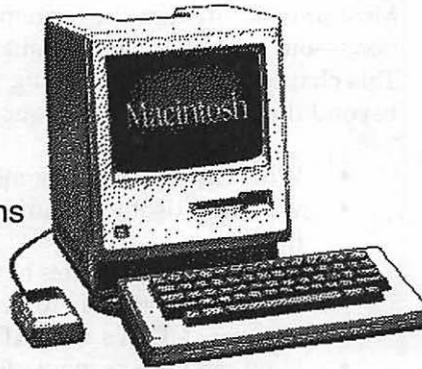


Figure 7.1 Your Mac is always using its operating system whenever you work with the Finder or with any application and data.

When you turn on the switch, the Mac's System file opens up first, and parts of it get automatically loaded into memory. As soon as you see the happy-face Macintosh, then the start-up screen (usually "Welcome to Macintosh"), you'll know the System is properly loaded. Then the System automatically loads up the Finder (or some alternative program you've chosen to do the Finder's work). You know you're in the Finder when you see the Trashcan down in the lower right corner. Finally, you choose the application you want to run, and create data or load in documents.

If Only the System and Finder Are Necessary in this Whole Process, What's All the Other Stuff in the System Folder For?

That "other stuff" includes a variety of files that do other essential behind-the-scenes type activities in your Mac. In Version 6 of the system software, for example, the System folder included the following:

Printer Drivers: small programs (like LaserWriter, LaserPrep, ImageWriter) that know how to control your particular printer.

Control Panel Devices: small programs that help you record your preferences for choices in the Control Panel Desk Accessory. The standard ones Apple gives you include:

Color for customizing the colors on a Mac II

General for customizing anything that shows up when you initially open the Control Panel DA

Keyboard for changing the key repeat speed of your keyboard

Monitors for switching between monochrome and color monitors

Mouse for changing things like the double-click speed

Sound for customizing the beep sound on your Mac

Startup Device for making your Mac boot from the right hard disk.

MultiFinder: an alternative to the Finder that lets you keep several applications in memory and ready to run at the same time. The *DA Handler* and *Backgrounder* files both work with MultiFinder to help your Mac juggle several programs at once.

Scrapbook and Clipboard: Files that hold data that you're moving between programs or from one place to another within a program.

Easy Access: A special utility that helps handicapped people substitute the keyboard for all mouse clicks and drags.

If you're using a black-and-white Mac without MultiFinder, and you're happy with the standard choices on the Mac's many customizable options, all you need to have in your System folder would be the System and Finder and the appropriate printer driver(s). Even the Scrapbook and Clipboard aren't necessary: The Mac will create new Scrapbook and Clipboard files if it ever needs them and can't find them.

It's the job of Apple's Installer program, which comes with your Mac, to automatically put just the things needed for *your* particular hardware and preferences, in the System folder. There's more in Chapters 9 and 10 about using Installer, if you'd like to learn more. Or you can look in the manual called *Macintosh System Software Users Guide* that came with your machine.

Why Do System Bombs Happen? What Do the Error Codes mean?

Remember earlier when I compared the Mac's operating system to a human's circulatory and respiratory systems? A System Bomb simply means the Mac's had the wind knocked out of it: For whatever reason, an error occurred in the System that caused it to stop running. When that happens, your application program can't run either.

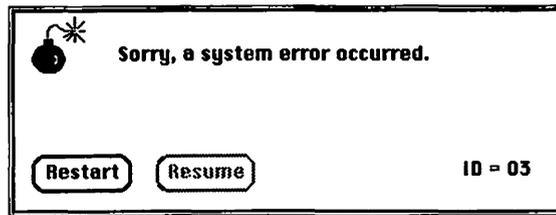


Figure 7.2 Error codes in the System Bomb dialog box don't tell you anything useful that will help you recover or avoid your next bomb.

Some things make System bombs more likely, including

- running newly released versions of the System and Finder,
- having more than one copy of the System and Finder on your hard disk (use the FindFile desk accessory and look for "System" to check for this),
- using public domain and shareware software,
- using software that hasn't officially been released to the public yet,
- using INITs and CDEVs that don't get along with each other (more on this later in this chapter),
- using Finder-substitute programs like those described at the end of Chapter 8.

The error codes on the bomb dialog box indicate which of many possible goof-ups occurred. But unfortunately, these codes don't convey useful messages like "Check your hard disk for extra copies of the System"; instead these codes mean nothing to normal people and are useful only to programmers. (For instance, ID=04 means "attempt to divide by zero" and ID=28 means "stack-heap kiss overflow error." Helpful, right?)

When your System bombs, you will almost certainly have to restart your computer to load in a fresh copy of the System. Then, since restarting your computer wipes out everything in its memory, you'll have to start your application again, and either recreate your data or—if it's safely saved on disk—open the appropriate data file.

When Do I Click, and When Do I Double-click?

The Mac's general rhythm is "Select Something, Do Something; Select Something, Do Something." When you click once on an object, you select it.

Then you use the mouse or a menu command to effect some action on the selected object.

That's the standard. In many cases, you can shortcut this procedure with a double click. The first click selects something, and the second click completes the rhythm by doing something. Doing what? That depends on the context: It's always "whatever is the most logical thing 90 percent of users would want to do next to extend the action of the first click."

Very often, the second click opens or launches a file, application, or procedure. But that second click can really do just about anything that can even vaguely be defined as extending the action of the first click. For instance:

- In MacPaint or SuperPaint, one click on the eraser selects it. Two clicks erases the entire screen.
- Also in MacPaint, one click on the pencil selects it. Two clicks selects the pencil and throws you into a magnified view of the entire screen where your pencil can work with the individual dots, or pixels, that make up your graphic.
- In word processing programs, one click positions the pointer in a word; two clicks selects the whole word.

A few tips for better double-clicking: If you click twice and the Mac doesn't react, make sure that you aren't moving the mouse at all between the two clicks. Also, consider resetting the double-click speed under Mouse in the Control Panel desk accessory.

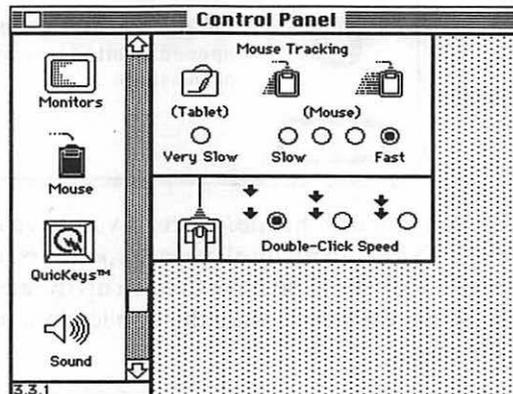


Figure 7.3 If the Mac won't respond when you double-click, select Control Panel from the Apple Menu, and adjust Double-Click Speed.

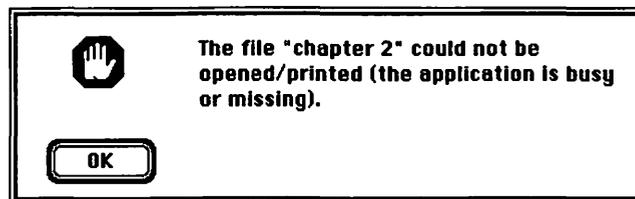
Setting it on the left-hand setting means that even two clicks that are relatively far apart (in time—you still can't move the mouse between them!) will register as a double-click. Choosing the far right setting means that only two very quick clicks will count as a double-click. Adjust this as necessary to match what your fingers do intuitively.

Why Don't Some Documents Open When You Double-click Them in the Finder?

Every Mac file has a set of special identification codes known as its *File Signature*. The File Signature is made up of two parts: a CREATOR code and a TYPE code. All files you create with Excel, for instance, will always have the CREATOR code XCEL, signifying that they were created with Excel. But different Excel files could have different TYPE codes, depending on whether you Save As Normal, WKS, WK1, SYLK, or Text.

(There's nothing in the System or Finder that lets you see these codes, since you don't need to for normal operations. If you need to know these codes for troubleshooting, or if you're just curious, you can use special utility programs to find out the TYPE or CREATOR of any of your files. One that will do the job is DiskTop, discussed in Chapter 8.)

When you double-click on a document in the Finder, your Mac looks at the file's CREATOR code, and starts up the appropriate application. If the CREATOR application can't be found on any disk currently in the Macintosh, you'll get the message:



Can you still use the file? Sure, if you have an application that can read the file's TYPE. Virtually all word processors, for instance, can read files of the type TEXT. But you have to open up the application itself first, and *then* open up the file from inside the application, using the Open command in the file menu.

(Sometimes you'll get this message even when the CREATOR application is available. This usually indicates a very minor problem with your disk; see the section in Chapter 9 on "Tips for Data Recovery.")

What Do People Mean When They Refer to “Booting Your Computer?”

When you start up a computer, the first thing it tries to do is load in a copy of its operating system from disk. But one of the primary functions of the operating system is to control reading and writing data on disks. This creates a Catch-22 situation: How can the computer read in a copy of the operating system from disk, until after it's read in the operating system from disk?

To solve this dilemma, a very small part of the operating system of most computers is permanently encoded into one or more chips called *ROM (Read Only Memory) chips* in the machine. When you flip the switch (or restart the computer), it reads in just enough instructions from ROM to learn how to start reading the disk, so it can bring the rest of the operating system into memory. In essence, the computer is pulling itself up by its bootstraps—hence the term “booting the computer.”

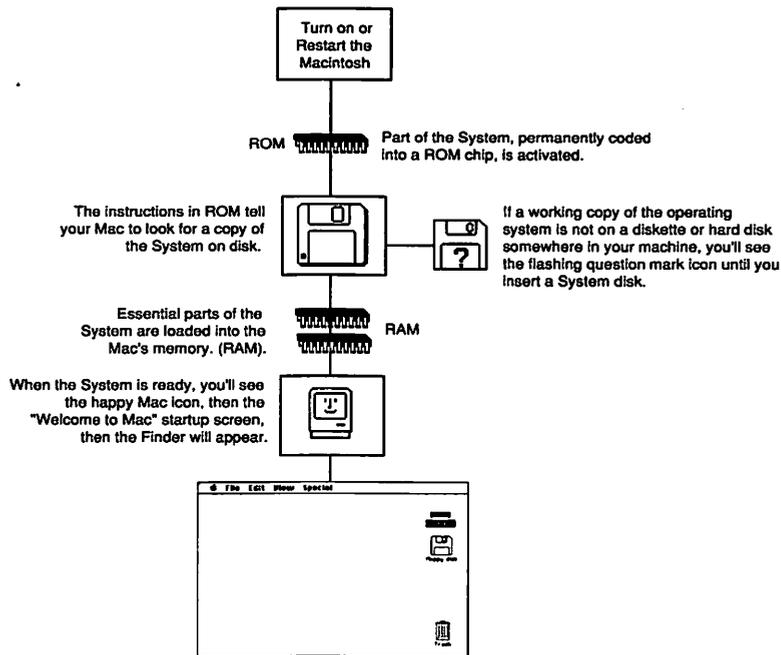


Figure 7.4 Every time you turn on your Mac or choose Restart from the Special menu in the Finder, it goes through what's called the “boot process.”

At this point, you might well ask why the *whole* operating system isn't just stored on a chip, since it has to be loaded in every time you start the

machine. It's a good question, but one with an equally-good answer: It's because new versions of the operating system must be released from time to time to support changes in a machine's hardware, or to add new system features. If the operating system were all in ROM, you'd have to take your machine in to your dealer and get the chips changed every time a new version of the system was released.

Why Do New Diskettes Have to Be Initialized?

As you've been told more times than you'd like, filing data on disks can be compared to filing papers in the traditional metal filing cabinet. If you buy a new filing cabinet then just open the drawers and drop folders in, nobody objects—but you'll find it difficult to find any of your papers when you need them later. You have enough sense to know that you're better off if you label the drawers and put some dividers in, so that when you start adding folders of papers you can keep track of where they are.

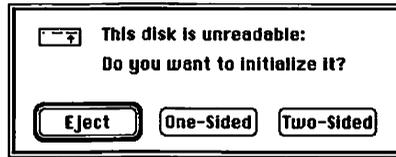
The Mac is a little more careful of its storage areas. It won't let you just drop files on an empty disk; it insists on first marking out the disk in an electronic grid that helps it keep track of where you've stored specific bits of information. For good measure, it also erases the disk before it marks out the grid, to make sure the disk is clean of any stray electronic trash that could corrupt your data.

In addition to erasing the disk and marking it off into a grid of wedge-shaped areas called *sectors*, the initializing process also sets up a housekeeping file called the Desktop File, to help your Mac organize and retrieve the files you will be putting on the disk. (Don't bother looking for the Desktop file on your disks — it's what's known as an invisible file, which means it never shows up when you look at a list of what's on your disk.) The Desktop file takes up a bit of space on the disk, which is why a brand-new, freshly initialized diskette or hard disk will already have some of its space—an amount that varies on different hard disks—used up.

Why Does the Mac Sometimes Ask to Initialize an Old Disk with Good Data On It?

Sometimes you'll put a diskette that holds important files into your machine and get the same message that you get from a new disk (shown in figure on opposite page).

This means that your Mac can't find the electronic grid marks where it expects them, or it can't find crucial information in the Desktop File.



There are several things, many of them very simple, that can cause your Mac to get confused in reading a disk.

- Your disk got too hot or too cold (from sitting in your car, perhaps) and has expanded or contracted slightly, making it hard for the Mac to find the location of specific sectors. Let the disk come to room temperature and try again.
- Your disk drive and the one that created the disk are aligned slightly differently; the “grid” and data were recorded in slightly different locations than your Mac expects to find them in when it reads the disk. Try the disk in another machine before you despair.
- Your disk may not be centering itself properly in the drive. Take it out and wiggle the metal hub in the diskette a few times, to make sure it isn’t stuck off-center.

In any event, make sure you click on Eject, and DO NOT initialize the disk, if you want any chance of ever seeing your data again. If these simple solutions don’t work, refer to Tips for Data Recovery in Chapter 9.

What Is The Difference Between Quit and Close?

These two commands confuse a surprising percentage of self-taught users. Sure, both commands help you to exit from your current work, so they do have something in common. The difference is easy to understand, though, if you take another look at the diagram I showed you on page 203.

Think of it this way: The operating system, an application, and data are always in your Mac as you’re working.

When you’re done with your work,

Use	To
Close	Make your <u>data</u> go away
Quit	Make your <u>application</u> go away
Shutdown (in the Finder)	Make the <u>operating system</u> go away

System

Finder and
other Applications

Data

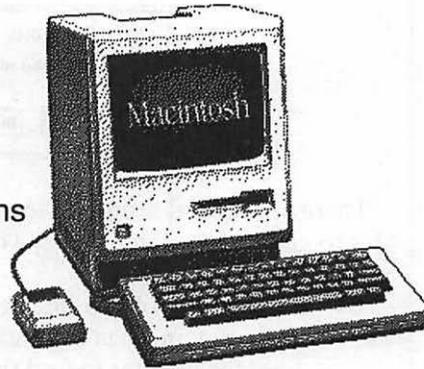


Figure 7.5 If you think about what's *in* your machine whenever you're working, it's easier to remember how to get everything *out* of your machine when you're done.

If you Quit without Closing any open data files, the Mac will automatically close them, first offering to save any changes you have made. This can blur the distinctions between these three a bit. But just keep the table above in mind, and you should be able to keep it all straight.

How Can I Avoid Disk Swaps?

Disk swaps happen when the Mac, for whatever reason, is convinced that you absolutely MUST insert a disk that you thought you were done with. It happens because your Macintosh keeps, in memory, information about every disk you've put into your Mac since you turned it on—just in case you need it later. It only dumps this information from memory when you make it perfectly clear that you're done with the disk.

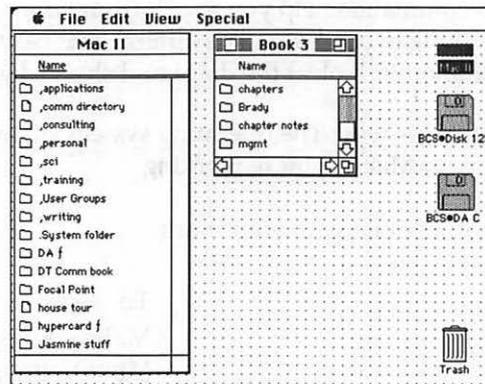


Figure 7.6 Ejecting disks with the File menu or Command-E leaves a shadow icon on the Desktop that could lead to disk swaps .

Using the Eject command in the Finder or in the Open and Save box of any application spits out the disk, but leaves this “residue” in memory. You can tell this is so when you return to the Finder; all disks that your Mac hasn’t forgotten show up as shadowy icons along the right edge of the Desktop.

If, on the other hand, you get rid of a disk by dragging its icon to the Trash, your Mac will forget it ever saw the disk, and you will never be asked for it again. (Don’t worry—this will *not* erase your files. It’s not at all like dragging individual files to the Trash.)



By the way, if you ever forget this and find yourself in the middle of one of those mind-numbing disk swaps, there is a way out. Try holding down the Command key while you press Period. You may have to whack on the Period key a few times before your Mac “hears” you, but this should soon break the vicious circle and let you get on with your work.

(It’s better, of course, to properly get rid of the disk in the first place by dragging it to the Trash. When you force your way out of a disk swap, you may get the message, “This disk has minor damage. Want to repair?” next time you use the floppy. This is because the disk was unable to update its Desktop file properly.)



Start Here Instead

Since the System is always up and running whenever you’re working with your Mac, you can make major changes in your work environment by making changes in the System. The Macintosh is quite unique among personal computers in the extent to which it allows individual users to customize their machines’ most basic functions.

Apple made this possible by designing the Macintosh so that every program—including the System and Finder—is made up of small building blocks called *resources*. While other operating systems on other machines

are pretty much an unapproachable, impenetrable, technical mass with which the user isn't meant to interact, the Mac System is meant to be customized.

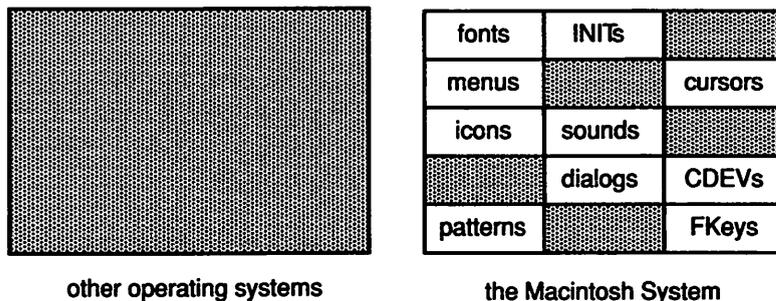


Figure 7.7 In contrast to other operating systems, the Mac System is made up of dozens of changeable building blocks called resources, some of which are illustrated here.

You can take out the fonts Apple gave you and add your own. You can put in your favorite desk accessories. You can change the beep in your Mac, or its Desktop pattern. You can even change the shape of its cursors, or the wording in its dialog boxes, if it will help you work more productively, all by adding and removing resources in the System. (Keep in mind, of course, that while much of the Mac's operating system is approachable, a large part of it exists, like on other machines, as complex programming code that normal people shouldn't mess with.)

In this section, I'll put all of this customizing in context. Then, starting with the assumption that you're already familiar with adding and changing fonts and desk accessories (read your Mac manual if you're not), I'll tell you more about INITs, CDEVs, and other commonly customized resources. I'll finish up the chapter by telling you about some utility programs that are designed especially to help you manage all the resources you can use in your Mac.

A Quick History of Customizing

It's interesting to note that in the early years of Macintosh, only the techiest, nerdiest users would even think of installing their own desk accessories: Apple's original machine included only a Font Mover, not a Font/DA Mover. Daring folks on the fringe figured out how to change their own DAs, so programmers started writing useful DAs, so more and more people got motivated to learn how to install them—and finally Apple made the

whole process easier for everyone, by including the Font/DA Mover with every copy of the system.

At that point, avant-garde Mac users moved on to INITs, little programs that add features to the operating system automatically: Why pull down the Apple menu to get at some of your favorite utilities, when you could get them to load themselves at start-up? Good point, but again, installing INITs was not a simple procedure. Despite this, INITs grew in popularity, until finally Apple made changes in the System so that INITs only needed to be dropped into the System folder in order to work.

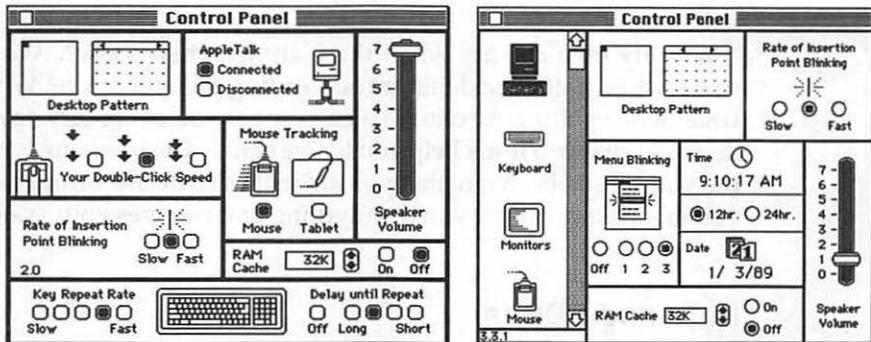


Figure 7.8 Earlier Control Panel versions (left) did not allow the use of CDEVs for customization. More recent versions of the System (right) provide a scrolling list of Control Panel Devices (CDEVs).

Never satisfied for long, Mac users and programmers quickly tired of INITs, which loaded invisibly then often worked in the background with no way for us to reach them for fine-tuning. CDEVs, with their added bonus of increased custom control through the Control Panel, became the “in” thing, as Apple obliged by updating the System file yet again to allow us to put our own entries in the Control Panel.

By the time you read this, there will be probably be some other customizing rage I haven’t even imagined now. No matter what it is, the conclusions we can draw from the short history above make it possible for you to react. Just remember: Apple is always adding new ways to tailor the Mac to our own proclivities. And if some new feature seems a bit too technical for you, just wait a few months until it enters the mainstream and gets more approachable.

Customizing Involves a Trade-off. The original Macintosh—with its closed case, 128K of RAM and single floppy drive—was a very limited

machine with almost no hardware and software options for customization. Apple felt very strongly that choice would lead to chaos like that found in the PC world, where nothing works with anything else, and where all software requires a tedious installation process to conform to the user's mix of hardware components. In order to encourage the success of the Mac and of its unprecedented consistent interface, Apple tried to put customization off limits until the Mac was well established.

Now customization is routine. This does not mean the risk of chaos does not exist. Changing fonts and desk accessories, and adding INITs and CDEVs *does* increase your risk of System bombs and freezes. So why do it?

Why fly on airplanes when there are terrorists loose? Why cross the street, when traffic accidents are our leading cause of death? Why drink the water when pollution exists? You assess risks all day, every day, and make decisions that you think help you to live better. Customizing is no different. But you should be aware that you are making a decision, and that there are possible risks any time you do anything that changes your system.

INITs and CDEVs

INITs and CDEVs are an important extension of the Mac's have-it-your-way approach to computing. As cryptic and techie as their names sound, they're really quite approachable and useful. An INIT is a small program that loads itself automatically into your machine's memory when you INITially turn it on; then it's available to you, as long as you're using your machine. A CDEV works pretty much the same way, only it has the added benefit of being controlled through the Control Panel Desk Accessory (hence the name CDEV, which is short for Control Panel Device).

Like fonts and desk accessories, INITs and CDEVs are essentially just another way of changing your Mac's operating system so that it more closely matches the way you want to work. As a result, you'll find a wide range of INITs and CDEVs being sold commercially and distributed as shareware.

What CDEVs and INITs Can Do

The best way to give you some idea of why you might want to explore CDEVs and INITs is to give you some examples of their use. Here's just a sampling of the ones made available over a few months through my user group:

INITs

<i>MenuClock</i>	Displays a clock in the menu bar, to tell you the time.
<i>Color Cursor</i>	Lets you color the arrow cursor on a color Mac II.
<i>Private Eye</i>	Keeps a log of name, date, and time of all programs run.
<i>PopUp</i>	Provides a "pop-up" copy of the menu bar wherever you hold down certain keys and click.
<i>SaratogaKey</i>	Enables the F1-F4 keys on the extended keyboard, so that they actually Undo, Cut, Copy, and Paste.
<i>RWatcher</i>	Protects your disk from three different viruses.

CDEVs

<i>The GuardDog</i>	Lets users open files, but not move, delete, or rename them.
<i>Vaccine</i>	Warns you of possible virus activity.
<i>SuperClock</i>	Displays a menu clock that you can customize.
<i>Staircase</i>	Lets you access any menu with cursor keys instead of the mouse.
<i>MacPassword</i>	Allows a disk to be password-protected for security.

As you can see from these lists, INITs and CDEVs exist to do almost anything. No matter what the function of an INIT or CDEV, though, it works pretty much the same way: By loading itself into memory at start-up, right at the end of the System-boot process. Then it's available all the time you're working, just as your System is.

It's almost inevitable that you already have some INITs and CDEVs in your System folder that you may not have realized are there. All the icons in the scrollable left-hand window in the Control Panel desk accessory represent CDEVs: When you click on Sound to change from Simple Beep to Monkey, for instance, you're customizing your Mac through the use of a CDEV. Beyond that, many utilities you buy to help you be more productive are INITs or CDEVs. QuickKeys, for example, is a CDEV.

Many peripherals you buy will also come with an INIT or a CDEV that you must place in your System folder before the hardware will work. This makes sense when you think about how it's the System's job to send data to all the different parts of your Mac: if you buy a new part, you need to somehow add on to the operating system so that the System will know how to work with the new equipment. It's a natural for an INIT or CDEV. Look in your System folder, using View by Kind. INITs will have "Start-up document" as their kind, and CDEVs will have "Control Panel document" as their kind.

One of my favorite INITs is OnCue, which creates a little pop-down menu in the upper-right corner of your screen. It shows all the applications you're currently running—if you're in MultiFinder—and a list of all the other applications on your disk, so you can move quickly to any other program, whether you're running MultiFinder or not. I like it better than PowerStation, because it's always right there.

Paul Parisi, Desktop publisher

Four Things You Must Know About INITs and CDEVs

I'll keep it simple. There are four main things to understand about INITs and CDEVs before you start using them:

- You can install INITs and CDEVs by simply dragging them into your System folder. They'll take effect as soon as you Restart your Mac.
- Similarly, you can uninstall any INIT or CDEV by dragging it out of the System folder, and putting it in another folder or in the Trash. But remember, you'll have to reboot before your changes take place: INITs and CDEVs are loaded into memory at start-up. Only a crash or a restart will blank out your memory and make them go away.
- INITs and CDEVs can fight with each other. Basically, both try to act like invisible servants, lurking in an unused corner of the room until you need them. If two of them claim the same corner—in this case, a chunk of your Mac's memory—at the same time, an electronic collision may occur, which you may experience as inadvertent behavior in your favorite program, or even as a crash.
- INITs and CDEVs take up RAM. On a 1M Mac, you may not have enough memory to run certain applications (HyperCard, for instance) if you've added many INITs and CDEVs, and your System starts to fill up more than about 200K of memory.

An example illustrates the memory problem a little more clearly. Let's say you've got a pretty normal copy of System 6.02 on a Mac Plus. If you start up the machine, then pull down the Apple menu to "About the Finder," your machine will tell you that the System has reserved about 158K for its own use (and that the Finder is currently claiming the rest, but using very little of it).

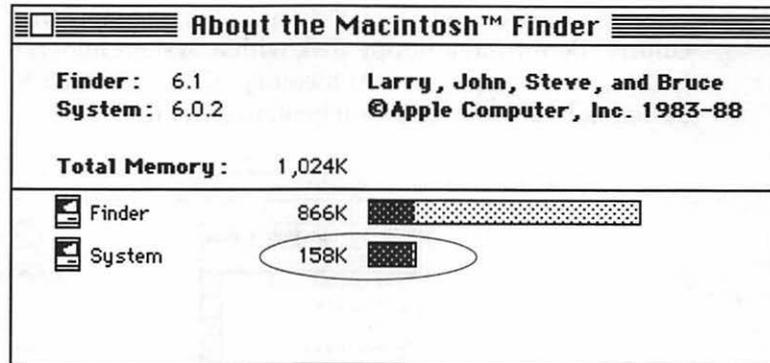


Figure 7.9 You can see how much memory your System is using by selecting “About the Finder” from the Apple menu when you’re in the Finder. If your System doesn’t have this feature, you have a very old version of the System, and should consider upgrading (see Chapter 10).

You add the 39K INIT SuitCase II to your System folder, and next time you start up the Mac, the System has grown to 167K. (Only parts of an INIT or CDEV actually need to be in memory, not the whole thing.) A few weeks later you decide to try QuicKeys, a 76K INIT, and your System grows to 198K. Finally, you add Tempo II, the INIT part of which weighs in at a hefty 209K, and which causes your System to grow to 273K. Now HyperCard gives you an out-of-memory message whenever you try to run it.

	INIT size	System now requires
No added INITs		158K
SuitCase II	39K	167K
QuicKeys	76K	198K
Tempo II	209K	273K

What should you do? There are only three logical options: buy more memory, use fewer CDEVs and INITs, or avoid running memory-hungry programs.

How to Recover from INIT and CDEV Problems

If a particular INIT or CDEV clashes with another utility or application you’re using on your Mac, simply restarting your machine will not solve the problem: The two programs will soon collide again, and you’ll be in a vicious circle. So what to do?

If you've just added a new INIT or CDEV, it's more than likely that's the culprit. Boot from a floppy disk with a System folder, to make sure the guilty party doesn't get into memory (INITs and CDEVs must be in the System folder with which you boot, in order to work)

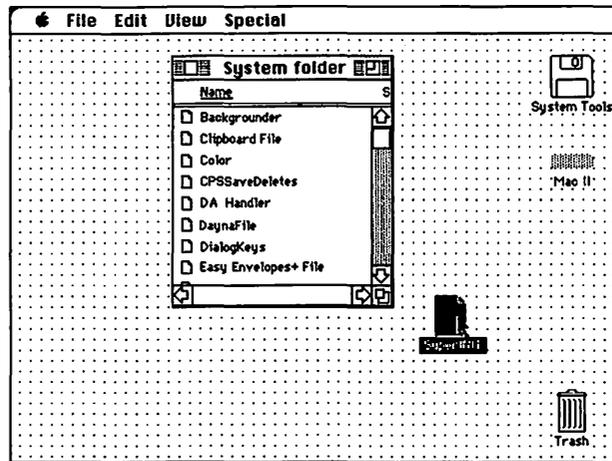


Figure 7.10 If an INIT causes your System to become unstable, you may have to take it out of your System folder, or drag it to the Trash.

Then open the System folder on your hard disk, and drag the guilty INIT or CDEV out to another folder (if it's your only copy) or to the Trash (if you never want to see the troublemaker again).

Sometimes you won't be sure *which* INIT or CDEV is causing your problems. In that case, the only cure is to remove all of them from your System folder, then put them back in one by one, testing for problems after each addition. (See the following section for a utility that can help you deal with this situation.)

Once you've found the problem, you have two choices: Stop using one of the two programs that are conflicting, or see if there's a newer version of one or the other—or both. Once major conflicts are discovered, software vendors are usually quite anxious to resolve them. One example I struggled with was Apple's MacroMaker INIT. When I first upgraded to System 6 and started using this utility, I experienced terrible crashes whenever I ran Excel. As soon as I removed MacroMaker from my System folder everything was fine. But since I wanted to use both programs, I called

Microsoft, and discovered that a newer version of Excel would solve my problem. And it did: As soon as I started using the upgraded Excel, MacroMaker worked fine.

Too Many Resources: Utilities That Can Help

Once you get going with fonts and desk accessories, INITs and CDEVs, and maybe a few custom sounds, it's easy to end up with chaos instead of customization. You're making changes to the System, to the basic foundation of everything you do on the Mac, and you're very apt to end up throwing this delicate organism out of balance.

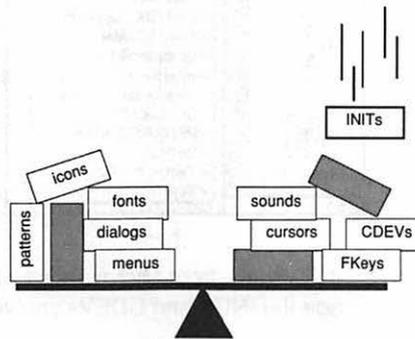


Figure 7.11 The System is always carrying off a delicate balancing act. Adding anything to your System can unbalance it, adding to the potential for crashes.

There are a few excellent programs on the market that can help you deal with this problem. Let's start with one that's especially useful for INITs and CDEVs, since we've just been talking about them.

INITPicker: Managing INITs and CDEVs

As you saw in the previous section, INITs and CDEVs can sometimes clash with each other and even with your applications. There's not much you can do about that: INITs and CDEVs are System add-ons, and the System is such a fundamental program that you *do* run the risk of making your Mac environment less stable when you go poking around with it.

Since INITs and CDEVs are automatically loaded at start-up, you don't always know for sure just what you've got in your System folder or in memory at any time. Some INITs and CDEVs flash an icon on the screen as

they load, but this isn't a great deal of help in managing the collections of these little programs that some of us amass. A program called INITPicker, from Microseeds Publishing Inc., can help. INITPicker lets you see a list of all the CDEVs and INITs in your System, then gives you several commands to control how and when these programs work.

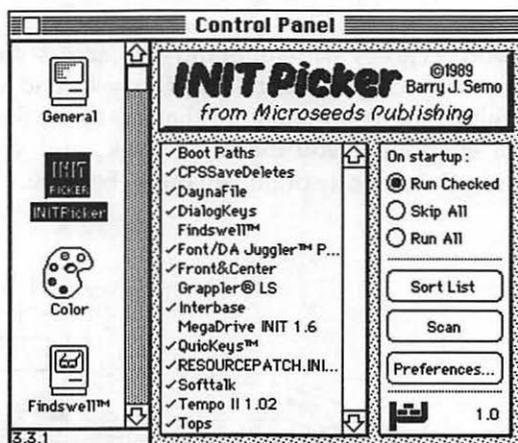


Figure 7.12 INITPicker, from Microseeds Publishing, can help you manage the INITs and CDEVs you've added to your System

INITPicker is itself a CDEV, so you access its features through the Control Panel. When you select it, you'll see a list of all the INITs and CDEVs in your System folder. Then you can:

- Check those you want to load at start-up, and uncheck those that you'd like disabled until further notice. This feature is very useful when you're checking to see what combination of INITs and CDEVs is causing your Mac to suddenly act unstable.
- Change the order of your INITs and CDEVs. Normally, your Mac loads all these programs in alphabetical order; incompatibilities can often be solved just by changing the order in which two of these programs get loaded into memory. (Picture this: If a really pushy INIT or CDEV that insists on parking in a certain area of memory gets loaded first, it won't cause the problems that can happen if it gets loaded in after someone has already taken its parking place.)

- Guard against unknown INITs and CDEVs. Some viruses spread by running themselves automatically when you start up your machine. If you have turned off “Run new start-up documents” in INITPicker’s Preferences box, new INITs and CDEVs won’t run unless you specifically see them on INITPicker’s list and put a check next to them. While not a complete solution to virus protection, this small feature can add another line of defense against possible viral infection of your Mac.

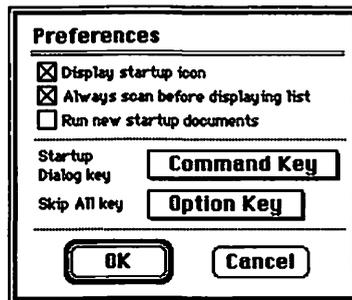


Figure 7.13 INITPicker’s Preferences screen lets you control the ways in the which INITPicker managers your INITs.

Using a program like INITPicker can be very useful. For example, if I had had INITPicker when I was trying to deal with the incompatibilities between MacroMaker and Excel I mentioned earlier, I could have just unchecked MacroMaker when I wanted to run Excel. Of course, I would have had to restart my Mac, too, since INITs and CDEVs are never removed from memory until you restart the machine.

INITPicker or some other INIT/CDEV manager can also be helpful if you’re using a 1M machine, and memory is tight. You can turn off some of your memory-hungriest INITs and CDEVs then reboot your machine, when you need to run a large application. This could get tedious, but it would work well as a stop-gap measure while you save up for more RAM.

I use a CDEV called Answer. It’s an INIT manager by a guy named Steve Bryan, and it’s shareware. It lets me turn off any INITs and CDEVs instead of having to move them out of my system. If something’s going wrong and I’m not sure why, I’ll start by using Answer to turn off all my INITs and CDEVs. It’s just a good way to start eliminating possibilities.

Paul Parisi, Desktop Publisher

Suitcase: Managing Fonts and DAs

Other programs help you to manage large numbers of fonts, desk accessories, FKEYs, or sounds. Suitcase—which I'll tell you about in this section—and its close competitor Font/DA Juggler have three principal features: they help you override the Mac's built-in limit of 15 desk accessories, they help you exceed the seemingly enormous limit of 256 fonts (a feature most helpful to desktop publishing professionals), and they let you use fonts and DAs without actually installing them in the System.

INITs and CDEVs are simply dropped into the System folder; having too many of them may increase your risk for clashes, and may increase the clutter in your System folder, but it does not add to the on disk size of the actual System file itself. Fonts and desk accessories, on the other hand, have always had to be made part of the actual System file itself, by being installed with the Font/DA Mover. Add enough of them to your System, and before long your System file is several megabytes large.

This obesity is not healthy. It means your System can't be backed up on a floppy without special backup software; it also means that some System operations will slow down, as parts of the System file must be found and fetched from locations spread all over your disk (see Chapter 9 for more about disk fragmentation). What's more, installing fonts and DAs, while not difficult, is rather tedious. Better to set things up so that your System can get at all the resources it needs even if they're not actually installed in the System file.

Suitcase for Desk Accessories. Suitcase is an INIT, so you install it by just dropping it into your System folder and restarting. Once that's done, you'll notice that the program itself has been added to the top of your desk accessory list.

All your desk accessories will be listed in alphabetical order, as usual. And right away, the first advantage of a font/DA manager becomes apparent: you can have more than 15 desk accessories in the list.

The second advantage is that you can call up any of your desk accessories without the mouse. In my copy of Suitcase, I use Command-1 to bring up the DA list; then I can type the first letter(s) of any desk accessory to launch it. (Suitcase comes with a default keyboard shortcut of Command-K, but

another Suitcase feature lets you easily change this shortcut to some other key combination if Command-K is already being used for something else in the programs you like to run.)



If you take advantage of Suitcase or Font/DA Juggler to add a long list of DAs to your Mac, you'll run into problems under MultiFinder: Your list of open applications, normally found at the end of a short list of DAs, will instead come at the end of a list that stretches out of sight past the bottom of the screen. SuitCase and Font/DA Juggler both deal with this problem well, letting you truncate the list to show only applications if you press a certain key as you pull down the menu.

In Suitcase, the key you press is up to you; it's one of the program's many customizable options. Figure 7.14 on page 226 shows how I've set up my copy.

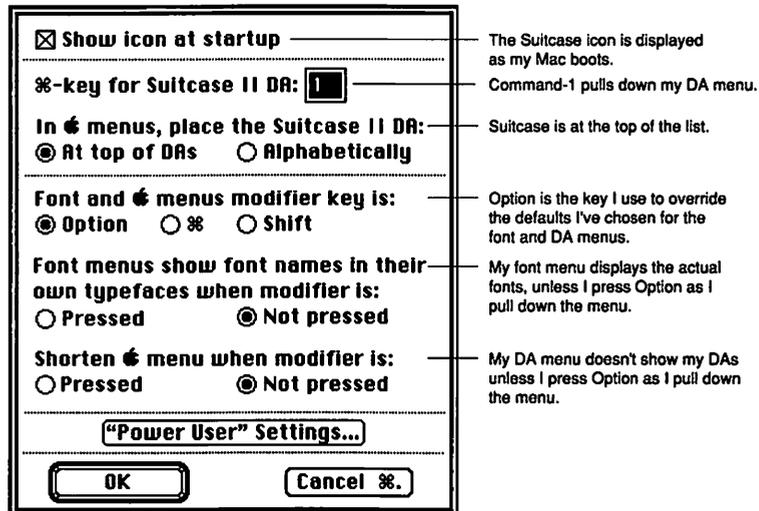


Figure 7.14 Like most good customizing tools, Suitcase has a number of its own customizing options that you can set to match your own preferences.

Suitcase for Fonts

Suitcase is also good at managing fonts. Its most useful skills in this area lie in overcoming Apple's limit to the number of fonts you can have, and helping to cut down on the space that fonts take up on your hard disk.

In contrast to the limit of 15 desk accessories, Apple's cap of 256 fonts may seem like plenty for just about anyone. It turns out, though, that each size and style of font uses up one of the 256 possible font assignments: Just the normal LaserWriter fonts in 9,10,12, 14, 18, and 24-point type would require more than 200 different slots. Although Apple is gradually changing over its approach to fonts, to eliminate this cap, you can see why a utility that surmounts this problem would be handy to most of us, and essential to graphics professionals who use more than the normal assortment of fonts.

Beyond this, Suitcase and Font/DA Juggler both will compress your fonts for you, so that the fonts will take up 25 percent to 40 percent less space on disk. They also handle the common problem of font number conflicts, an issue of concern to graphics professionals. I won't go into a detailed explanation of font-numbering conflicts here; suffice it to say that both these programs help deal with the problem. The Suitcase manual discusses the issues involved very well, if you want the details.



Finally, both Suitcase and Font/DA Juggler let you see samples of all your fonts at any time, both in a special viewing window where you can also see different sizes and styles, and in a font list.

Here's one area where I really prefer Suitcase's approach: While Font/DA Juggler shows all your fonts in a special font list, Suitcase will optionally change the actual font menus within all your applications, to show the actual fonts.

You might not want to use this option all the time, as it can take awhile to "draw" the menu each time you pull it down. But it is very useful to be able to actually see your fonts when you're selecting one.

Beyond all this, Suitcase and Font/DA Juggler add even more features to handle sounds and another type of resources called FKEYs. These features aren't nearly as important as those for fonts and desk accessories, so I won't go into them here—they're not System and Finder essentials. Consider them bonuses, when you buy either of these programs for its font/DA management skills.

I use Suitcase II. It's wonderful—the single most amazing font manager ever. I bought Master Juggler [the deluxe version of Font/DA Juggler] but Suitcase seems to handle Apple's new font system better. I think the Suitcase interface is easier to use; it's very well thought out, and it doesn't use hierarchical menus.

Paul Parisi, Desktop publisher

The companies that make Suitcase and Font/DA Juggler have been in something of a features war for some time, and we Mac users are the winners. Last year, when Font/DA Juggler had more features, I used it; now Suitcase offers just a few more frills, and I'm fickle enough that I've switched for now. I don't think you can go wrong with either one.

You Can Buck the System—If You're Careful

The Mac's customizable System is a wonderful thing, but along with the privileges of customization comes a good deal of responsibility. If you're the type who would really rather minimize risk, use the System Apple gave you, and don't add anything more than a few fonts or an occasional DA—and maybe not even that. There's no shame and dishonor in taking this route; the goal is to do whatever makes you work most comfortably. If you're uneasy out on a limb, don't go there.

If, on the other hand, you're willing to trade some possible challenges for potential rewards, explore the options open to you in customizing your work environment by adding all the fonts, DAs, INITs, and CDEVs you really need. Just make sure to save your work more frequently than you might otherwise, so you can get the most productivity for the least risk.

8 Hard Disks

Storage strategies for your files and folders

At about the time that Apple introduced the Hierarchical Filing System (HFS), which made the organization of files by folder possible, it also introduced the FindFile desk accessory. FindFile let us look for misplaced files simply by entering any part of the file's name, so many of us quickly got careless about where we stored important files—after all, we could always call on FindFile if we couldn't remember where on earth we'd put something.

Helpful as FindFile is, it's a little like the key-finder gadgets advertised in mail-order catalogs: "Just get within ten feet of your keys and clap, or whistle, and KeyKeeper will chirp..." claims the ad. But what if you're so careless you can't even get within ten feet? Wouldn't it be better to get into the habit of leaving your keys in the same place every time you put them down?

That's the basic premise of this chapter: Good hard disk habits make more sense than any utility that attempts to rescue us from our natural tendency to simply drop data into the hole and forget about them. I've put this section near the back, because we're all more attracted to quick fixes and instant results than to long-term management. I'll try to convince you, though, that the strong yawn factor associated with the term "hard disk organization" is undeserved. I'll keep it short and to the point, focusing on three main topics:

- Reasons for organizing your hard disk.
- How to decide what files to keep.
- How to decide where to keep them.

I'll spend most of the chapter talking about good ways to organize your workspace, relying almost entirely on the System and Finder's own features, then finish up the chapter with a few words about PowerStation, DiskTop and Gofer, three utilities that I've found extremely helpful in the battle against hard disk disorganization.

The One Single Goal of Hard Disk Organization

There is—and can only ever be—one single goal of hard disk organization: to get immediate access to the file you want when you want it. As such, good hard disk organization does several things:

- cuts to a minimum the number of mouse-clicks or keystrokes needed to find any data file or application,
- eliminates outdated and unneeded files,
- makes backup easier, and
- keeps hard disk space available for important things.

As this chapter unfolds, I'll use these points as yardsticks to show you how the approaches I recommend measure up.

What Should You Keep on Your Hard Disk?

Too often people define hard disk organization as a system for deciding where to keep files. The first step, usually ignored, should consist of deciding *what* to keep.

Everything you could possibly want to keep on your hard disk falls into just three categories:

- System files, which are generally kept in the System folder
- Applications
- Data, or documents

Each of these groups deserves its own discussion.

System Files

System files include not only the files Apple provides in your System folder, but also any desk accessories, fonts, CDEVs, and INITs you might have added. Usually these files are all kept in the System folder, but with system-management programs like Suitcase and Font/DA Juggler (see Chapter 7) some System files might be kept elsewhere.

Keep these files to a minimum. If you don't use MultiFinder, or Easy Access, or background printing, or an ImageWriter, don't keep those files cluttering up your System folder. Use Apple's Installer to install System software on your hard disk, and specify the equipment you're using, in

order to get the right files added to your System folder. (If, for example, you have an SE, Installer won't put any resources for color into your System folder.)

You should know that Installer won't ever take OUT any files that are already in your System folder. So, the easiest way to clean out your System folder is to start absolutely fresh, and add only what you really need. This procedure is actually quite straightforward:

- (1) Boot from your original System Tools floppy. It's never a good idea to make changes in the System that's currently running your Mac.
- (2) Open up your hard disk's System folder, and drag everything but the System and Finder files to the trash.
- (3) Now open up System Tools, and double-click on Installer.
- (4) Click on the appropriate equipment, and install. This process is described in detail in Chapter 10, and it's also in the manual that came with your machine or system update, entitled *Macintosh System Software User's Guide*.

Once you've got the System down to size, be careful about what you add. Put in anything that's useful, but remember to clean out files that you no longer use.

Applications

The biggest mistake most people make with applications is that they put a copy of every program they own on their hard disk. Don't do it.

After years of lamenting the lack of closet space in my house I laid down a hard-and-fast rule with myself: If I haven't worn it in a month, it's out. "Out" doesn't mean all the way to the Salvation Army; it can mean to the attic or the off-season-storage cupboard. But the decision has to be made.

Use this guideline with your applications. If you don't use a program at least once a month, keep it on floppies. Don't clog up your hard disk.

Documents

I saved documents for last because they should—and will—occupy the largest part of your hard disk and require the most care to keep organized. Documents fall into four subgroups:

- current work—important files for work in progress
- templates—master documents and forms that help you quickly create new documents
- old work—files from completed projects
- junk files—files that never needed to be saved in the first place

Current work and templates are the only documents you should keep on your hard disk. If a project is complete, throw the files away (if you're sure you no longer need them) or copy them to floppy disks, label them, and put them in a box in the closet.

Current Work versus Junk. A junk file is any file you create that doesn't really need to be saved. It's the note to your sister that you'll toss after you've printed it. It's the letter to the editor that you keep until it's printed in the paper. It's the spreadsheet you're using to balance your checkbook. Because RAM can be flakey and computers can bomb, all these files need to be saved while you work on them, or you risk wasting valuable time.

It's pretty obvious that these files are junk. Surprisingly, though, a rather large percentage of what seems to be current work is actually junk, too. Your to-do list for the day before yesterday, the first three drafts of an important proposal, and your Email for the last two weeks should all be tossed now.

But all too often, once something has a name it's a permanent fixture on your hard disk. I solved this problem early on by keeping a folder called "temporary" on the top level of my hard disk. (The top level, also called the "root directory" is the area you see when you first double-click on a disk to see what's on it.) In it goes everything that could possibly be ephemeral: first drafts of almost every document, and all my junk files. I even make sure that my junk files all start with the word junk—"junk Nancy" for the note to my sister, "junk editor" for the letter to the paper, or "junk checks" for my spreadsheet—so there's no mistaking their contents.

Once a week, when I'm ready to back up, I open up the temporary folder and clean it out. Almost all of it goes into the trash, although a few documents have proved their worth and get properly filed away in my current work folders.

Where Should You Keep It?

Once you've gotten into the habit of keeping only really necessary files on your hard disk, you're ready to pay some attention to where to put those

files. And again, the goal is not to follow slavishly some obscure set of rules, but to arrive at a system that allows you to get at any document or application as quickly and easily as possible. Since documents and applications are very different, I'll give you my ideas for each separately.

Applications

Applications you use every day should be kept on the desktop. Applications you use more than once a month, but not daily, should be in a folder called Applications. Anything you use less than once a month should not be on your hard disk, as I suggested above.

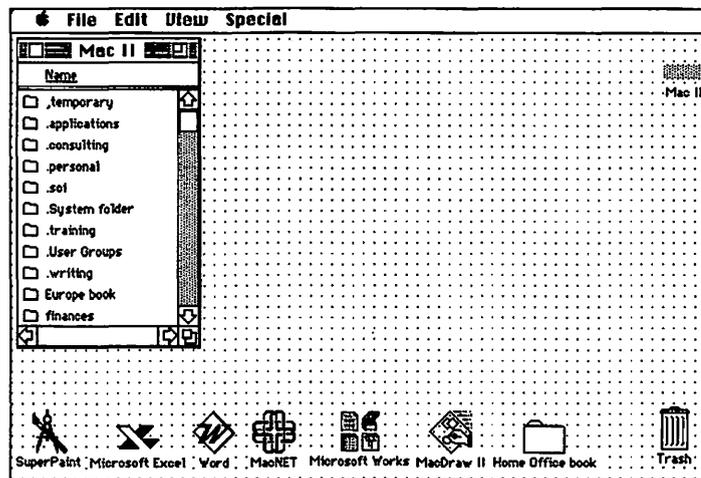


Figure 8.1 You may find it easier to access your favorite applications, if you keep their icons on the edge of your Desktop.

This is my Desktop, as it would look under the Finder. Across the bottom are the icons of any applications I use all day, every day. (Plus, you'll notice, the folder of any big project in the works.) The rest of the applications are in a folder on my hard disk. I'll tell you in the section on documents why I've added commas and periods in front of some of the folder names. I definitely recommend this approach if you're using the Finder's own features to organize your disk most efficiently.

Applications with Associated Files. Many applications have related files that they use for certain tasks. In my example, Word has its spell-checker and glossary files, and MacNet has special files that help dial the modem. If you pull these applications out of their folders, you may have trouble:

Word, for instance, will ask you every time to indicate where you've hidden its dictionary, and MacNet just won't connect.

What can you do? You certainly don't want to keep your word processor in a folder inside the applications folder: You'd have to open two folders each time you wanted to write a letter. You have five other options, three that use just the Finder's own capabilities, and two that use add-on utilities:

- Put the related files in your System folder. Any time your Mac can't find a file it wants, it will look in the System folder before it gives up. I don't recommend this route, because before long your System file will get very cluttered—especially since this fix only works if the files are right *in* the System folder, *not* within their own folder inside the System folder.

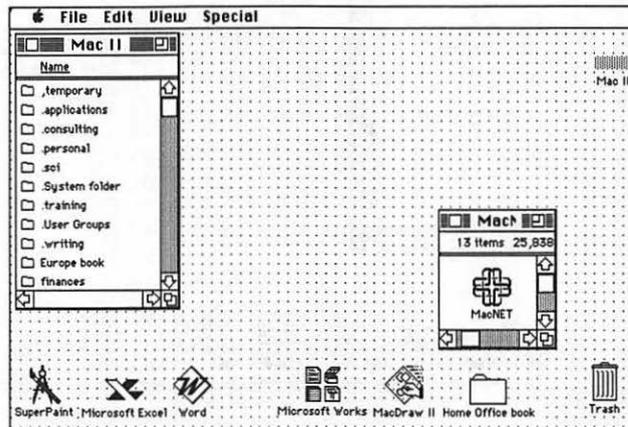


Figure 8.2 One way to access applications that must be kept with auxiliary files is to keep a very small window open on your Desktop.

- Keep the application in its own buried folder, but leave the folder on your Desktop as a tiny open window in Icon view. This takes up a lot more room on your Desktop than a simple icon, but it works: You won't have to dig for your program to launch it.
- Keep the application in its own buried folder, but keep a blank document from the application on the Desktop. Documents can always find their parent applications and open them no matter where they're located. So if you have a blank document

called “Get Word” on your Desktop, you can double-click on it to launch Word. If you do this, make sure to close your “launcher” document and open another blank one immediately, so you won’t accidentally enter data in your launcher.

- Keep everything in its own buried folder, but use a program like QuickKeys to launch the application when you want it. If you select File from QuickKeys’ Define menu, you can tie any file—document or application—to a particular key combination, then just press those keys to open the file or launch the application.

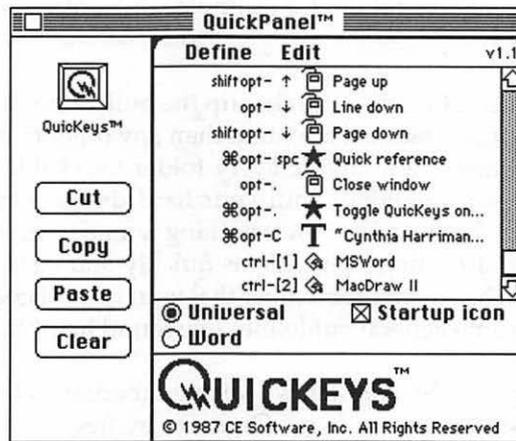


Figure 8.3 You could use a program like QuickKeys to start up any application with a special key-combination, even if the application is buried in several layers of folders.

- Keep everything wherever you want, and use a utility to tell the Mac where the necessary files are located. This last option is the one I used. I have a shareware program called Set Paths, from Paul Snively of Indianapolis (see the Appendix). While the Mac normally will check only the System folder automatically, my Mac checks up to five additional folders for any files it needs, thanks to Set Paths. This is such a sensible thing to do that I hope Apple adds it to the System by the time you read this—but if not, I recommend Set Paths.

A Few Caveats. I’m a firm believer in the icons-on-the-Desktop approach. I used it for years, and couldn’t live without it. Appleshare experts tell me,

though, that their network can't deal with icons arrayed like this; some back-up programs also might not notice folders and files on the DeskTop, so you'll have to consider your own situation.

Documents

Earlier I recommended that you keep most new files in a folder called *Temporary*, and that you remove old documents from your hard disk. If you've done both of these things, then you're dealing with just two kinds of documents here: templates and current work. While you might want to have a special folder for templates, I find it easiest to keep them in the appropriate work folder: The Excel template I use to estimate my taxes is in the *Finances* folder, for example, and a blank invoice is in my *Consulting* folder.

Current work, as it takes up the bulk of my hard disk, demands more of my organizational attention than any other files. Don't get too organized. It's tempting to divide every folder into subfolders, and every subfolder into subsubfolders until your hard disk scheme is seven or eight layers deep. Technically there's nothing wrong with this. But you won't meet the goal of finding every file as quickly and easily as possible with this approach. Always remember that your overall goal is *finding*, not *filing*. Here are some general guidelines I've found helpful:

Organize by Frequency. Keep your organizational structure to three or at most four layers deep. Organize by frequency of use rather than a strict hierarchy. Let's say you're preparing a seminar to present to one of your regular clients, the Dog Food Institute of America; you're doing research, interviewing industry leaders, and creating graphics, among other things. By strictly hierarchical rules, you might arrange your files like this:

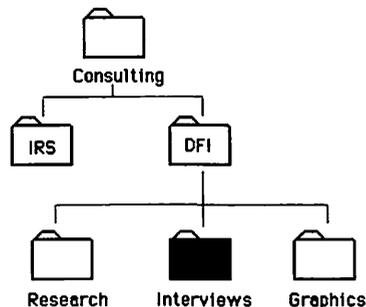


Figure 8.4 If your goal is *filing* your documents in a strictly hierarchical structure, the most logical location for a folder might be a few layers down.

But if you want to be able to get at your interviews folder quickly when some luminary suddenly returns your call, it might make more sense to organize things like this—or even keep the Interviews folder on your Desktop.

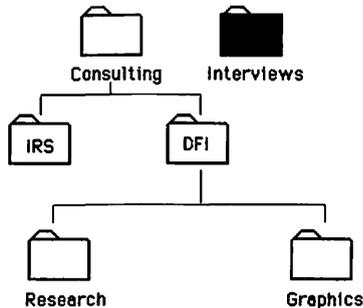


Figure 8.5 It may make more sense to arrange folders in a way that puts the files you access most frequently near the top of your folder structure.

Small Folders. Whenever you get more than a dozen items, start to think about creating some new folders to reorganize things. If you let any folder go beyond a maximum of 15-20 items, you'll end up scrolling through lists too often.

Names Help with Access. Whenever you open a Standard File dialog box, all your files and folders will appear in alphabetical order. Remember your keyboard shortcuts from Chapter 2, and name your files and folders accordingly.

- Don't forget that you can simply press the first letter of a file or folder's name to find it more quickly in a Standard File box. If you like to move through Save and Open boxes this way, give your files and folders names that start with different first letters and are easy to remember.
- If you prefer to use your cursor keys to move around instead, make sure your "favorite" files are at the top of the heap alphabetically, so you can get where you want quickly. This is why you might want to name your Temporary folder ",Temporary". The comma makes it sort to the top of the list, so you can easily drop new work into that folder.
- First letters and cursor keys don't work in the Finder itself. If you spend a lot of time hunting for the same half-dozen folders

all the time in the Finder, you might put a period in front of the names of these most-used folders. This sorts them to the top of the list, avoiding a great deal of scrolling. This is a trade-off: by making it easier to find your favorite folders in the Finder, you've made it more difficult to get to these folders from Save and Open boxes, since you'd have to type ".p" for your Personal folder, instead of just "p". It's a matter of personal preference

Ben Calica and Charlie Rubin, in their book *Macintosh Hard Disk Management*, (Howard W. Sams, 1988), go into much greater depth on recommended ways to organize your hard disk. You might want to take a look at their book if you want additional suggestions on getting the most out of the System and Finder.

This is an idea I picked up at a user group meeting. When I have the first window out on the Desktop it has a System folder, an application folder and a data folder. When you open up the data you get a window with about ten more folders—financial, payroll, store art, things like that. I originally did that to make it easier to back up the hard disk.

Mel Reisz, Jeweler

It's Up To You

In the final analysis, though, it's up to you to devise a system that works for your own files. My goal here was to impress upon you the overall goal—getting at everything quickly and easily—and tell you about some tricks that help you get around limitations of the Macintosh operating system to achieve that goal. (As the operating system evolves and new utilities come on the market, the mechanics may change, but the overall goal will remain the same.)

If you follow these pointers, and modify them to meet your needs, you *will* cut to a minimum the keystrokes and clicks needed to reach any file. You *will* find that your hard disk is no longer cluttered with unneeded files. This, will make backup easier: You're not spending valuable time and disk space creating extra copies of junk (see Chapter 9 for more on backup). And you'll always have room to store the applications and data you do need.

Finder Utilities: PowerStation, DiskTop, and Gofer

Now that you know how to do it right, I'm going to talk about a few Finder alternatives that I think are worth recommending. I've left them till way at

the end of the chapter because it's very easy to use these programs **WRONG**—to stick them on top of a disastrous hard-disk organization that's impossible to back up or clean out.

The other reason I've left them till last is that I think using Finder utilities adds a small but real increment of risk to your work environment. Think of it this way: it's relatively easy to add on to the top of your house—to stick a cupola on the roof, for instance—but it's a lot tougher to make changes to the foundation: You risk collapsing the entire house. These are not programs you run, then put away when you're done; Finder utilities are there, sitting under your other work, whenever you're running any application.

How much of a risk does this entail? I'd say my Mac probably crashes or locks up about 5 percent more often when I use my preferred PowerStation/DiskTop environment, under MultiFinder, with too many applications open at once and too many different weird DAs and INITs and CDEVs all getting on each others' nerves. I just save frequently, and recognize that I'm making a choice that suits the way I work. You have to make your own choice as to whether a very small increase in the instability of your work environment is worth the extra functionality you get from bypassing the Finder.

And bypassing is what Finder alternatives are all about, since a Finder alternative is any program that has the capabilities of the Finder. When you stop and think about it, the Finder does two main things: launching files and housekeeping (renaming files, copying disks, erasing files, and so on). PowerStation and DiskTop, between them, take over virtually all these tasks, and add some special twists you won't get with the Finder alone. PowerStation has special features for organizing and launching files, and DiskTop is a housekeeper par excellence.

Together, PowerStation and DiskTop offer you really useful features like

- easy access to your most frequently used documents and applications, without reorganizing your whole hard disk.
- a much better file-finding utility than FindFile
- the ability to create a new folder from within any application
- better access to the Trashcan and disk icons under MultiFinder

I'll take you on a tour of each program in turn, then tell you a little more about how some people use the two together. At the end of this section I'll talk a little bit about Gofer, a program that can peek inside files to find information you've lost track of.

PowerStation

PowerStation recognizes two conflicting facts of life: You can locate and launch files most quickly when they're on the top level of your disk, yet your hard disk will be a disorganized, hard-to-back-up mess if you leave everything out of folders on the top of the heap. Therefore, PowerStation's main purpose is to give you instant access to the files you work with most, no matter where they're located on your hard disk.

PowerStation does this by creating special pages of buttons that act as an extra layer on top of the Finder, linked to specific files and applications. You click on the appropriate button to launch something, rather than return to the Finder and hunt through layers of folders. For instance, I keep all my applications in a folder called Applications. Rather than leave the applications folder open on my Desktop all the time so that I can get at any program I want, I created a PowerStation page with all the applications I use most often:

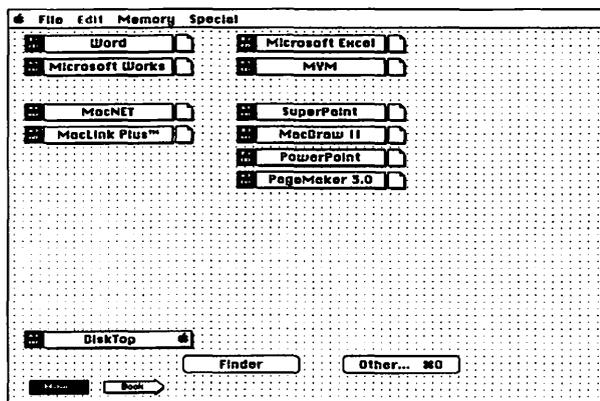


Figure 8.6 PowerStation lets you create up to 16 "pages" of "buttons" for your favorite desk accessories and applications.

A PowerStation page has three columns of buttons, in as many rows as your machine's screen size will allow. On my Mac II, I can have up to 42 buttons on a page; a Mac Plus/SE fits 27. And, since PowerStation allows you to have up to 16 pages of buttons, you have quite a bit of flexibility in what you do.

As you can see by the illustration, I have all my favorite applications on one page that I call home. It's easy to move buttons around on a page, so I've organized them in loose categories: word programs, money programs, connecting programs, and graphics programs. At the bottom of the page, I've made a button for DiskTop, so I can access its housekeeping features easily: Desk accessories can be installed in buttons as well as applications.

Documents can also be made into buttons. I'll generally make a new page for any major project I'm working on, like this book. If I open PowerStation and click on the word Book at the bottom of the page, a second page of PowerStation buttons appears:

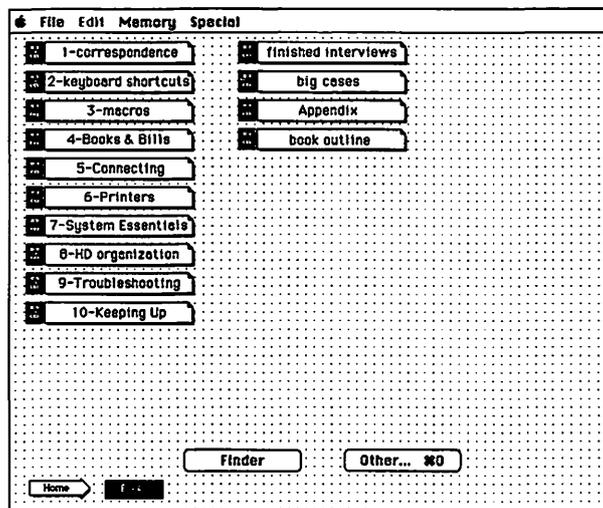


Figure 8.7 PowerStation also allows you to assign documents to a button, so you can easily get at the work you need with a single click.

Creating new buttons is easy. If you click anywhere where there are no buttons on a PowerStation page, little shadow rectangles will appear representing open slots. Click on any one of the blanks, and a menu will drop down, with the first selection, Install Application, as the default.

As soon as you let go of the mouse button, you'll be thrown into a Standard File Open box, where you can select the application you want to install. This part of the process is very well explained in the manual, so I won't go into any more detail here.

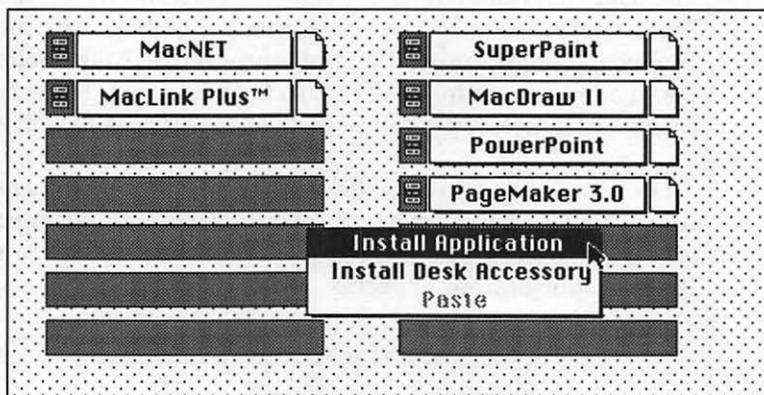


Figure 8.8 When you click on an empty button, PowerStation defaults to “Install Application.” Then you can choose from any application on your disk.

Installing documents is a bit more obtuse, as you may have gathered already from the fact that your only choices in the pop-up install menu are “Install Application,” “Install Desk Accessory,” and “Paste.” Basically, documents can only be installed as an adjunct to an application button. The small page icon to the right of an application button can link either one file, or a group of files, to that button, so that the file(s) open when you launch the application. So, to get a document button all by itself, you need to install an application, install the document, then “dedicate” the button to the document, making the application disappear from the PowerStation page.

Here’s how I installed the different chapters on my “Book” page:

- (1) On a new page, I installed a Word button, as described above.
- (2) Then, I copied the button 13 more times, to allow for ten chapters and four other documents I needed to access quickly. Copying an existing button in PowerStation is done by pulling down on the button’s menu—represented by the little icon on the left—to the Copy command, then clicking on any blank button and Pasting.

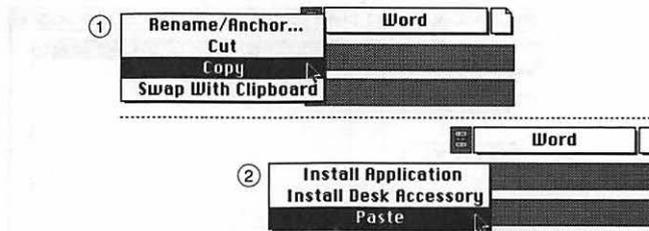


Figure 8.9. Copying a button in PowerStation is an easy two-step process.

- (3) Once I had my page covered with enough Word buttons, I was ready to change each button to a document button. I went back to the first one, and clicked on the small icon to the right of the button—its document icon. As soon as I did this, PowerStation asked me what I wanted to install, and let me move around my hard disk in standard Mac fashion to find my Chapter 1 document.

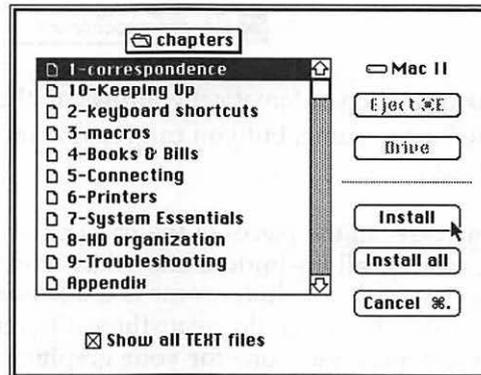


Figure 8.10 When you open a folder, you can choose to link a single document or a group of documents to a button.

- (4) After I clicked on Install, PowerStation gave me a chance to select additional documents—an entire folder, or a random list of documents from all over your hard disk can be “attached” to a button. Since I just wanted the single file, I clicked on the Done button that PowerStation offered me at that point.
- (5) Finally, PowerStation presented another screen where I clicked on “Dedicate the application box to this set of documents”, shown in Figure 8.11, on page 244.

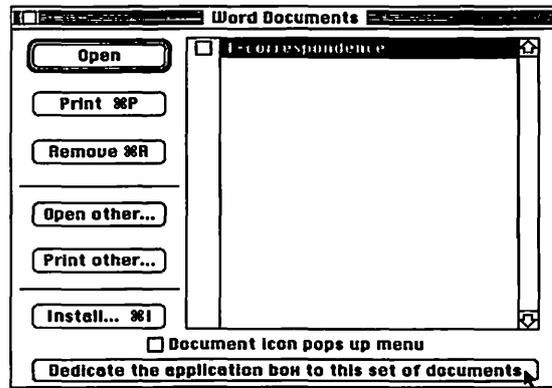


Figure 8.11 After several steps, PowerStation offers you the button that actually changes an application button to a document button.

Now, when I returned to my PowerStation page, the button looked like this:



PowerStation automatically throws up the name of your document as the button name, but you can rename the button if it suits your purposes.

In my case, all the pieces of the project were documents from the same application, so all my buttons started as Word buttons. Obviously, if you have a project that includes some text documents, some illustrations, and some financials, you could create three different “master” buttons, one for your word processor, one for your graphics program, and one for your spreadsheet, then duplicate those to suit your needs. Installing documents in PowerStation could be a bit more straightforward, but it is very flexible.

I'm a big fan of PowerStation and DiskTop. I go into the Finder maybe once a week. PowerStation is very project-oriented: You can make up to 16 pages of buttons to open not only applications but any documents you want, and they don't have to be in the same folder. Then, as soon as a project for a particular client is over, you just delete the button. To do the same thing in the Finder, you'd have to move everything into the same folder, then move it back later.

The other thing that's really nice is that you don't have to permanently decide on MultiFinder or Finder—you can keep a button in PowerStation

that takes you to MultiFinder. DiskTop does all the renaming, copying, and finding files, so you can even get rid of FindFile. You have to have both of them. PowerStation lets you load anything, and DiskTop lets you do all the other things the Finder usually does.

Martin Dalgleish, Consultant to international businesses

DiskTop

PowerStation, with its excellent file-launching features, is only half the equation. To replace all of the Finder's features, I recommend you run DiskTop along with PowerStation. DiskTop is a desk accessory from CE Software, the QuicKeys people. It's been a regular on my machine from the day I first tried it.

Finding Files. The feature I use most frequently in DiskTop is its file-finding capability; I have, in fact, removed Apple's FindFile from my hard disk. FindFile, as you're undoubtedly aware, just locates a file and shows you where, in the hierarchical structure of your disk, you can find it. But at that point you must close FindFile and go get the file yourself—there's no way to say, "Well, let's go there!" in FindFile.

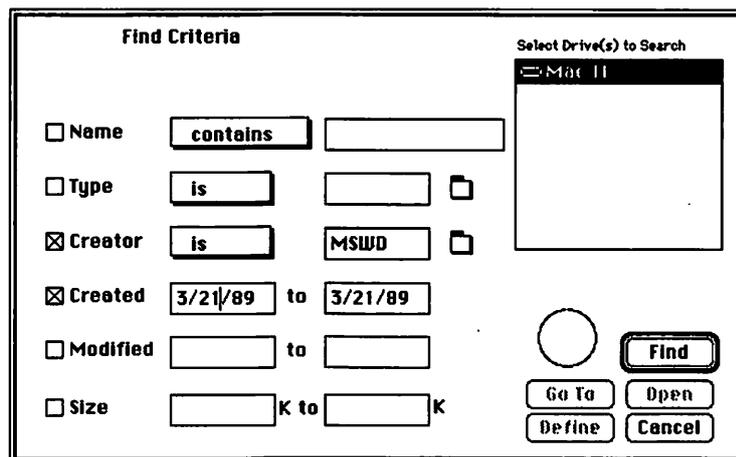


Figure 8.12 DiskTop goes beyond FindFile's capabilities to let you hunt for files by date, size, or by the program that created them.

DiskTop, on the other hand, lets you find files by name, by creation or modification date, by type (such as TEXT, PICT, etc.), by creator (a code that tells what application created the file), or by size. If you can't even begin to

remember a file's name, but you know you created it last Tuesday, and that it was a Word file, you can ask for all files with a creator of MSWD (Microsoft Word's creator code) created on 3/21/89.

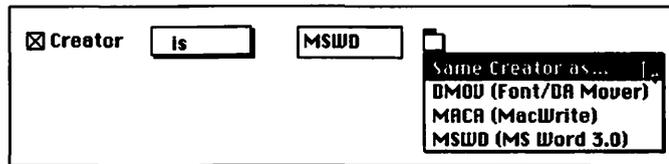


Figure 8.13 DiskTop includes the creator codes for a few popular applications. But you can just point to any file and say "Same creator as this" and avoid cryptic codes altogether.

Using Creator codes seems like pretty sophisticated stuff, but it is useful, so DiskTop makes it extremely easy. To give you a hand, the tiny menu you see to the right of the creator code is a pull-down menu that has codes for three popular applications, and a choice called "Same Creator as..." that lets you simply open up your disk and point to any file that is from the same application as your desired file.

When DiskTop lists all the files that meet your criteria, one of them should ring a bell. At that point, you can select the file, and not only see a visual representation of its location on your disk, but also be able to tell DiskTop to Open the file immediately.

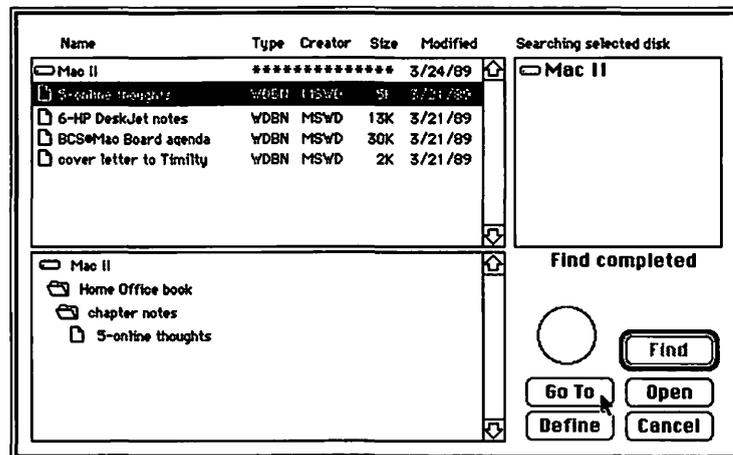


Figure 8.14 Once you've found the file you want, you can ask DiskTop to take you to the file, or even open it.

Disk and File-handling Features. If you used DiskTop for nothing but its extremely versatile file-finding, you'd get your money's worth (the program commonly sells for under \$30). But it's got a lot of other great features, too. Basically, the program has three main screens: the Find screen you saw above; a Files screen where you can Copy, Delete, Move, and Rename files; and what's called the "disktop" screen, where you work with whole disks.

The disktop screen substitutes for the normal Mac Desktop, and displays all your mounted disks and the Trashcan. For the way I work, using the disktop instead of the Finder's Desktop offers a few definite advantages: I can see how full each disk is and how much free space it still holds; and I can get at my disks and the Trash even when I'm in MultiFinder. If you use MultiFinder, you know how irritating it can be to have to resize all your open documents to uncover the Trashcan and disk icons with Apple's approach.

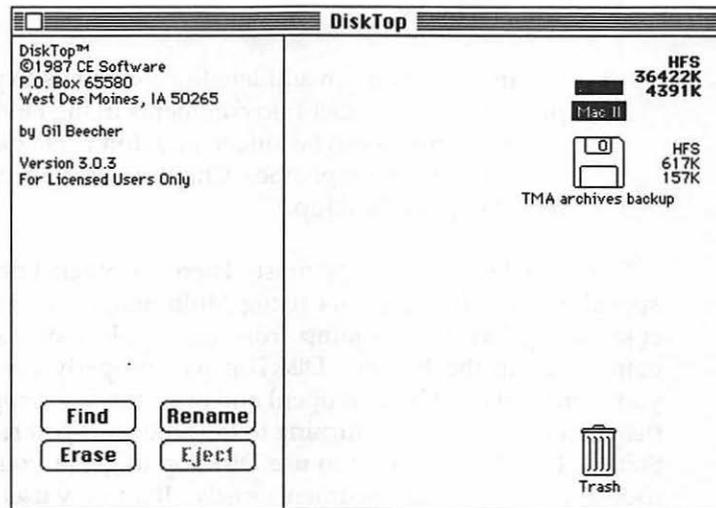


Figure 8.15 Using DiskTop, you can easily see what's on a disk or eject it, without digging down to the bottom of a cluttered MultiFinder Desktop.

The files window has a long list of very useful features that I use all the time. For instance:

- **New Folder.** DiskTop lets you create a new folder in any location on your hard disk at any time. This is great for those

times when you go to save a document for a new project, and the proper folder to put it in does not yet exist.

- **Move Option.** The Finder moves files from one folder to another when you drag them on the Desktop, but it only *copies* them when you drag them from one disk to another: If you no longer wanted a copy of the file on the source disk, you have to manually delete the original after you copy. DiskTop offers both Move and Copy Options, so you can specify which you really want.
- **File Sizes.** It's frustrating to carefully select a group of files for copying, then have the Finder tell you, "Sorry, not enough room...." Any time you're working in the Files window, DiskTop lets you click on the Sizes button to see the total size of your selected files and folders. Even when you're not copying or moving data, this is a useful feature just for finding out the size of a folder.
- **Comments.** You can add lengthy comments to your files, in a process similar to Get Info comments in the Finder. But DiskTop's comments can be longer, and don't get erased when you rebuild the Desktop. (See Chapter 9 for an explanation of rebuilding the Desktop.)

Those are the ones I use the most. There are others I don't use that might appeal to you. If you're not using MultiFinder, for instance, you might enjoy using DiskTop to jump from one application to another without going back to the Finder. DiskTop will properly close the application you're in (you can't leave it open) and open the new program, in a process that's much faster than returning to the Finder. If you're not using PowerStation, there's also a way to use DiskTop to get at your most frequently used applications and documents easily. It's a very useful program.

Gofer: A Text-Search Utility

The final program that I think is very handy for expanding the Finder's capabilities is Gofer, from a company called Microlytics. In contrast to FindFile and DiskTop, which can find any *file* on your disk, Gofer can find any *information* hidden in any file on your disk.

Let's say, for instance, that you're a writer, researching the life of Thomas Jefferson. You're up to 1776, and you need to find every reference in your

notes to the Declaration of Independence. You can ask Gofer to find every file that contains the word "Declaration." Or every file that has "Declaration" anywhere near "Independence." Perhaps instead you're a lawyer, and you need to find every file on your disk that concerns a client named Riley. Have Gofer search for "Riley." Or for "James Riley." Or for "James or Jim and Riley."

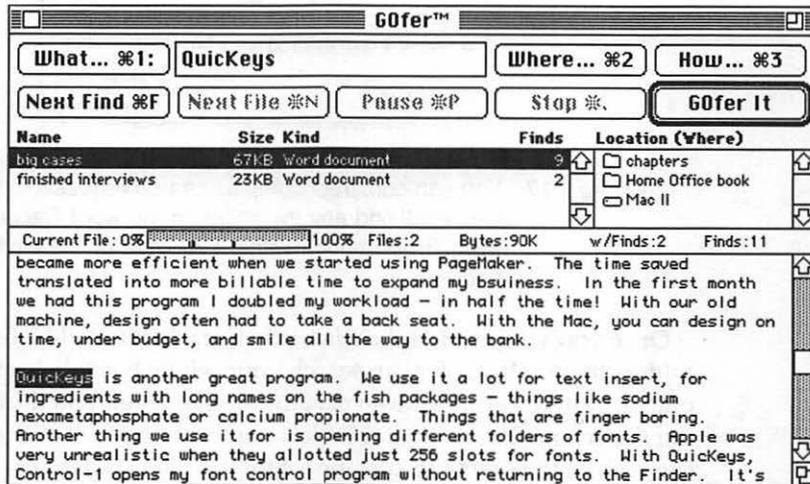


Figure 8.16 Gofer was useful for writing this book, to find quotes and references from my interviews with small business users. Here's Gofer looking for references to QuicKeys.

The really neat thing about Gofer is that, when it finds the files that contain your search words, it doesn't just list the names of the files and where they're located. It actually opens the files and displays each document on screen, where you can not only see the citation but copy it to the Clipboard. Since Gofer is a desk accessory, you can have your word processor open at the same time as Gofer, and easily paste all the appropriate citations into another document or report.

To send Gofer searching, you first specify *what* you want to find, then *where* you want Gofer to look and *how* you'd like the results reported. Each of these three specifications has its own button on the main Gofer screen. If you click on What, you can specify a particular word or words to find, either exactly as you wrote them, or anything close, to allow for spelling variations. You can also build rather exacting queries, using commonly accepted rules of logic, as shown in Figure 8.17 on the following page.

Figure 8.17 You can construct complex search requests in Gofer. Here Gofer will find any instances of the word Declaration or the word Proclamation within five lines of the word Independence.

Once you've specified the *what*, you use *where* to tell Gofer which files or folders to search. Gofer can search your whole hard disk, at a rate of about one megabyte per minute—very impressive when you think that it's reading the whole file, not just the file's name—but you'll still save time if you can restrict the search to specific folders or files. Gofer also lets you restrict the search by file type: You could look at the whole disk, but only at MacDraw files, for instance. Finally, you'll use Gofer's *how* button to indicate how you'd like the results displayed. Gofer's choices are:

Figure 8.18 Gofer offers four options for processing the information it finds in its searches.

Overall, Gofer can be a very useful utility if you're doing the kind of work where you're assembling references from all over your hard disk, or if you're so forgetful about naming your files that you need to look for your work according to what's inside the file.

Even though I love it, Gofer still has a very non-Mac feel. Users should know that first-time set-up can be confusing. But once they find that first long-lost reference they'll swear by it.

Stacey Donahue, Mac consultant

Only You Can Fight Hard Disk Chaos

I can't tell you how to organize your own hard disk any more than I can tell you how to arrange your sock drawer. But I hope with the information in this chapter you have enough ideas to develop a system that makes sense and is efficient for you.

How will you know if you've succeeded? When you can get any document or change applications without opening folders or scrolling through windows, your hard disk matches the way you think and work. Keep at it until your all your work is easily accessible.

9 Problems and Solutions

Fixing whatever goes wrong

There's no use getting creative in trying to warn you about the down side of computing: If you're like most people, the only reason you've even turned to this chapter is because disaster has already struck. Just as very few of us floss daily until after that first painful root canal, we're unlikely to practice good computer hygiene until that first excruciating disk crash. Hopefully, though, it's a minor disaster that's brought you here, and you can pick up some good habits before anything worse goes wrong.

With that hope in mind, this chapter includes information on:

- How to tell if your problem's hardware or software related.
- Speeding up your hard disk.
- Why you should always use Shutdown.
- The quickest and best ways to back up your data.
- Viruses: Should you worry?
- Tips for data recovery.

Although you're certainly welcome to read just the part you need desperately right now and skip the rest till later, I think you'll find it helpful to get the whole picture of what's likely to go wrong with your Mac.

A lot of what's involved in taking care of your Mac is common sense. The Mac really hates to be left by an open window and rained on.

Sam Partridge, Mechanical engineering consultant

What's Your Problem? Basic Troubleshooting Skills

As this chapter took shape, it became apparent to me that almost everything I wanted to put in was related to hard disks. There's a reason for that: There's really very little that can go wrong with the actual Mac hardware. That's why I'll start with the few things that can, then continue on to software/hard disk problems, which are much, much more prevalent.

Hardware Problems

How can you be sure it's not a hardware problem? If the machine is dead (and you're sure it's plugged in...) you know you have a hardware problem. The extremes are always easy. In my experience, though, hardware problems *are* usually extreme, and are usually obvious. The most common ones I've run across (and their solutions) include:

Stuck Disk. If your machine has crashed or locked up with a diskette in the drive, you may find that your only option is to turn off the Mac, wait a minute, then turn it on again. But if the nasty floppy was the cause of your crash in the first place, your machine will only crash again as it tries to boot from the sick floppy.

The solution: Hold down the mouse button as you turn on the Mac. This will force it to spit out the floppy, so you can boot from your hard disk or from a good floppy. Yes, you can stick a straightened paperclip in the little hole next to the disk drive. That's what the hole is there for, as a last resort. But try holding the mouse down first: The paperclip trick can sometimes damage your machine.

Disappearing Screen Image. If your Mac screen has shrunk considerably from its normal size, if it wavers and wiggles, or—finally—if the image fizzles down into a small horizontal band across the middle of the screen, take the Mac to your dealer. Something has happened to your power supply or to your video board, components that are the most likely to fail in Macs. Replacement will cost you in the neighborhood of \$150 to \$200.

Printer or Hard Disk “Disappeared.” From time to time I get calls from people who tell me that their hard disk just doesn't show up on the Desktop, or that all their applications tell them they “Can't Find Printer” even though the printer's right there, attached to the Mac. Most often this is a minor problem, related to your Mac's PRAM. (I only include it here because you're going to assume it's a hardware problem.)

PRAM is not an English baby carriage: It's short for Parameter RAM, an area of battery-powered memory in your Mac that is supposed to keep track (among other things) of all the printers, drives, and other devices you've got attached to your Mac. If this area of memory somehow gets corrupted with faulty data, your machine might not recognize all its parts.

But there's an easy solution: Zap the PRAM. (This is Apple's official term, not just me making a feeble attempt at being cute.) You do this on a Mac Plus by turning off your machine, then removing the battery for at least ten

minutes, then replacing it once the PRAM has had a chance to forget everything it ever knew. The battery on a Plus is located in a small compartment above the power switch.

On SEs and Mac IIs, which have a lithium battery deep inside the machine, you zap the PRAM by holding down the Command, Shift, and Option while you select Control Panel from the Apple Menu. Instead of the usual Control Panel, you'll get a message on your screen that looks like the one below. Click on Yes, then wait a short time until your screen's clear.

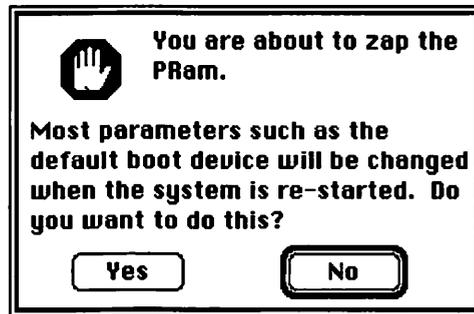


Figure 9.1 Many problems can be solved by erasing an area of battery-operated memory that holds settings for the devices attached to your Mac. This is called "zapping the PRAM."

Whether you've zapped your PRAM by removing the battery or through on-screen commands, you may have to reset some of your control panel settings again when you're done.

SCSI Connection Problems. Always check any SCSI cables connected to your machine when you have problems with your Mac. SCSI cables—most commonly used to connect an external hard drive to your Mac—can give you trouble if they're not on tight, or if there is a kink or sharp bend in the cable.

I once pushed a hard disk back on my desk, so that the cable connecting it to the Mac was forced to bend sideways too far, instead of hanging slack. Not only would the hard disk not boot properly, the Mac couldn't even be started from a floppy: The screen glowed briefly, then went utterly dark, leading me at first to fear that my video board or power supply had died. Many anxious minutes later, I resorted to reading the SuperMac manual, and tried their recommendation on checking the SCSI cable. Since then, I've tried this first and solved a number of perplexing hardware "failures."

I've had at least three power supply replacements, because I have an original 128K Mac that's been upgraded several times. I thought I had another one the other day, because I got vertical lines all over the screen and then it went black. But it turned out to be a problem with the cable on my hard disk, and when I straightened out the cable it's been working fine again.

Henry Barton, Episcopal rector

Software Troubleshooting

As I said above, hardware problems aren't generally too sneaky. Software problems tend to be clever and intermittent, and harder to track down. You'll have frequent system bombs, or observe strange behavior in your favorite applications, and you won't know where to start in tracking down the problem. Here's what you should do:

- (1) **Is it a RAM problem?** From time to time, your program runs amok and records weird things in RAM. Or a stray electrical charge gets into your machine, where it's mistaken for program code or mixed in with your data. That this happens is not so amazing, when you think that everything you do on your Mac is represented internally as a mess of little on-and-off electrical charges. What's amazing is that it doesn't happen more often.

The solution is to clean out your Mac's memory. Save your work. (Use Save As, and give the file another name. In case your problem has corrupted your file, you don't want to Save, which simply replaces your earlier disk file with the mess in memory.) Quit any applications, return to the Finder, and shut down your machine completely. Wait a minute, then start the machine up again.

Turning off the machine will fix your problem, since it wipes out everything in memory. (I'd also try this "brainwashing" technique on a misbehaving printer, before I panicked. Printers have memory that can get messed up, too.) If the problem comes back after you reboot, go on to #2.

- (2) **Is it the application?** Different versions of some applications don't function properly with different versions of the Mac System software. This is more of a problem for people who use pirated software that doesn't get updated properly, and people who install Apple's latest System as soon as it's released. Use legal software, and wait about six months before adapting any new version of the System, and you'll minimize compatibility problems.

Sometimes a perfectly good application gets damaged, too. Try different applications. If the symptoms aren't apparent in other programs, your copy of that application has somehow become corrupted. Erase the application from your hard disk and replace it with a new copy from your original (locked) application disks. If the problem persists, go on to #3.

- (3) **Is it the system?** Try a different system. Since the System is always running no matter what application you're working with, system problems will crop up no matter what you're doing. Shut down your Mac, and start up again from a copy of your original Apple System disks. (If you don't have an extra copy, it's okay to use the originals if you've locked the disks.)

Unfortunately, as soon as you run any applications on your hard disk, the System on the hard disk will grab control of your machine, so you can only play around in the Finder, or load an application from a floppy to see if things are better. If this seems to cure your symptoms, use Apple's Installer to put new copies of all the System files onto your hard disk. If the problem persists, go on to #4.

- (4) **Is it extra copies of the System?** It's easy to accidentally add extra copies of the System file to your hard disk, since almost all application software comes with its own System folder. But extra System files can confuse your Mac and cause erratic behavior (who's in charge here, anyway?)

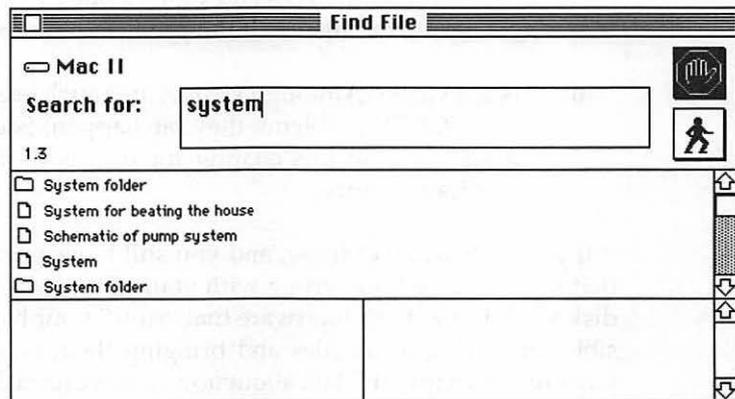


Figure 9.2 It's important to make sure you don't have extra System folders on your hard disk. The Find File desk accessory will show you if you have a problem like the one on this disk.

Use Apple's Find File DA or some other file-finding program to check your hard disk for extra copies of the System. In Find File, for instance, you'd type in "system" in the Search for box. You should see one instance of System folder, and one of System, along with any files that have nothing to do with the operating system but just happen to have the word "system" in their name.

If you see additional System folders or System files, though, note their location and return to the Finder to trash them. Not sure which is your "real" System folder and which are the imposters? The one that's really in charge of your machine—with all your favorite fonts and DAs installed—is distinguished by a small Macintosh on its folder, like this (except in very outdated versions of the System):



- (5) **Is it something you've added to the System?** Remove all non-Apple INITs and CDEVs from your System folder. INITs and CDEVs, as we discussed in Chapter 7, modify the way your System—and therefore your Mac—works. And they can conflict with one another, or with certain applications. Toss them all overboard, reboot, and see if your problem has gone away. If it has, you can try reloading your INITs and CDEVs one by one, checking after each change for problems. If the problem persists, it's time for step #6.
- (6) **Is it a virus?** Although viruses are much less likely than System or INIT/CDEV problems, they can happen. See the section titled "Viruses" later in this chapter for details on how to check for and eradicate a virus.

If you've tried all of these, and you still have a problem, it's most likely that there's something wrong with your hard disk—not with the physical disk itself, but with the software that "runs" your hard disk, that's responsible for storing away files and bringing them back to you on demand. Later in this chapter I'll talk about how to solve hard disk problems like this. But before I do, I'd like to emphasize how you can *prevent* hard disk problems, instead of merely trying to cure them.

Watch out for air vents. Once I put my Kleenex box too close to my hard drive, and it slid over and blocked the vents on my external drive, under

the computer. It fried my hard drive. I got lucky, because it would work for ten minutes until it warmed up, so I got all my data off. It was a Nova MicroTech with a five-year warranty, and I did get it fixed for free, too. But I'm more careful now.

David Hartmann, Self-employed contractor

Hard Disk Jargon

To get the most out of the rest of this chapter and out of some of the hard disk utilities I recommend, understanding the meaning of four basic terms is helpful. For your review, here they are in dictionary form:

Bits. Every piece of information kept on a disk (or in your Mac's memory) is stored as a series of on-and-off signals, where an "on" signal is represented by a number 1 and an off by a 0. These are *binary digits*—a term shortened to the word *bits*. This binary system of storing information can be thought of like a Morse code, only with 0s and 1s instead of dots and dashes.

Bytes. Eight bits are used to store each character; this group of eight bits is known as a *byte*. A kilobyte is approximately 1,000 bytes (if you want to be exact, it's 1,024 bytes, due to differences between a computer's binary math system and our decimal system).

Desktop File. A file on every disk that helps the disk mount itself (show up) in the Finder when you stick it in your drive (floppies) or turn it on (hard disk). The Desktop File records the icons for each file on your disk, and the positions of any windows the last time the disk was used.

Directory. A listing kept on a disk of every file on the disk and where it's located. When you look at a disk's contents in the Finder or use the File Open or Save commands, the list of file names and folders you see is generated by the directory.

Speeding Up Your Hard Disk

Just as your car's mileage deteriorates between tune-ups, your hard disk's performance slows, too, in the course of normal use. Two factors contribute to a hard disk's fall-off in performance: Extra icons in the Desktop File and fragmentation. Let's take a look at what causes both these problems, and how they can be solved.

Extra Icons

The Problem: Every time you copy a file onto your hard disk (or onto a floppy for that matter) important information about the file is stored in the Desktop File. First, there's information about the icon needed to display the file in Icon or Small Icon view. There's information your Mac uses to recreate the position of windows and the View (by icon, by name, etc.) of any open windows, just as you left them last. And finally, there are any comments you've entered in the Get Info boxes of any files or folders. All this is great stuff, and very essential to the proper operation of your Mac. Unfortunately, though, the Mac's operating system is a little sloppy about removing this information when you erase a file.

Let's say, for example, that each week you add 20 new files to your hard disk and erase ten. After four weeks, your Desktop File contains icon information for 80 different files, even though your hard disk now only contains 40 actual files. Do you care? You should, and not just because the Desktop File gets larger and takes up a bit more space on your hard disk. Your Mac uses the Desktop File whenever it returns to the Finder, and these operations take noticeably longer when the Desktop File is overloaded with unneeded icons.

The Solution: There are a couple of ways you can get rid of the extra icons. One (unsatisfactory) solution would be to move all the files off your disk, initialize it, then move the files back on. Initializing a disk erases it completely and creates a fresh new Desktop File; then, as you copy files back onto the disk, only the appropriate icons get "registered" in the Desktop File. This works—but it's extremely tedious, and there's no need to go to these lengths.

Instead, you should simply *rebuild the Desktop*. You do this by holding the Option and Command keys while you Restart your Mac. Keep holding them until you see a message that says:

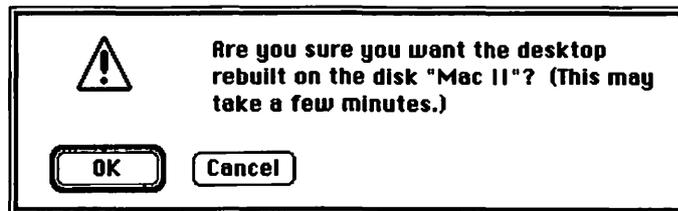


Figure 9.3 Rebuilding the Desktop can increase performance of most disk operations.

Click on OK, and the Mac will throw out the current Desktop File and build a new one based on the actual files that are currently on the disk. This can take a while with a large hard disk, but it's definitely worth it.

I have a really big hard disk—150 megabytes. I found it was taking 16 to 20 seconds to update the Desktop every time I returned to the Finder. It was frustrating—you've got all this high-powered hardware and it doesn't perform. Then I started rebuilding my Desktop file every week or two, and it takes more like three seconds. You do have to remember you lose [the contents of] your Get Info boxes. It's more important to me to have performance than Get Info.

Paul Parisi, Desktop publisher

There are two possible side effects to rebuilding the Desktop that you should be aware of.

- Any comments in your files' Get Info boxes will be erased by this procedure.
- Some data files may lose their original icons, which will be replaced by a generic icon.



Figure 9.4 The file on the left displays the usual icon for More files; the one on the right has turned into a generic document icon.

Comments disappear no matter what, when you use the standard Rebuild-the-Desktop procedure. Icons are only affected in files whose parent application—the one that created the file—is not currently present on any disk mounted in the Mac. (You can get the icons back simply by copying the parent application onto the hard disk, even if you subsequently remove the application again.) Since neither of these drawbacks is serious, I recommend you rebuild your hard disk's Desktop every few weeks, to make sure it's running efficiently.

(One final note: If you like to put comments in your Get Info box, there are special utilities that can clean out your Desktop file without removing comments. 1st Aid Kit and Disk Express (both mentioned in more detail below) are two of the many programs that can do this.)

Fragmentation

The Problem: When you first save a file on a relatively empty disk, all its data get recorded in one place, an arrangement referred to as *contiguous* storage. Later, if you create several more files, then go back to add on to your first file, the file will be too big to fit in the space it formerly occupied, and part of it will be stored elsewhere on the disk, in the next available space. As your disk gets more and more crowded, there may in fact be no one single space available that's big enough to fit a file even the first time it's saved: Your Mac will have to scout all over the hard disk, storing bits and pieces of the file in small corners left available when you erased other files.

Before long, your disk bears a definite resemblance to the daily newspaper, with two paragraphs of the lead story on page one, four more on page three, and the rest hidden amidst the obituaries on page 64. And just as it takes you quite some time to read a story when you must flip to another section to find its next piece, so does your work on the Mac slow down when each part of a file must be located and retrieved from a different part of the hard disk. This mess is known as *fragmentation* or *noncontiguous storage*.

The Solution: Fragmentation can also be cured by copying all your files off the hard disk, initializing it, then copying everything back on, file by file. While there are utilities that can handle defragmentation, you might want to save your money. Why? I highly recommend that you back up your data before you use a defragmentation utility, since the procedure puts your data at risk. And once you're backed up anyway, it's just as easy to initialize and restore as it is to use a utility.

That's *my* opinion—and that of some friends who create System software at Apple. But since you may feel differently, I'll spend a few pages telling you about two good utilities—HD TuneUp and Disk Express. HD TuneUp is part of Symantec Utilities for the Macintosh (SUM), a package that includes several different programs for file recovery, disk troubleshooting, and partitioning, as well as defragmentation (more on SUM later in this chapter). Disk Express, from AIsoft, is more limited in its scope—but does a more thorough job of defragmentation.

Let's start by taking a look at a typical SUM HD TuneUp session, so you can get a better idea of what's involved in defragmenting your hard disk with a utility program.

- (1) Launch Symantec Utilities Disk Clinic program, then click on HD TuneUp. You'll be asked to indicate the drive you want to work with, then you'll see the screen in Figure 9.5.

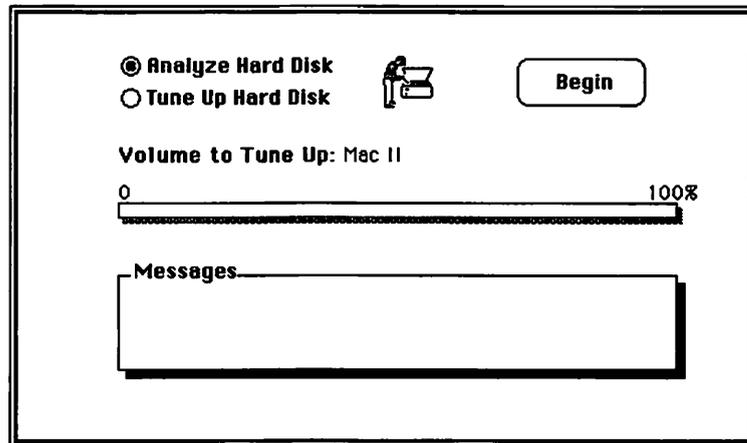


Figure 9.5 When you start up SUM HD TuneUp, you can select a drive to defragment, and choose to Analyze or Tune Up.

- (2) Click on Analyze Hard Disk. This part of the program looks at your hard disk and reports back in a few minutes, telling you how much of your hard disk is fragmented.

Symantec recommends you defragment your hard disk any time that more than two percent of it consists of fragmented files, even though improvements probably won't be obvious on a disk that's less than ten percent fragmented.

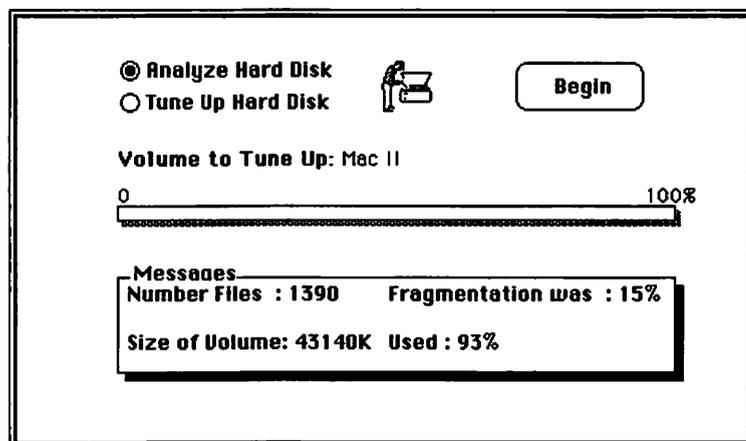


Figure 9.6 If you select Analyze, you'll see the extent of fragmentation on your hard disk. Improvements are most noticeable on disks that are more than ten percent fragmented.

- (3) Before you proceed, make sure you've backed up your data. This is important, because the defragmentation process consists of moving bits and pieces of files all over your disk. In the unlikely event that something—a power failure, for instance—went wrong in the middle of the process, your data could be damaged.
- (4) Finally, you'll click on Tune Up Hard Disk to actually carry out the defragmentation procedure. Depending on the size of your disk, this will probably take at least ten minutes. When it's over, you should find all sorts of disk operations—Saves, Opens, Find Files, etc.—are much more efficient.

It's important to realize that the defragmentation process requires some free space on your disk in order to work well. This is due to the way defragmentation is performed: By moving all parts of a single file to a blank area of the disk where the whole file can be stored contiguously. If only a small proportion of your disk is blank, and the blank areas are scattered all over the disk, it will be next to impossible for HD TuneUp to reassemble any but the smallest files.

In Figure 9.6 shown above, for example, the disk being tuned is 93 percent full—too full for the process to work properly. On a disk like this, you'll get repeated "Unable to Optimize" messages, as file after file is passed over. When the disk is analyzed again after defragmentation, you'll find that it's still almost as fragmented as before. You'll have to delete some files, and try again.

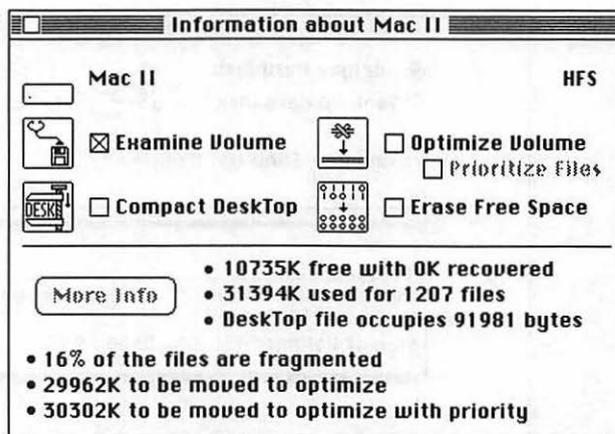


Figure 9.7 Disk Express's "Examine Volume" and "Optimize Volume" compare to SUM HD TuneUp's "Analyze" and "Tune Up."

Disk Express. A more thorough job is done by Disk Express, a program from Alsoft, Inc. Instead of moving your data file by file, like SUM, Disk Express moves pieces of files, temporarily parking data in one area while it frees up enough space in another to store the entire file. What's more, Disk Express defragments not only your files, but also the free space on your disk, gathering it all into one contiguous chunk. This approach has two definite advantages:

- Your disk will stay defragmented longer: new files can be stored contiguously in the large free space created by Disk Express. After a SUM HD TuneUp, free space is available only in small blocks scattered all over the disk, and new files must be split up almost immediately upon creation.
- Even a rather full hard disk can be defragmented. Disk Express will keep parts of your file in memory, if necessary, while it cleans out space to reassemble a particular file. Alsoft claims that the program can defragment even a completely full hard disk, although I haven't tried one that full.

Disk Express can also *prioritize* your data. This means that, as it rearranges the files and free space on your disk, it puts files most likely to change near the free space. Applications — which rarely grow or shrink — are filed away in a far corner. Documents, your Desktop file, and your System file (which grows and shrinks whenever you change fonts and DAs) are placed close to open areas, where they can easily be added to. This makes future defragmentation much quicker and easier.

A few definite disadvantages come with the real plusses of Disk Express:

- The process takes *a lot* longer: about an hour for a 40M hard drive that was only 18 percent fragmented. If you're in a hurry, though, more recent versions of Disk Express include a Quick Optimize option that does the equivalent of a SUM TuneUp — to tide you over until you have time for the more thorough job.
- Any interruption of the process almost guarantees that your data will be damaged. Since Disk Express is juggling small bits of your files into different locations on disk, and into memory, a power failure—even one of those brief thunderstorm-induced flickers—could stop the process, with your data scrambled and the directories on your disk improperly updated. The actual data may not be harmed, but you won't be able to find it without an accurate directory.

Even the SUM/QuickOptimize approach can cause problems with your data if the process is interrupted. Always make sure to back up your data just before you optimize your hard disk.

When you're using Disk Express, do not under any circumstances turn off your machine. When you start out, it doesn't tell you how long defragmenting is going to take, until it actually starts—and then it usually says "this will take about six days." That's an exaggeration—it's more like a couple of hours. But if you have second thoughts when you realize your machine's going to be tied up for that long, don't turn off the machine. You will wipe out everything—you'll effectively create moth-holes in every single document and application on your hard disk. I'm embarrassed to say I learned this the hard way.

Kate Hatsy Thompson, Writer and graphic designer

One final note on Disk Express: it also includes an option called "Compact Desktop" that purges icons from the Desktop file (see above) without destroying the comments in your Get Info box or losing any icons. If this is important to you, you might prefer to use this utility rather than use the Mac's built-in procedure for rebuilding the desktop.

Shutdown

One of the simplest ways to avoid trouble with your hard disk—and unfortunately one of the least understood—is to make sure to use the Shutdown command in the Special menu of the Finder *every time you turn off your hard disk*. If you use a Mac II, you probably don't have to be reminded: it's really the only obvious way to turn off the machine. If you're using an SE or a Plus, though, you may not have developed the Shutdown habit.

Shutdown is essential for two main reasons. First, you can seriously damage data on your hard disk if you turn the disk off when it's in the middle of recording data. Since it's not always readily apparent when the disk is actually recording, Shutdown is the best way to guarantee that you're not interrupting the Mac as it writes data to disk. That's why Shutdown displays the message on a Plus or SE (shown in Figure 9.8 on page 267).

Second, your Mac records important housekeeping information in the Desktop File at Shutdown, information that includes the View of each window (by Icon, Small Icon, Name, etc.) and the position on screen of each window and file. This is what enables the Mac to start up again with everything just as you left it. If you turn off the machine without Shut-

down, this information won't be saved, and you'll see a very obvious delay next time you start up, as your machine tries to piece things back together on its own. You may even see a message as you turn it on, that says "The disk <disk name> needs minor repairs. Do you want to repair it?" Your Mac is telling you that it needs to fix the Desktop file, so you should say yes.

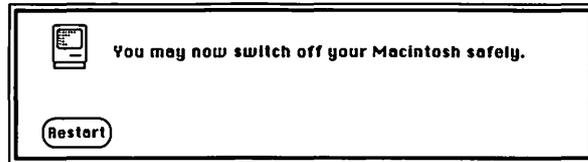


Figure 9.8 Always use the Finder's Shutdown command to turn off your machine.

Then, for the rest of your life, you should use Shutdown so it doesn't happen again. Next time you might not be so lucky: Instead of minor damage, you may find you've damaged your disk's directory, and—even though your precious data are there—there's no way to retrieve any of the files on your disk.

One final note. Even though I've told you Shutdown is absolutely essential, don't panic if you just *can't* do it because a crash has locked up your machine and you have no alternative but to flip the switch. When you can't, you can't. No, it's not good for your hard disk, but there's no other choice, so do it. You'll probably find that your next start-up will take a very long time, but chances are everything will be fine.

(A note for Mac II users: Since Shutdown turns off your machine without the use of a switch, you may not be aware that you, too, have an on-off switch that can be used when your machine's locked up. Reach around the right side of your system unit, and you'll feel it in the lower corner on the back. Press it if you're locked up and can't use the mouse to Shutdown properly, then use the normal keyboard start-up procedure.)

I keep a copy of Apple's Disk First Aid program on a floppy, and I run it every time I have a crash and can't Shutdown properly. I read the part about it in the Mac Utilities manual, and it said to use it for preventive maintenance. About a third of the time I run it, it comes up with some problem, especially if I crash in Image Studio. I've got to believe if you don't find the problems right then, and let Disk First Aid fix them, you're gonna pay some day. Eventually I probably would have gotten an error message, but why wait? I'm not into risk.

Paul Parisi, Desktop publisher

Quickest and Easiest Ways to Back Up

I'm not going to waste pages and time explaining to you why you should back up. You already know you *should*. But that doesn't mean you *do*.

If you still aren't backing up, it may be because you're not sure about what your options are. In this section I'll talk about your choices, and give you some ideas that might help you develop a successful backup strategy—a combination of hardware you can afford and understand, software that has the features you need, and a planned schedule that reflects the way you work.

Deciding When to Back Up

How often you back up depends on the amount of work you create, and how difficult it would be to recreate that work. Working on the last few chapters of this book, close to my deadline, I'm copying my work to floppies every hour or so, to make sure I couldn't possibly lose words that would be difficult to recraft. When I'm doing more routine tasks, once a week might be enough.

Most people back up weekly or monthly. Stop and think: If your hard disk stopped functioning today, how old would you want your backup data to be? Could you live with last month's files? Last week's files? Yesterday's files? Take the time to ask yourself, and decide on an answer.

When I make a new file I put it on a floppy called "Transfer" and take it to my machine at home. It's no big deal to bring five or ten files home to my other machine—it's not like backing up 15 floppies every day. If I know I'm going to be doing a lot of work, I take the second hard disk to work. It's still a little dangerous; if something happens when both drives are on the same machine I suppose I could wipe them both out. But I'm not sure if anyone's much safer than that.

Mel Reisz, Jeweler

Deciding What to Back Up

Don't back up things you don't have to: it just wastes time and disk space that you'd rather use for some other purpose. Think about the different things on your disk (look back at Chapter 8 for a discussion of what should be on your disk in the first place), and make some decisions:

- **Applications.** There's no reason to copy all your applications every time you back up. You have "backup copies"—the

original floppies—sitting on your shelf somewhere. If, however, your application is one that can be customized (you can add your own Command-keys, default styles, or other preferences), consider backing it up onto an extra floppy whenever you make changes to it, and storing the floppy with your original disks.

- **System.** If you have installed desk accessories and fonts into your System folder, you'll want a backup copy of your System. This is especially important because the System file can get damaged or corrupted more easily than any file on your disk, due to its complexity and the fact that it's in use all the time.
- **System Data.** System data files are often overlooked by people who religiously back up all their documents. By "System data" I mean files that are created by your System utilities. This might include a name/address file that goes with a Rolodex-type program, or all your macros and keyboard shortcuts from a program like QuicKeys or Tempo. It's easy to forget these files, and you'll be lost without them.
- **Documents.** You don't need to include all your data every time you back up—only the files that have changed since the last time you backed up. Specialized backup software can tell the difference, and save you a lot of time.

Backup Software

When you back up your files, you create copies of them on another disk or a tape. (If several disks or tapes are used, they are referred to as a backup set.) Then, if your data is damaged, you *restore* your copies to your hard disk. While backup copies can be made simply by dragging files to another disk with normal Finder procedures, special backup programs are often faster and offer more options. To assess these programs, it's helpful to understand a few basic terms and techniques:

Global Backup. All the data on your hard disk (except applications or other exceptions you've specified) gets backed up. Global backups are carried out with one of two basic techniques:

Mirror Image. An exact copy of the disk is made on another disk or tape, with each piece of each file in exactly the same place on both the original and the copy. Mirror Image backups are extremely fast, but if your hard disk is badly fragmented, your backup will be just as messy.

File by File. Data is moved to another disk or tape file by file: all the pieces of file A are collected from your hard disk, and stored together on the backup disk. This approach is slow, but very reliable, and has the added advantage of defragmenting your files.

Incremental Backup. Once all your data have been backed up, you'll need a way to do a partial backup of selected data. Different backup programs offer different options for incremental backup. Some only back up files that have changed since the last time you backed up. Others can back up changed files, files with specific names, files created by certain programs, and so on. You'll need to study the options and think about your backup needs to judge the incremental options in a program you're considering.

Another important issue in incremental backups affects the amount of disk space you'll need for your backup. Some programs actually update the changed files on your backup disks, so that your backup set still takes up as much space as before. Other backup programs keep the old file and add its updated version to the backup set; when you restore, the most recent version is copied back onto your hard disk. The latter approach results in a backup set that grows rapidly, filling extra disks or tapes until you start over with a new global backup. The backup program that Apple supplies with the System works like this.

Alternating Backups. Some people think it's a good idea to keep two sets of backup disks, and alternate the two: On Monday, you back up your hard disk to cartridge A (or to the floppies with the blue labels), on Tuesday to cartridge B (or to the red floppies), then on Wednesday to Cartridge A (or blue floppies) again, and so on. It's no more trouble than backing up to the same set of disks every day or every week, and provides an extra measure of safety.

Here's why: Let's say you keep only one set of backups. You back up on Monday, then on Tuesday you accidentally erase half of the names in your customer file. Before you realize your error, you back up—replacing the only good copy of your customer file with the damaged one. On Wednesday, when you open the file and find everyone in the last half of the alphabet gone, you turn to your backup disks—but that file's damaged, too. If you had alternated backup sets, your chances of destroying your only good copy of the data would have been lessened, since you'd have had three copies of the file at any time.

Backup File Formats. Some backup programs store files in the same form as your Mac does. If you've backed up onto floppies with such a program, and your hard disk dies, you can make an extra copy of a floppy and use it

directly. (Note I said *make a copy* first; it's risky to use the only copy of any important data.) Other programs use a special backup format that compresses data and speeds backup. The trouble with these programs is that you can't use your backups directly; you must use the restore program that came with your backup program, which may be difficult if your hard disk is out of commission.

Backup Software

The best way to see how these options and terms actually affect the ease and speed of backup is to take a brief look at three different examples of backup software: Apple's own HD Backup, Redux (from Microseeds Publishing), and DiskFit (from SuperMac).

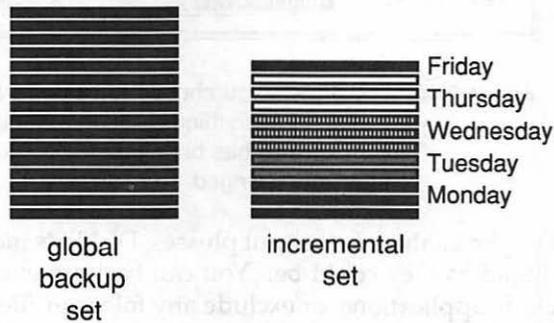


Figure 9.9 Apple's HD Backup is free, but its incremental backups just keep adding and adding to your stack of floppies each time you back up.

Apple's HD Backup. HD Backup comes free with every copy of the System—but you get what you pay for. Its incremental options are so limited that you can't even choose not to back up your applications: The program can copy all your files, or incrementally back up those that have changed since the last backup. It can also back up a single file, splitting it over several disks if it's too big for one floppy.

To use HD Backup with floppies (the only medium it's designed for) you would first do a global backup, then incremental backups on a regular basis. HD Backup adds to your backup set every time you do an incremental backup, so before long you'll have several dozen floppies. Apple recommends starting over, with a new global backup, whenever your incremental backup set gets to equal half the size of your global set.

SuperMac's DiskFit. DiskFit has several advantages to recommend it. First, it works with any media: floppies, a second hard disk, removable

hard disks, megafloppies, and tapes. The program actually updates files, rather than just add to your backup set; this keeps your stack of floppies to a minimum, or saves space on another drive or tape. Another DiskFit advantage is that it stores files in Finder-readable form, so if your hard disk fails, your data are immediately accessible from the backup media.

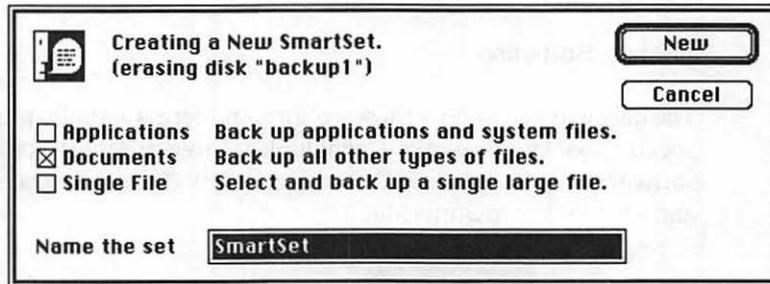


Figure 9.10 DiskFit lets you choose to back up a single file, just documents, or everything on your hard disk. Once a backup set ("SmartSet") has been created, DiskFit will just update files that have changed.

Despite all these important plusses, DiskFit's incremental options are not as broad as they could be. You can back up everything on your disk, or exclude applications, or exclude any folder or file whose name is enclosed in [brackets]. Adding brackets to your files' and folders' names is bothersome, and may keep some programs from working properly (SuitCase, for instance, may not recognize desk accessories whose names are in brackets).



Figure 9.11 Redux has very flexible options for incremental backup, all of which are specified simply by making selections from pull-down menus.

Microseed's Redux. Redux also works with any media, and updates files rather than add to your backup set. It offers the most flexible imaginable

options for selective incremental backup. Redux displays a list of your files, and you can then:

- Click to individually check files you want backed up, and uncheck those you don't.
- Automatically select the files you want to back up: all files—all System files—all applications—and/or all documents.
- Select groups of files that start with, end with, or contain certain words.
- Select files that are older than or newer than a certain date.
- Select all files that are of a certain TYPE (all TEXT files, all PICT graphic files, etc.)

The one possible drawback to this model of flexibility is that Redux does not create backup disks that are in Finder-readable form. You *must* use Redux's restore program to get at the data on your backups. If this makes you uneasy and you don't need the incredible flexibility Redux offers, consider DiskFit or some other program of your own choosing.

Hardware Options for Backing Up

There are five widely used hardware options for backing up your data: floppy disks, regular hard disks, megafloppies, removable hard disks, and tape drives. Each has its pros and cons.

Floppies

Pros: Cheap and accessible—uses equipment you already own.

Cons: Backup is slow, with constant human intervention required. Backing up a 20M disk takes about twenty-five 800K floppies (or about twelve 1.4M floppies).

Advice: Use floppies if you can't afford any other solution, but make sure to invest in a good backup program that can do quick incremental backups without adding to your backup sets. A backup program will reduce the time and tedium involved in backing up, and will make it possible to back up files that are larger than a floppy can hold.

Hard Drives

Pros: Fast and convenient. May be more reasonable than you think, since your second drive needn't be as big as your primary drive (you won't be backing up your applications). Great as a spare, if your drive fails.

Cons: Costs more than floppies, although still less than other options. Finite capacity—a hard drive will fill up some day—means that you can't use it to "archive" files (store files you want to save, but don't need on your hard disk).

Advice: Cheapest *convenient* solution in a one-person office. Be prepared to archive files onto floppies to save backup hard disk for current files.

Megafloppies

Megafloppies look like floppy disks with a thyroid condition. About five inches square, megafloppies require a special disk drive and can usually store either 10 or 20 megabytes.

Pros: Faster than floppies. Removable media means two or more people can share the drive, and use their own megafloppy disks. Extra megafloppies can be used for archiving important files, or graphic libraries.

Cons: Slower than hard disks. Technology may die out as it's eclipsed by the lower prices of hard disks and the faster speeds and larger capacity of removable hard disks.

Advice: A good bet in an office where people can share the drive and a removable hard disk is too expensive.

Removable Hard Drives

Removable hard drives combine the speed of a hard drive with the infinite capacity of a floppies and megafloppies: when one 45M cartridge gets full, you just pull it out and insert the next one.

Pros: As fast as conventional hard drives. Great for sharing between several people, and archiving large amounts of files.

Cons: Much more expensive than other choices. Widespread reliability problems with cartridges—which all come from the same original source regardless of vendor—when the technology was first introduced.

Advice: Definitely the easiest way to back up, if you can afford it. Check reliability with other users before you buy, to make sure early problems with this technology have been ironed out.

Tape drives

Tape cassettes that look a lot like regular audio cassettes can be used for backup, along with a special tape drive.

Pros: Easy to share among several people. Small cassettes are easy to store, and can hold 40M to 300M.

Cons: Almost as slow as floppies. Can't be used as primary drive in case of drive failure. If your hard drive fails, data backed up on tapes may be inaccessible unless you have an extra hard drive to which to restore your files.

Advice: Useful in large offices where several people need to share a backup device, and spare drives are available for restoring data.

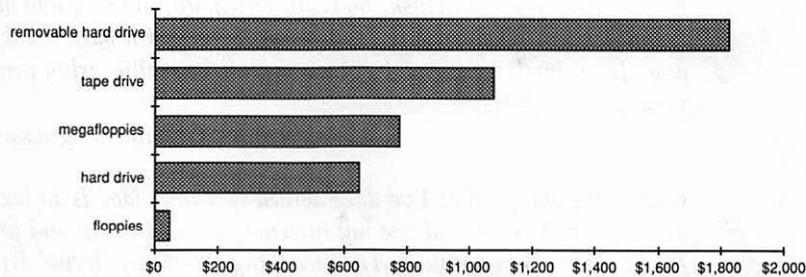


Figure 9.12 Comparison of approximate costs to back up 20 megabytes. While prices may vary, relative costs of each technology may help you make a decision that works for you.

A Few More Opinions

I hope at this point I've inspired you to back up regularly, or that I've nudged you far enough that you've at least made one more resolution to get serious about backup. And if I haven't convinced you, perhaps some other Mac small business users will:

Backup—what a question! I just lost my whole hard disk. I used to back up once a week, religiously, but in the process of a recent move I let it slide, and it got me this morning. My hard disk just wouldn't show up or do anything. I get the happy Mac icon, but then nothing more happens. Looks like I'll have to go back to my latest backup. I'll survive. I probably won't realize what I'm missing until later.

Charlene Anderson-Shea, Weaver

For backing up, there are some things I'll back up directly on floppy, and other things I back up to a removable cartridge drive. I don't have a tape backup, and I don't use any backup software. I'll just copy a whole set of folders at once—just drag them over and walk away. I'm using a Mass Micro DataPack. The first unit I had trouble with, so I sent it back. They said it was all right but I still had problems so I sent it back to them again. This time they replaced it and I haven't had any problems since. It's a wonderful device—if it's reliable.

DeRay Norton, Desktop publishing

I'm using Redux for backing up. I like it a lot, and I especially like the support the company offers. I was backing up a hard disk that had some sector damage in it—and here I was with all these floppies and I couldn't

restore them to the hard disk. So I called them up, and they told me to send them the disk. They rebuilt the directory and sent it back to me the next day. It's a small company, but they seem to be really caring people, with very good products.

Cheryl Jencks, Graphic designer and editor

One of the things that I've done which is a neat idea is to boot off my external hard drive, and use my internal one for backup and for storing stuff I don't use very much. The nice thing about an external drive is that you can take it with you so that your office is always available wherever there's a Mac. Two drives is a very smart idea—and always buy twice the size drive you think you need.

Martin Dalgleish, Consultant to international businesses

I back up regularly with DiskFit, about once a week. I just do one set [of backups]. The DiskFit manual says you should keep two different sets, and rotate them and everything—but you'd have so many disks! I don't run into that much serious trouble. I do have to admit I make an extra set every two months or so, and take them to my parents' house in Phoenix when I go there. This is LA—I gotta be ready for the earthquake!

Brian Batastini, President of Magical Entertainment

Viruses: Should You Worry?

Viruses, as unpleasant and real as they can be, have become a convenient scapegoat for everything that goes wrong on the Mac. Got a System bomb? Blame a virus—don't stop to make sure you don't have extra copies of the System file on your disk. Mac won't boot? Blame a virus—don't even question the mishmash of 17 INITs and CDEVs you have in your System folder. This section is an effort to help you figure out when (and if) you really *do* have a virus infection, and when you should turn your attention to other problems.

What is a Virus?

Biological viruses are characterized by their small size and by the way they latch onto living cells, then multiply and infect other cells. Computer viruses are similar: Small bits of programming code that latch onto other programs, then multiply and “infect” other programs. Computer viruses as they are currently known in the Mac community bear other similarities to their biological counterparts, including:

- Viruses come in many varieties. Most are not really very severe; they should be considered in the same league as the common cold, not as comparable to AIDS or other deadly viruses.
- You may harbor a virus for months without realizing it, while the infection is spreading.
- Removing the original source of the infection and its original target won't stop the virus if it's already spread to other "cells."

Biological viruses are a trick of nature; computer viruses, unfortunately, are tricks played on all of us by very twisted programmers. In common with vandals, mass murderers, and other social misfits, virus programmers want a feeling of power over other people, and they love to read about their exploits in the computer press. While some of them claim to write viruses to "alert people to weaknesses in computer security" or to "spread a message of peace," as long as the end result is anxiety and wasted time and resources, I for one can't attribute any positive motives to any of these criminals.

What Is the Worst a Virus Can Do?

Conceivably, there's no upper end to what a virus *could* do. But don't let that statement panic you: The viruses that have circulated in the Mac community so far only affect applications. *They do not harm data.* I can't emphasize this enough: If you have original diskette copies of all your applications safely on a shelf somewhere, you can easily recover from any virus infection the Mac has seen to date. (While this is meant to reassure you, and is true as I write this, past experience is no guarantee for the future. Read Mac magazines and stay current, so you'll know if things change.)

How Do You Know You've Got a Virus?

There are two ways you're likely to find out your Mac has become infected: By using special utility programs that diagnose possible viruses, and by the presence of certain symptoms.

Common Symptoms to Watch For. There are three main symptoms that might tip you off to the presence of a virus. They are:

- Difficulty running or printing from programs, especially spreadsheets or graphic programs. (My only encounter with

SCORES, one of the two most common Mac viruses, made itself known when copies of the network game Maze Wars wouldn't run.)

- Changes in the size of your System file, when you haven't added any fonts or DAs. Since viruses frequently lodge in the System file and multiply there, it's not a bad idea to jot down the size of your System file, then check it from time to time.
- Changes in icons, especially the Scrapbook and Notepad changing from small Mac icons like those seen on the left to generic document icons like those on the right:



This phenomenon is one of the classic tip-offs to infection with the SCORES virus.

Since these symptoms apply to known viruses—principally SCORES and the second widely-observed Mac virus, nVir—you might also want to use a diagnostic program that helps guard against infection.

I caught a virus when I took my disks to someone's computer to print a couple of contracts. The disks had the documents and my application on them, and the virus jumped onto my copy of Word, then got into my System when I got home. I had an inkling that I had a problem: MacWorld had a great article on viruses that said one sign of nVIR is an extra beep as you go into an application. (What's worse, according to the article, is if you have [the speech utility] MacInTalk installed your computer says "Don't Worry" instead of the beep.) My user group suggested using both Virus Rx and Interferon to get rid of the virus, so I did. Now I've got Vaccine on my System, to warn me about any other viruses.

Brian Batastini, President of Magical Entertainment

Virus Diagnostic Programs. Programs that "prevent" viruses fall into two categories: Those that watch for the behavior of known viruses like SCORES or nVir, and those that watch for changes in the System file. Those in the second group are potentially more powerful, since they have the potential to warn you of new and different viruses. But since they operate

by notifying you when *any* changes are made to any resource in the System file, they can cry wolf often enough to make you eventually ignore real problems.

A few words of explanation are in order. The Mac's System file is made up of dozens and dozens of resources, which can be thought of as building blocks that can be combined to customize your copy of the System. You change resources whenever you add or remove a font or desk accessory; other commercial programs make additional changes to System resources to make those programs work in special ways. Modifying and replacing resources, then, is a *feature* of the Mac System, as explained in Chapter 7.

But this feature is something that in fact makes the Mac more vulnerable to viruses than some other computers might be. And that's because viruses often operate by modifying System resources, or resources in other application programs (since all Mac programs use the building-block approach). So now you can see why a program that beeps whenever resources are changed might be a mixed blessing! If you use such a program, at least make sure to remove it or turn it off whenever you use the Font/DA Mover.

Some of the better-known virus detection programs include:

Ferret	by Larry Nerdry	detects Scores
Interferon	by Robert Woodhead	detects Scores and nVir, watches for changes to system file
Vaccine	by Don Brown	Detects Scores and nVir, watches for changes in significant system re- sources
Virus Rx	by Apple Computer	Detects Scores and nVir

I've given credit where credit is due, here, because each of these authors has distributed his program without charge, for the good of the user community (Woodhead requests a donation to his favorite charity). These programs are available from their authors, through user groups and on-line services, and in the case of Virus Rx, from Apple dealers. See the product list in the Appendix for more details.

Virus Cures

Many of the programs listed above as virus detection utilities also help eradicate viruses. Others on the market specialize just in the cure of viruses.

These programs find infected files, then help you remove those specific files from your hard disk.

I'm a bit wary of this approach. Once a disk has been infected, I think it's better to completely initialize the disk, to make absolutely sure that all traces of the infection are eradicated. I know this sounds something like the old days, when a child's toys and bedclothes were burned after a bout with scarlet fever—but I don't think it's going overboard. One of the known traits of the SCORES virus, in fact, is its ability to modify itself and hide, then come back and start infecting a disk again.

Here's what I recommend you do, once you've determined that you have a virus infection:

- (1) Back up all your data files. While data files are not corrupted by known viruses, it's recommended that you make a completely new set of backups rather than write over the disks you used for your last backup session. An extra backup copy never harmed anyone.
- (2) Erase the hard disk. Use a locked floppy containing a copy of the utility that came with your hard disk to initialize it. (In the case of Apple's equipment, this is the Apple HD SC Set-up program in the Set-up folder on your System Tools disk.)
- (3) Check your master System and application disks and any other floppy with a virus detection program to make sure they're clean. Here's how you must do this:
 - a) Put a new copy of the System and Finder on your hard disk. Put a copy of a virus detection program like Virus Rx on the hard disk, then check the hard disk to make sure that what you've done so far hasn't infected the hard disk.
 - b) Now check every floppy you own: your System master disks, your original application masters, your backup disks, and any other disk that's been anywhere near your computer. Your detection program will give you results for each disk.

If you checked them with Virus Rx, for instance, you'd get a long report that's a bit tough to understand, followed by a summary like the one shown in Figure 9.13, which is all that really matters.

- c) If any disk is found to be infected, check your hard disk again for viruses before you proceed, or you may risk transferring the infection to every subsequent disk you check.

```
SUMMARY:
Invisible Files & Questionable INITs: 3

* One or more questionable files were found.      *
* These don't seem to be of immediate concern.    *
* You may wish to check their resource forks.     *
* Relax for now, but run this program again later.*
```

Figure 9.13 Virus Rx gives you a report on any suspicious activity after it checks your disk.

Some sources recommend keeping your hard disk off and using only the floppy drive to check your diskettes for infection; they stress the importance of avoiding any risk of recontaminating your freshly initialized hard disk. This is a bit silly: You'll be swapping floppies all day on the typical one-floppy hard drive machine, and it's much easier to simply use the hard disk for the detection procedure, then wipe it clean again after the work is done.

- (4) Once you're done with the disk-checking procedure, initialize your hard disk again (there's so little on it, it's worth the extra bit of safeguard to wipe it out after you've been plugging diskettes in it right and left). This time, restore your own System folder on the hard disk, because you're on the road to recovery.
- (5) Copy all your application programs back onto your hard disk.
- (6) Restore your data files from their backups.
- (7) Check your hard disk one final time with your virus detection utility, to make sure it's virus-free.

At this point you can start breathing again. You've wasted a good half-day's work, but you've removed the infection from your Mac. Now read the next section to find out how you can avoid getting infected again. Unlike human viruses, computer viruses don't leave behind any measure of immunity just because you've had them once!

Virus Prevention

Virus prevention falls into two categories: safe computing habits and virus prevention utilities.

Safe Computing Habits. In the current virus-panic atmosphere, you've probably read articles that go so far as to advise you never to use public

domain software and shareware, never to download any programs from a bulletin board and never to put any floppy in your machine that hasn't been first checked for viruses. This is somewhat akin to saying you should never leave the house during the flu season: Sure it would decrease your chances of infection, but you'd never have any fun or get anything productive done.

Here are the middle-of-the-road guidelines that I follow:

- Get shareware and public domain software only from known reliable and fastidious sources, like BMUG or The Boston Computer Society. These groups depend on high-volume sales of public domain software at very modest prices to support their computer outreach activities; they take huge pains to keep their disks clean to avoid any possible risk to their reputations and their finances.
- Don't download program files from local bulletin boards. Again, commercial services and boards run by the very large user groups take stringent efforts to guard against viruses. But downloading your own PD and shareware software from bulletin boards takes so much longer and generally costs more than buying it from a reputable group that it isn't really worth the trouble.
- Trade data documents with friends and colleagues, but not programs. No viruses loose in the Mac community to this date infect documents. And if you're getting your PD and shareware from a reliable group and buying your application programs legally, what kind of program files would you be getting from other individuals, anyway?

Virus Prevention Programs. These utilities work as INITs or CDEVs for the most part, loading into memory at start-up and running at all times to warn you if anything tries to modify resources in your System file or in any application. I've mentioned several of them above under "virus diagnostic programs"; most of these programs do double-duty in prevention and detection. Another one I didn't mention above is Guardian, a commercial program that's part of the Symantec Utilities (SUM) package.

Between the combination of reasonably careful habits and keeping a virus "alarm" program on your machine to warn you of suspicious events, you should be able to get back to work without sacrificing any considerable amount of time or mental concern for viruses.

Tips For Data Recovery

It would be perfectly possible—and appropriate—to write a whole book just on data recovery. But rather than pass on to you every possible data recovery problem and its appropriate solution, I'll instead concentrate on telling you what to do about three of the most common file problems, then leave you with lots of advice about the tools and knowledge you should add to your personal arsenal to deal with anything else that might come down the line.

The Application is Busy or Missing

One of the most frequent problems you'll encounter in opening files is this message, when you double-click on a file in the Finder:

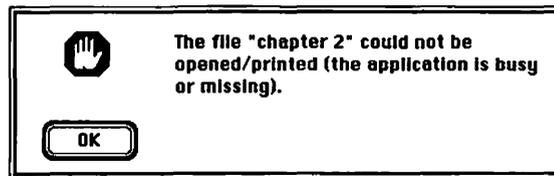


Figure 9.14 There are three main reasons you'll get this error message; two of them are very easy to fix.

(Older versions of the System give the related message "An application can't be found for that document.") When you try to open a file from the Finder, your Mac checks the document's *file signature*, a bit of information in all files that tells what application created the file; it then tries to open that application.

Sometimes the file signature gets damaged, and your document "forgets" what program created it. If this happens, open the application first yourself: You probably know what application you used to create the file. Then use the File Open command inside the document to open the file. Saving the file again in the normal manner should recreate its file signature properly, so the document will open from the Desktop next time you need it.

Other times, the master list of all your applications and their codes, which is kept in the Desktop file, gets damaged and causes this problem. If several files cause this message to be displayed, this is more likely to be the cause. Rebuilding the Desktop, as described earlier in this chapter, will usually solve the problem.

In a very few rare instances, you may have to repair the file signature of a specific document yourself, with a repair utility. One program that can both diagnose this problem and help you fix it is 1st Aid Kit, described in more depth below.

Accidentally Trashed Files

Another common problem comes from accidentally dragging files to the Trash Can. You can always double-click on the Trash, open it, and drag your file out again—only until the Mac's invisible janitor comes along and empties the Trash (or until you select Empty Trash from the Special menu).

It turns out that trashed files can often be resurrected. This is because, when you trash a file, it doesn't actually get deleted: Its name simply gets removed from your disk's directory. Your actual data are still there but the file won't be listed in any Finder windows or Open dialog boxes. The file will remain on the disk until the computer needs the space it occupies to store some new data you've created.

So if you do accidentally erase crucial files for which you don't have backups, *stop working on your disk immediately*. Don't take the risk of overwriting the deleted files before you have a chance to recover them.

SUM Guardian. One way to guard against problems like this is to use SUM (Symantec Utilities for the Mac), the same package that I mentioned earlier in conjunction with HD Tuneup. If you've installed it on your hard disk, it should be able to recover any deleted file right after the accident, and even recover some files later on.

I'm a real believer in Guardian. I accidentally trashed the master mailing list for my business after I'd just updated it. A half hour later when I realized it was gone, I was able to get it back with just one click. It really saved my life. The way it works is, you keep an INIT called Shield in your System folder, and it keeps a record of files as you throw them away—sort of a phantom directory. When you open SUM, it goes to the directory and tells you whether the file's still available. Sometimes it tells you a file's available and it's not all there; there are pieces missing and the file won't open. It's not a sure fire thing, but it's better than nothing.

Keith Thompson, Newsletter publisher

Do You Want to Initialize?

The most dread condition of all occurs when you put a floppy in your drive—or even worse, turn on your hard drive—and get the message "Disk

is unreadable. Do you want to initialize?" You know you don't want to initialize the disk, since that will erase all your data and destroy any chance you might have of ever seeing it again. But the only other option this heart-stopping dialog box offers is Eject, which won't solve your problem.

Problem:

There's something temporarily wrong with the disk itself.

Your disk hub (the round metal part you can see in the back) may be stuck off-center. Also, disks left in the cold or in a hot car can shrink or expand, making it impossible for the drive head to find the exact location of your data. Always let disks come to room temperature if they've been exposed to extreme temperatures.

Solution:

Wiggle the disk hub with your finger, and try the disk again. Many disks that won't work on the first try do fine on the second. If the disk has been exposed to extreme temperatures, let it come to room temperature before attempting to use it.

Problem:

There's something permanently wrong with the disk itself.

If you've upended a chili-dog on your diskette or dropped it in a mud puddle, it may be so gummed up your drive can't read it.

Solution:

There's no good solution for this situation. (Moral: Keep chili-dogs and other foods away from your computer area, and transport your disks in a good disk carrier.) Don't even try to use the disk, or you may damage the drive itself.

Problem:

There's something wrong with the data.

All data on all disks consist of thousands of magnetic "on" and "off" signals. If for some reason just a few of these signals go haywire (due to an electrical surge or software crash while the disk was in your Mac or due to contact with a magnetic field in some other machine) the Mac may not be able to read the entire disk.

Solution:

Sometimes you can blank out the offending area with a utility program (this is called "zeroing out bad sectors"): Once the mess is cleaned up, the rest of the disk may work just fine—but of course you'll be left with a hole in the middle of at least one file, in the area where you erased all the magnetic signals. Check out the instructions in 1st Aid Kit to learn more about this procedure.

Problem:

There's something wrong with the directory of the disk.

If the directory of a disk gets damaged, the data on the disk becomes inaccessible, even though it's all still there.

Solution:

Use a utility program to restore the directory. If that fails, you may be able to use a utility to extract text from your files, a process that can get all the words out of your document while sacrificing any formatting (fonts, margins, indents, etc.) in it.

If you've just retrieved your disks from the glove compartment and it's 110° out, or if you've just mopped up your spilled coffee, you know which of these possibilities applies to you. Diagnosing damage to your directory or to your data itself is more difficult. I use a program called 1st Aid Kit.

1st Aid Kit

1st Aid Kit is one of those rare programs that gives the average user credit for being able to understand some pretty sophisticated technical information—but yet, doesn't require this understanding to use any feature of the program. Its big strength is its manual. Honest. Even if you have never read another software manual in your life, consider reading the 1st Aid Kit manual.

The manual starts off with three chapters that give you all the background you could ever want about how disks actually store data. These chapters, entitled "Things Your Computer Salesperson Never Told You," "Files and Disks," and "Prevention" are followed by three more chapters geared at explaining how to diagnose and solve any kind of Mac-related problem.

This second section starts with a chapter called "Error Messages" that lists every conceivable kind of aberrant behavior of which the Mac is capable, followed by all the normal on-screen error messages you're ever likely to see. When something goes wrong, you thumb through the symptoms or through the alphabetical list of error messages to find the problem. Each problem refers you to pages in the "Troubleshooting Procedures" and "Recovery Procedures" chapters to help you figure out what to do. What's more, each solution includes several possibilities, starting with the one that's simplest and least likely to cause any untoward side effects, and continuing on through procedures that are more difficult and more risky.

I personally find it easier to deal with disaster when I have some inkling of what's going on, and I've found that knowing more about how this all

works makes me less likely to *have* disasters in the first place. If you're on a hard deadline, though, or if you just go at life in a different way, you may want to forego the manual and just use the software.

Unlike many recovery programs that assume you're a programmer, 1st Aid Kit speaks English. If you had just received a "Want to Initialize" message, for instance, you'd start by inserting the disk and pulling down the Disk Repair menu.



Figure 9.15 In 1st Aid Kit, most of your disk problems can be dealt with by choosing Diagnose and Recover from the Disk Repair menu.

When 1st Aid Kit is running, the Mac's normal defense mechanisms—that would make it reject the damaged disk—are bypassed, to let you insert your bad disk without the "initialize" message being triggered. You'll proceed by selecting Diagnose and Recover from the menu, and 1st Aid Kit will give you a full report on the disk, like this:

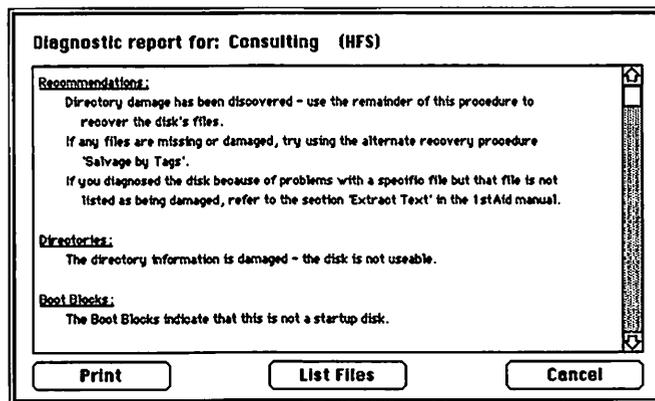


Figure 9.16 After it examines your disk, 1st Aid Kit gives you a full report. Then you can use its excellent manual/guidebook to decide what to do next.

You'll select List Files, and 1st Aid Kit will show you a list of all the files on the disk—even though it reported directory damage. You'll check the list, and select any file(s) you want to salvage, then click on the Recover button in the List Files window

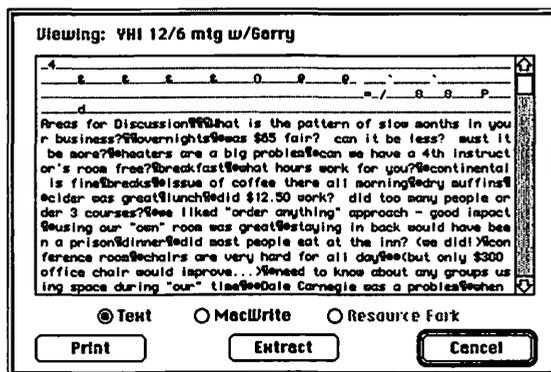


Figure 9.17 If a file can't be recovered in full, 1st Aid Kit can often recover the text contents of the file. If your data are essential, a mess like this is better than no file at all.

What happens next is not so definite. 1st Aid Kit will chug away, and will report your files as recovered. In many cases this will be true, and you'll be back in good shape. Sometimes the recovery's not successful, and then your options depend on the type of file you've lost. If your files were produced by a word processor or database, you'll want to use 1st Aid's excellent Extract Text feature, which is almost always successful in pulling the actual words out of your dead file.

If your files were created by a graphics or spreadsheet program, you'll probably have to give up at this point, and get on with recreating your work.

Symantec Utilities for the Mac (SUM)

SUM contains disk recovery tools in addition to the defragmentation tools and undelete-file tools you saw earlier in this chapter. SUM's features overlap with those in 1st Aid Kit by quite a bit. Both can recover files from a damaged floppy or from a crashed hard disk, about equally well. But SUM goes one giant step further, in recovering files from a hard disk that's actually been *initialized*.

It turns out that, although we've all been told that initializing erases everything on your disk, the Macintosh System doesn't actually wipe a hard

disk clean when you initialize. (Notice that I said hard disk. Initializing a floppy *does* completely clean off every trace of data, making recovery absolutely impossible.) SUM tries four different methods to recover your data, and can often succeed.

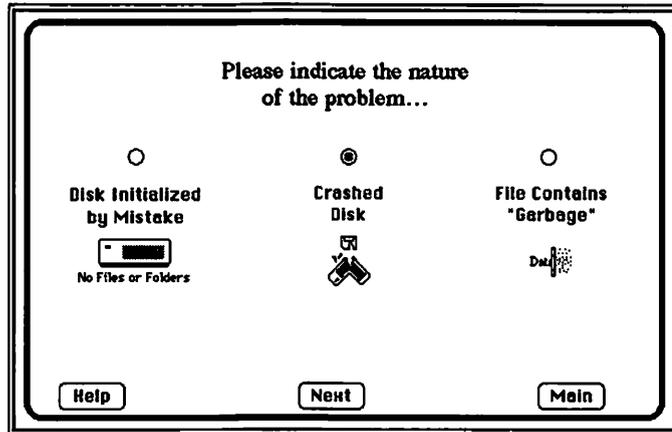


Figure 9.18 SUM can actually recover some hard disks that have been initialized—completely erased.

I wouldn't recommend that you buy SUM, then wipe out your hard disk on purpose just to see if it works. It does, but like any other disk recovery tool, there are no guarantees. Your chances are best if you have Guardian (the Shield INIT file that comes with SUM) installed on your hard disk, and if you've backed up SUM's Volume Save file onto a floppy. This file stores important directory information about deleted files that aids recovery.

Which Recovery Program Is Best?

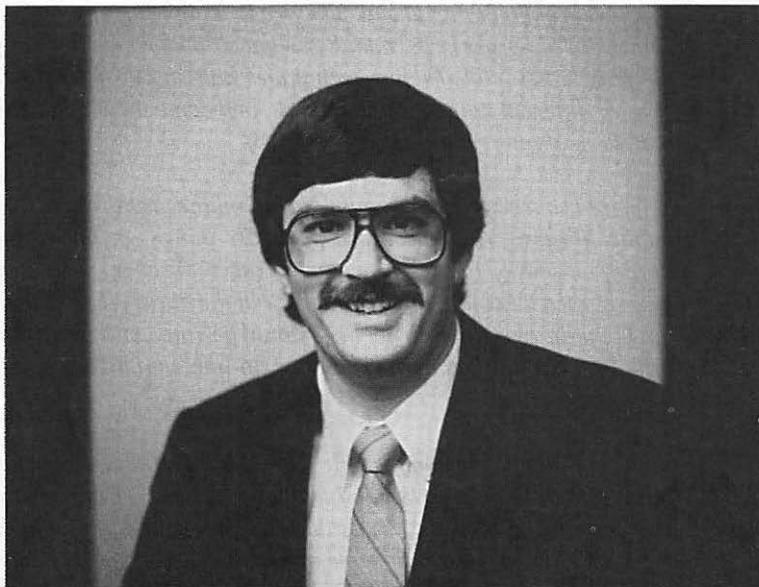
I recommend you get both SUM and 1st Aid Kit. SUM has a wider range of tools, and is better at undeleting files and recovering initialized disks. 1st Aid Kit has Text Extraction, a feature that has saved my data many times, and a marvelously educational manual for any and all problems you might encounter with your Macintosh.

I feel really comfortable with SUM, although it has the worst manual in creation. My 90-megabyte external hard disk crashed, in a power failure: I could mount it, but I couldn't get at any of the files. SUM retrieved all of them—that's really amazing. It also has a file retrieval capability that enables you to retrieve files you've deleted.

What I don't like is that it doesn't distinguish between files you deleted, and ones the computer got rid of. It only keeps the last 100 files, and about half of those are usually unrecoverable [because new files have overwritten them already]. Last time I checked, out of 46 recoverable files only 13 were anything useful—the rest were print files, copies of the DeskTop and other temporary files the computer itself generates and trashes automatically.

Martin Dagleish, Consultant to international businesses

For every user whose data and sanity have been saved by SUM, there's another user who has changed his will to remember the makers of 1st Aid Kit. But as good as both these programs are, the bottom line is: Don't count on these programs to bail you out. They're no substitute for backing up!



Tom Ballard
Business Consultant to the Mining Industry

Tom is a partner in a mineral venture company that looks for gold properties in the West and ventures them out for development. He does this and some general business consulting out of his home near Denver, working with a Mac Plus and an SE. His devotion to on-line services is attested to by the fact that we “met” through a message I left on CompuServe, looking for people who’d like to share their on-line experiences for the book.

I’m a firm believer in networking with other people, but I don’t always do a good job of it. Working from home you tend to get a little isolated. When I find myself spending too much time at home I force myself to go out and have lunch with someone. I really like CompuServe for networking: I go up on the Working from Home forum and the International Entrepreneur’s Network (USEN). And I hang out a lot in the Macintosh forums, getting hardware and software information.

I’ve always had a kind of fascination with computers, and telecommunications was a natural leap for me. I got started on the local bulletin board, and decided “Gee, this is fun.” CompuServe does some good marketing—almost every modem maker bundles some free time on CompuServe with every sale. So I took advantage of that, and I’ve been hooked ever since. I’ve been using CompuServe for a while, now I’ve signed up with some other services for my business—Dialog, MCI Mail, and Dow Jones. I access those a lot for my business.

I'll tell you a good example of how I use Dialog. I'm just working on a thing right now for an engineering group. They're looking at using a clay liner to create water storage in old gravel pits, and they wanted to know what other people had done in the past: costs, construction techniques and so on. I went on-line and accessed several different databases on Dialog, and came up with a list of different articles that were of interest to them.

There is a tremendous amount of stuff online. I think it's faster than going to the public library. And there are probably things on there you can't find at the library—some of the references are rather obscure, some are from overseas. I suspect even if I could have found those at the library, I may have found a reference, but I couldn't get an abstract like I could on-line. Still, sometimes you have to do a little legwork and phonework. I start on-line, and if I have to fill in the holes I go more conventional.

I'm still not really comfortable with Dialog. They're very good at system documentation, and they have good training sessions. I'm signed up for one of their courses coming up soon. I'm still fumbling around a bit, and hoping to get better after the course. I've built some of my own databases so I may have a little better handle on how to search for things than most people. I worked for a gravel company with significant real estate holdings in Denver, and set them up with a database system to track permits and all their land deals, of which there were quite a few. Knowing how databases are set up helps when you approach it from the other end. I still have to look in the system documentation a lot.

CompuServe is a lot easier. Before I make a major purchase of software or hardware I'll always hang a request out there and see if anyone's used this particular product—or just monitor other people's conversations. Most recently, I wanted to upgrade my modem from 1,200 to 2,400 [baud]. So I conducted an informal poll on one of the Macintosh forums, and ended up picking a Practical Peripherals 2,400, for about \$180. I just wanted to find out what to look for in a modem as far as compatibility goes, reliability, how they're put together. There's not a whole lot of difference between them, as it turns out.

On-line information was really helpful when I was setting up my business, too. I had exchanges with different people about putting together business plans on Working from Home and USEN. Had a real good exchange with Laura Douglas on Working from Home. She operates a marketing group out of her house, and she helped us a lot on how we should market our business: on writing press releases, on how to approach people on selling properties.

You'd probably pay a lot if you contracted for that. I didn't really even consider seeking out a local businessperson. I'm really a CompuServe junkie. I spend a lot

of time on there because I think people are a great resource. On-line, you can get a whole lot of opinions on the same questions, and then decide what's what. I think I'm smart enough to tell. There are a lot of people out there in the same situation, and they're just willing to share their expertise and help.

It's important to be willing to give some back to the system. If someone has a problem I can help with, I'll jump in. Just today I got a phone call from a guy I had left a message for yesterday. He was a financial consultant, working with some people who had a gold property in California, and I said I'd be glad to help him out. He doesn't really have any background in the mining industry, and I have ten or 12 years, so I'm more than happy to do that.

The other service I'm starting to use more and more is MCI Mail, for a few of their services. I use it to send overseas mail. You can register your letterhead and your signature with MCI, then send a letter straight from your computer onto MCI. They send it electronically overseas, then print it out on a laser printer at the city of its destination, or at least somewhere real nearby. They stick it in the mail, so it takes maybe two days to get there instead of two weeks. You don't have to stick it in a mailbox here and hope that it makes it. Of course, if the people you're writing to have MCI Mail, it gets there even faster—instantly. But the laser letters, as they're called are great for most people, who aren't on MCI.

I use laser letters here in the states, too, if I want something to come out nice and in a hurry. I don't have a LaserWriter yet, and it's cheaper than running down to Kinko's [Copy Center] every time. I use MCI for FAX, too. That's another piece of equipment I haven't bought yet, and I can send them through MCI.

I get a little perturbed about the speed problem with on-line services—it costs you money. Every time I scroll through a menu, I think, "This is costing me." I think CompuServe is very reasonably priced, and that's what makes it work for a lot of people. Some of the Dialog databases, though—especially the chemical ones and the patent ones—can run up to \$300 an hour. Most of them are around \$100 an hour, but that's plenty to make you real perturbed at any delay.

There's not much I can do about that. For me, as far as business and personal development goes, I like the way forums let me get out there, talking to people, sharing ideas, and assimilating information. I don't see any better way than on-line services, where you can communicate with people all over the country—all over the world. Bounce ideas off people. Trade advice, and maybe save yourself some grief. The networking aspect is just incredible. Where else can you call on so many people and always find somebody that knows the answer?

Brian Batastini **President of Magical Entertainment**

Brian's company offers entertainment—his own magical skills and the talents of others—for private parties, hospitality rooms, trade show booths, and conventions. Brian uses a Mac Plus with a 30M SuperMac DataFrame hard disk, and an ImageWriter II. His favorite software includes Word, Excel, Acta, FocalPoint, and Managing Your Money.

A lot of what I do is at trade shows and conventions, where companies will hire what they call "industrial entertainers." I'll use my magic to promote the company's product. It attracts attention—everyone loves magic. For instance, if the message is, "This product will cut your costs in half;" maybe I'll cut a rope, then I'll put the rope back together again while I say, "And it will make your profits grow."

My company also books other acts. We're an entertainment company; we'll put strolling violinists at a wedding reception, or find hula dancers, if that's what you want. We can book whatever you need, as long as I can find it. And I usually can—this is Los Angeles: you can find almost anything you want. I've got a file two inches thick of people who do all kinds of things, but I haven't put that in the computer yet.

Where the computer comes in now, is in planning the tricks. I'll use Acta for brainstorming, to build up an idea. The outline really helps, causes you to think logically. I'll start by thinking of an object—like a key chain—and type in all kinds of ideas about what you could do with a key chain. Then I'll organize the steps to the trick: I'll write down what I'm going to be doing with my left hand, then I'll ask myself, what will the audience expect to see now? What can I be doing with my right hand?

I don't use the Mac directly in my act because I believe in building illusions with common objects. People sort of think computers are magic anyway—they're more surprised with more common things. I'll take someone's ring and make it disappear, then tell them it's in the glove compartment of my car. I give them my keys to go get it—and there's their wedding ring, strung on my key chain.

I just picked up a program called Speak Easy. It's public domain software that makes the Mac sound like a robot. It can read anything you type in. I use it in a lot of ways—I have it read my letters to me, and the scripts for my tricks, for instance. As a magician, I like to involve all the senses. If you read something to yourself, it's one thing. If you read it out loud, your mind is in tune at a different level, with two senses instead of one. I catch myself using repetitive words, or words that just don't sound right when I hear them out loud.

One of the things I picked up at the last Mac Expo in San Francisco was FocalPoint II. I had never used HyperCard, but I saw this [FocalPoint] demoed in a booth, and I figured, "It only costs about \$80, and it's in HyperCard, so I can change it if I don't like it."

I do a lot of cold calls, and repeat calls with my existing clients. I used to use SideKick for logging phone calls, but FocalPoint is 100 percent better. I'll call someone, then put in when I have to follow up—if you put in x number of days, it puts the call on your to-do list for how many days ahead. Plus, the nice thing is when you're talking to them you can highlight their name, then click on the calendar module, and it will open to the date book. They're interrelated, so you can say, "We're going to meet at 2:00 at such and such a place," and your customer is very impressed.

Another program I've been using longer is MacMoney. I'm real pleased with it. One of the things that it does that saves me a lot of time is writing checks. There's an alarm system in there, and you can put in all your regular bills, and it will tell you which bills to pay when. All you have to do is say, "Okay, pay them all" and it writes out the checks. It also itemizes automatically. I have all my regular performers entered in there, and when I pay one of them it puts the expense in the right category as soon as I click. I have a business degree in accounting, but I like not having to use any of it in MacMoney.

The type of software I buy is something that I can play with, make changes. Not the kind that says, "This is all there is, that's it." I keep all my standard contracts in Word, and send them out to performers. And I keep a template in Excel for phone calls, to track my progress. It has columns with the number of phone calls each day, and how many bookings I got from the phone calls. In Excel I can calculate how many people I talked to, and what's my percentage of productivity. I don't have to do this: if I don't, my bank account shows my productivity about a month later, but I'd rather know now.

I give myself little rewards to motivate myself to do things like this. Like, I'll say to myself, "If you book these, you can take the next couple days off." Or I'll tell myself that I'm going to try some new system for just two weeks—let's push this, see what happens. Gung ho. Then I'll reward myself with a week of taking it easy. You have to try things, plan things.

Planning is usually more important than actually doing it. I always try to sit down away from my Mac with a blank sheet of paper before I try something new. Think about, what do I want to do here? If you sit down at the Mac with your software running, you get too involved, and lose track of what you're really trying to do.

Recently I went to "The Battle of the Macros" at my Mac group, and learned all about QuicKeys, Tempo and MacroMaker. I bought Tempo II as a result—it looks great because it can pause, see if something's greater than something else, and so much more. So now, today, I'm sitting down with a piece of paper in front of me, with the word "Macros" at the top, and making a list of all the things I would like to automate. Then I'll get out the program.

The Mac frees up my mind of all the general duties of running a business, so my creativity really starts to flow. That's essential, because when you're a magician, people expect miracles.

Elisa Abel

Writer/Producer of Educational Media and Print

Elisa Abel went to graduate school in instructional technology and media at Columbia, and has always worked in communications. Last year she decided to leave her job and start freelancing as a writer and producer of instructional videos, specializing in the health field. She works with a Mac SE, a Personal Laser Printer from General Computer, and Microsoft Word.

I got the Mac when I started freelancing. It wasn't a tough decision at all, as I had worked with the Mac a little before, and thought I knew a lot more than I actually did. Media people use Macs a lot, and in terms of practicality, of compatibility, it's really an advantage to have a Mac.

There are three stages to the videos that I do—preproduction, which is all the planning, then the actual production of the video, and finally postproduction, the editing. I know other people with Macs who use a database to manage production. They enter in all the shots, all the locations and all the costumes, and then use it to find everything that needs to be shot in one location or whatever. Personally, I use the Mac mostly for preproduction. I'll start by writing a treatment—what we call a plan of action, a visual verbal outline. Then I write up scripts. Scripts have a video column on the left, where you write down the shots, and an audio column on the right with the words you think you'll use.

I use Microsoft Word's side-by-side columns, and people I work with are very impressed by the look of my scripts and manuscripts. The fonts and other things the Mac can do help a lot too—I use italics and bold to convey different elements of the script, and people love that. It took me quite a while to learn to do side-by-side columns in Word. Manuals are very good for brushup when you already know something, but actually learning from them is a high-stress situation. But for what I do, it was worth the investment of time. I checked into another program

[specifically for writing scripts] but it had some other major flaw and it cost a lot of money. For my purposes I can handle Word fine.

My biggest problem was that I really got a lemon to start—my SE had to have its hard drive and its analog board replaced—really, half the computer was replaced, and it still malfunctioned. It was so clearly not right. But I lost all confidence and thought, “I’ve done something wrong.” I’d call up the service people, and I’d call up my user group, and they’d say, “No, you haven’t done anything wrong.” But I was getting constant bombs, losing documents, letters were going down the side of the screen single file.

When my warranty was almost out I said to my dealer, “Look, we’ve really got a problem.” They didn’t want to let me return it—they offered to extend the warranty, and they promised me I wouldn’t have any more problems. But I insisted. Since then it’s been a cinch. A big relief to find out I’m not a total klutz. Even though on a rational level I knew it was the machine, I still thought, “Maybe I did something wrong.”

I bought the PLP about two days after I bought the Mac. I’m very glad I got a laser printer. There’s no question about that. I’m in a very visual field, and it really made me shine. You need every advantage you can get when you’re just starting in business. Even though I was in a rush, I didn’t go into it blind—I talked to a lot of people and read a lot of articles. Now I wish I had the Apple [LaserWriter]. It’s a better machine, and much faster than the PLP. If you do a hundred-page document, [the PLP] can take several hours. And the paper jams up all the time—you just expect it always. The toner cartridge is messy to change, and in the summer, the printing gets very light when it’s really hot and humid. The toner quality suffers.

I didn’t have problems with memory at first—I could print from Word without having to drop out of my application. But lately, everything I do that’s longer than one page, I have to quit Word first. I’m not sure what’s changed. It’s a real bother. I’m always under deadline pressure, and it’s 2:00 A.M., and I have to deal with this on top of everything else. Would I buy it again? Probably, because it’s still so much less money—I had to buy a car, too, when I went out on my own. But I wish I’d known more about the PLP’s drawbacks. If you know you’re going to be dissatisfied, you’re not as disappointed.

I’m inundated with work right now, working on a huge project for a medical foundation. When I get time I’ll update the printer, definitely. And even though I’m doing some pretty sophisticated formatting in Word I’d like to take the time to learn PageMaker. When you’re on your own, learning things is a lot slower than it is for people working in companies. When I started, I really thought I knew a lot about the Mac. Now every day, I realize how much more there is to know! But I love using the Mac. I’m definitely glad I got it. It’s like a friend.

Cory Kilvert **Photographer and Writer**

Cory has been self-employed since 1972, with a home-based photo journalism business. With both writing and photography skills, he's published a gardening book and a cookbook, traveled 58,000 miles taking travel photographs for *Reader's Digest*, and written everything from TV and radio scripts to promotional literature for agricultural chemicals. Cory works with a Mac Plus with 2.5M of RAM, and an ImageWriter II, using WriteNow and ReadySetGo most often.

I think a lot of people at my level of expertise—which is certainly not the highest—are confused by upgrading. It's like buying a library and then finding out all the books have to be replaced.

I am not a technical person, and in fact, jealously guard my 19th-century approach to life. Until about four years ago I worked with a 1955-model tabletop typewriter. If I had to go back to that I'd go mad, but I don't need the super-sophistication a lot of the software companies assume I do. I can't afford to—and don't need to—upgrade all the programs I own. But then my hand is forced when there are incompatibilities.

I'm really a very reluctant person when it comes to getting the latest things. I read some nightmares about System 6 [in my user group newsletter], so I didn't upgrade yet. I've had problems with incompatibilities of DAs and things when I upgraded in the past—it's a very forbidding process: You're trying to get work done, and suddenly you're back to square one. I think that you should never use a new System for at least a year after its introduction. But I just bought Acta Advantage, and the manual says that certain aspects require System 6 or higher. Some of the applications I'll buy in the future will also have that stricture, so now it's something I'm prepared to risk.

I use my Mac mostly for writing, for the ability to produce good-looking manuscripts without having to retype everything 209 times. I started out with a very early copy of Word, Version 1.05. It was the first program I ever used on any computer, and I was ready to cut my throat. It turned me into a crazy, while I tried to master benefits inadequately explained in the manual.

Now I've switched to Write Now. It's a great program—you can figure it out; it's a very easy thing to use. I don't need something like Word with all its bells and whistles. I have an observation about some of these programs that are so powerful: If you go to a computer book store, the more books there are on any program, the better indication it is of the weakness of the program. If you have to buy a lot of books to understand it, you shouldn't buy the program.

I'm using a Mac Plus, with a lot of extra memory. I don't think I'll ever need a Mac II. I fantasize a little about the SE/30, but will I ever really need it? I kind of wish I had a little extra acceleration, but I think that's just sort of an American thing—we always want to go faster, get there quicker. I just think about the old typewriter any time I'm dissatisfied, and it all comes back into focus.

Neil Ross

Director, International Marina Institute

Three years ago, Neil left a post with the oceanography department at the University of Rhode Island to start his own company, International Marina Institute, which provides information and services to marina operators. Now grown to include three full-time employees, Neil's company uses three Mac Plusses and an SE, with both a LaserWriter and an ImageWriter.

We're a clearing house for educational information, involved largely in developing national standards and guidelines for marinas. For instance, we run a national research conference annually, and by the end of this year we'll have published 12 to 14 books of about 150 to 200 pages each. I've been in this field for 21 years now, and this company was a natural outgrowth of my work with the University.

One of the big chores we're involved in now is an ambitious project to identify all of the marinas in the country. We have 35 universities and institutions gathering data for us, which we're putting into a big database in OverVue. Right now I'm involved in cleaning up the database. There are 8,611 businesses in there at this point—we think that's about 85 percent of the total marinas out there—and because they were collected by different people, there are all sorts of funny abbreviations. It's a good thing this is a slow time of year for us, because we have to go in and do a "global search and destroy" to change everything. And there are 32 fields in each record.

Although we do some database projects like this, the biggest difference the Mac has made is in word processing. I think it has expanded my productivity to communicate tenfold. Basically, we're in the communication business when you come right down to it. If I can't communicate, I'm out of business. And the Mac gives me a level of communication I wouldn't ordinarily have. For word processing we're still using MacWrite. We tried Word and had problems with it, with the complexity of it. We need to keep working—we don't have time to learn all the nuances and little things! But we may look into it [Word] again, because I don't like the way tabs and things turn out when you put them into PageMaker from MacWrite, and I'd like multiple columns.

I like the spelling checker they added to MacWrite, but I've still got about umpteen spelling checkers: Spelling Coach, Sensible Grammar, and so on. Sometimes I use two spellers to check each other. You'd be surprised how often I catch things! We've got a lot of technical words that we use in our business and a lot of things that aren't normally found in spelling checkers. Why would they have a word like "yard-arm" in there? Even a word like "marina" doesn't appear in most [spelling checker] dictionaries. And "dockominium"? It's in mine.

Actually, we just finished writing our own dictionary, which we're publishing for our members. It's about 80 pages. I started it in More from a series of glossaries we had. More [an outlining program] let us alphabetize and shuffle it around, and put in three or four definitions if necessary. More made it real easy to throw things in and it didn't matter where they went. We transferred it to MacWrite for a more stylistic format, then to PageMaker for layout and printing.

We do mailmerge with a little program from Silicon Beach [Silicon Press]. That worked out real well. We make name tags for conferences, and place cards for the tables—you know, the little name things that fold over. And certificates. It's got to be simple for me: I'm a simple-minded guy. If I've gotta read the damn handbook, it's too complicated. If it's a decent program, you should be able to do all the basics without the book. You shouldn't have to look at the book until you have to do more complex things.

I've been using Excel fairly heavily since last summer. I built a database based on an automobile parking survey we did last summer, to try to figure out how many parking spaces marinas really need for each boat. It was only 145 responses, but each one had about 180 fields, with so many convolutions and comparisons, that someone told me it had to go on a mainframe for the kind of analysis I wanted to do.

So I went back to the engineers who wanted the answers and said, "What is it you really need? I've got all this stuff..." They really just wanted some basic numbers—add the columns, find the average, compare to another column, do some graphs and charts. I presented our findings at a national conference, and already several states have adopted my guidelines. And it's helped some marinas to get the zoning they need. It turns out zoning was requiring more parking than was really needed.

I've had Macs from the very beginning. I was the first person at URI to buy a Mac, and I've seen the whole evolution. At first, I had my 128, and I had every single program that was available—all five of them. MS Basic. Habadex. I had everything. At that point, you were struggling to make sure it didn't bomb, and swapping disks all the time. It's been very interesting to watch it evolve, and participate in it as it became a more integral part of my life. Now there's hundreds of programs out there, and it's impossible to stay on top, even for those who have dedicated their life to it.

I think you have to focus, target in. You can no longer be a generalist, you have to be a specialist. Ignore all those little things that are nifty for the computer nerds. The most difficult thing for me in terms of keeping up is not having the time or opportunity for new things. Workload pressure keeps you from even learning the new features of updates. I've had the OverVue/ProVue update now for quite a while. And I looked at it enough to realize there are enough differences that I've really got to learn it before we convert [15] all of our databases to it. I'm not comfortable enough to say that the entire office [is] going to convert yet.

I get MacWorld, MacWeek, and MacUser. I like MacWeek. It's up to date. Nothing in it is very complete, or in much depth, but when you get all the small pieces over the months you can put them all together and figure out what's going on. MacWorld is nice—good articles and really nice art. MacUser I don't like as well. The art form is quite garish in color, and they have an ugly cartoon format. I don't think their articles are as well-written. They're too chit-chatty, like people are playing little games. I don't have time to play games, or figure something out. Just give it to me straight. But that's a personality thing.

If MacWorld or MacWeek comes in, I'll take it home and read it that night. I really look forward to them, and I don't know why. Not so much a survival thing, I just enjoy it. It's sort of like, I was on the leading edge once, and I have a residual feeling that I want to stay current. There are very few high-tech things in our life that I can keep up with. I can't keep up with space technology, with microbiology. Here's an area that's tangible, that makes a difference in my life. Somehow, keeping up with it makes it easier to feel good about all the other things I can't begin to understand.

10 What's Next?

Keeping your hardware, software, and knowledge up to date

I've tried to make this book as useful and helpful as possible. But even if I've succeeded beyond my wildest expectations, after the last page you'll be back on your own. So what happens next? After you put this book down, how do you keep growing in your Macintosh skills and knowledge? How do you make good buying decisions? How do you find help when you get stuck? This final chapter will try to let you loose gently, with some ideas of where you can go from here, including:

- Advice on buying hard disks and memory upgrades.
- Pointers for keeping up with changes in the System.
- Recommendations on upgrading applications and utilities.
- A few words on the importance of reading—what to read and when to read it.
- Suggestions on how to get free and useful help from user groups and on-line services.
- Tips on how to find a good consultant when you really need one.

Priorities for Emptying Your Wallet

One of my primary goals in writing this book was to answer “in public” the most common questions I get asked individually by small-business users. So many people ask me questions like, “Should I buy more memory first or a hard disk?” or “What’s the best hard disk to buy?” that I decided it was necessary to touch on this area.

Yet purchasing advice is the hardest thing to include in a book. It's outdated quickly, and the “right” answers vary so widely depending on each person's individual situation. Despite these difficulties, though, there are a few overriding truths that deserve to be broadcast.

Buy a Mouse Pad

This may seem silly and trivial, but it's not. Dollar for dollar, no other computer purchase will give as good a value as this little foam pad. A mouse pad makes your mouse work more smoothly, so you won't miss your target when you're pointing and selecting. It saves wear and tear on the feet of your mouse, and keeps lint and other dirt out of the mouse's ball, making it unnecessary to clean the mouse as often. You can pick one up for somewhere between \$5 and \$10; they're often available at little or no cost as premiums from dealers or at computer shows.

Trust me: Once you've started using a mouse pad, you'll find it hard to do without it when you're using someone else's machine.

Buy a Hard Disk

Once you've sprung for the mouse pad, get a hard disk immediately. Don't pay your rent or mortgage. Don't buy groceries. Don't get braces for your kid. Buy a hard disk now.

I finally bought a hard disk, and it's like a new computer. I was using floppies, and I thought I was being real efficient—one for the System disk, the other for my application and the data. I could have written the book on mastering floppies. But it was tremendously slow. I was flipping disks all the time, and it would take a minute and a half just to open Word. Now it takes about ten seconds. The speed has made a tremendous difference, but the big advantage is having a System folder as big as you want.

Brian Batastini, President of Magical Entertasinment

I stated in the Introduction to this book that I would assume you already owned a hard disk, and that if you didn't you should go out and buy one right away. I really meant that: Moving from floppies to a hard disk will make your Mac seem like a totally different machine. Ever try to work out of your briefcase on a trip? You never can find the papers you want, and there isn't any stapler or paperclips. You're thumbing through notebooks and folders for everything, and wishing you were back in your office where you've set everything up the way you want it. Working with floppies is like that: You're constantly flipping disks to find the right files, and your favorite desk accessories are never on the right disk.

Working with a hard disk, in contrast, is like moving into a spacious office. There's plenty of room to spread out, and a nice big filing cabinet for all your important documents. You can customize your System file with all your favorite desk accessories, fonts, INITs, and CDEVs (as described in

Chapter 7), and your changes will be available in all your programs. All this translates to a tremendous boost in productivity that will more than pay for the hard disk in no time. If you value your time at all, don't hesitate.

What to Buy. All hard disks are enough alike that you should buy on the basis of dealer support and vendor warranty rather than go for The Big Name. There are a lot of hard disks on the market that you've never heard of. I've never even heard of them, and I have my nose stuck in computer magazines almost all the time. Almost all of the hard disks on the market are made by the same few manufacturers, and packaged in different cases by the computer vendors.

The software added by the vendor will differ, and may contribute to small differences in speed. But overall, you're going to be so happy not to be using floppies that you won't notice whether your hard disk is 14 nano-seconds slower in retrieving a file than your best friend's.

You will notice, however, if your hard disk fails and you can't get it fixed quickly and at a reasonable price. Pick a drive that has at least a one-year warranty (from a company that's been around long enough that they're likely to be around still next year), and make sure your dealer carries parts for the drive. My local dealer turned my drive around in two hours when its power supply failed; I would not have liked to send it off to East Overshoe, Washington for two weeks instead.

This is not to say that there aren't some real disreputable companies out there. The early internal hard drives made by one East coast company (whose products have improved so much that I won't mention them by name) were extremely unreliable. Hanging around with a user group or on an on-line forum (see Chapter 5) gives you access to this sort of information. And believe me, bad news travels faster than good news among computer users. If you're active on-line or in a good group, and you haven't heard anything bad about a product that's been out there for a while, it should be okay.

Buy More RAM

It's unlikely that you're doing anything that, in and of itself, requires more than the one megabyte of RAM that came with your machine. While a very few programs are starting to require more than one megabyte of RAM, there are good alternatives to these programs that can be used with less memory. So the real reason for getting more RAM is to be able to use MultiFinder, Apple's Finder alternative that allows you to keep several applications open at once.

Using MultiFinder. Face it. None of us starts a task and sees it all the way through to the end before starting another one; life is a series of constant interruptions—especially for those of us who work at home. Here’s a typical hour with my Macintosh:

- Turn on the Mac and start word processing, with Word.
- Get writer’s block, decide to check my electronic mail to see if anyone’s looking for me. Without closing my document or quitting Word, I launch MacNet, get my mail then quit MacNet.
- Decide to call my editor and ask for an extension. I open up QuickDEX to automatically dial the number.
- Back to the article, and a few more pages in Word.
- Jump to SuperPaint and create an illustration for the article, then back to Word to paste it in.
- Interrupted by the phone again. My accountant wants some details on my medical expenses for my tax return. I open Managing Your Money to get the facts, then thrown up an Excel spreadsheet to do some quick calculations as we talk.
- Finally I turn on my answering machine and shut out the world so I can finish my work.

By now I’ve got four programs (Word, SuperPaint, Managing Your Money, and Excel) open on my desktop, along with several documents. The only one I closed up as I worked was MacNet—and only because I was sure I was done with it. I probably could have closed MYM, too, because it’s a relatively special-purpose tool. I never *open* all my favorite applications right when I start working, but if I launch any open-ended tools—word processor, graphics, spreadsheet—I tend to leave them open on the Desktop till the end of the day.

Maybe this sounds sloppy to you, and you think you’re doing just fine with the Finder. But you’d probably agree that working sequentially with any of your other office tools would drive you crazy. What if you had to put your telephone away in a closet before you could use your notebook? Or put your pen away before you could use your stapler? It’s definitely easier to keep everything within reach, if your “desk” is big enough. More RAM gives you a big enough Mac desk that you can efficiently jump from project to project without repeatedly starting and stopping each application.

Get more memory. It’s the best thing you can do. If I had a choice between going from a 20M hard disk to a 40M one, or from 1M of RAM to 4M of RAM, I’d buy the memory first. I can’t imagine living with one meg of

memory anymore. I don't think it's humanly possible. I'm almost always using MultiFinder, so I'd want at least four megabytes of memory.

Paul Parisi, Desktop publisher

Total RAM Options. Memory in all Mac models currently produced comes in little circuit boards of eight chips each, called SIMMs (Single In-line Memory Modules), that fit in slots in your Mac.

The Mac Plus and SE have four SIMM slots each, which, when you buy the machine, are each filled with a 256K SIMM. $4 \times 256K = 1024K$, which is one Megabyte, the base memory of a new Mac Plus or Mac SE. Upgrading memory on a Plus or SE consists of yanking out 256K SIMMs, and replacing them with 1M SIMMs. But the catch is that your SIMM slots come in pairs; you have to replace two at once. Here are the allowable combinations of memory you can have in a Plus or SE:

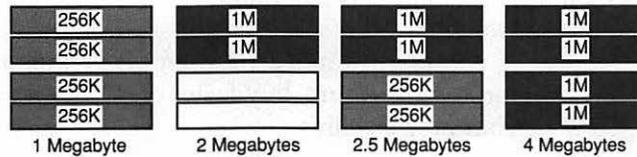


Figure 10.1 A Mac Plus or SE can have up to four Megabytes of memory, depending on the combination of SIMMs (memory chip boards) installed in it.

Since you'd be foolish to throw out two of the 256K SIMMs that came in your machine, you're unlikely to pursue the two Megabyte option; instead, you'll want to buy either two or four 1M SIMMs, for a total of either two and one half Megabytes or four Megabytes.

The Mac II has eight SIMM slots, adding a few options. But upgrading the Mac II can be more expensive, since *four* of its SIMM slots must be replaced at once. Thus, the allowable Mac II memory configurations are:

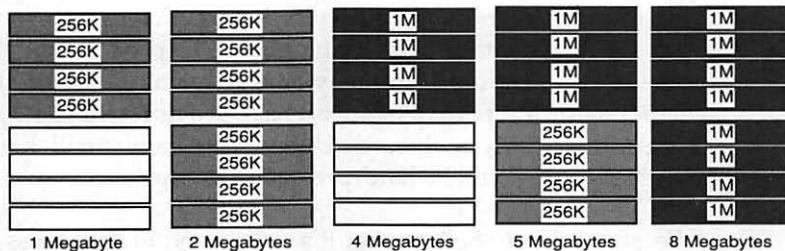


Figure 10.2 A Mac II can have up to eight Megabytes of memory installed, but only certain combinations of chips are allowed.

If you can possibly afford it, try to buy four 1M SIMMs. Upgrading to two Megabytes by buying four 256K SIMMs is a dead-end, since you won't be able to go beyond two Megabytes without wasting those 256s.

Buying Chips. There are two basic types of SIMMs sold, surface-mount (also called low profile) and DIP (also known as high profile). Surface mounts are more expensive, but fit better in the tight quarters of the SE and Plus. DIPs are generally less expensive. They work fine in the Mac II, and in an SE or Plus without any internal add-ons like accelerator cards or big-screen adapters.

RAM chips also come in different speeds, where a *lower* speed is faster. A Mac II requires 120-nanosecond (or faster) chips, while the Plus and SE require 150-nanosecond (or faster) chips. What you buy depends on what machine you're using now—and what you intend to use in the future. Two thoughts you might keep in mind:

- If you plan to move from an SE or Plus to a Mac II in the foreseeable future, buy faster chips, so you can reuse them in your new machine.
- Make sure to get surface-mount SIMMs in an SE if you think you'll ever put any sort of card in the machine's expansion slot.

Installing the SIMMs. Installing memory can be very easy. It can also be very dangerous, and can cost you more in specialized tools than you would have paid to a qualified technician to install it for you. If you own a Mac II, you'll probably have no trouble putting in your own RAM. On some models you have to remove the hard disk to get at the SIMMs, but the job is not difficult.

Opening up an SE or a Mac Plus is another thing altogether. You will need two special tools, an extra-long Torx T-15 screwdriver, and something called a case-spreader (more colloquially known as a "Mac-cracker"). You'll need to work near high-voltage parts that can do you serious harm even when the machine is unplugged. Depending on the amount of memory you're adding, you may have to cut a resistor on the Mac's main circuit board, and perhaps solder it back in a different spot. And the whole thing is incredibly awkward: Unless you have small hands with long artistic fingers, you'll be hard-pressed to do the job.

Because I firmly believe that it's not a good idea to mess around inside your Mac solely with the aid of written instructions, I will not include detailed step-by-step advice here. If you are aware of the risks you're

taking, and you can find a friend who has the right tools and has opened a Mac before, the whole process is really very interesting. But if you can't find a mentor, please let your dealer install your upgrade. The risk is not worth the \$30–\$60 installation charge you'll incur.

(Note: If you live in rural Wyoming or Nevada miles from another living soul and have ordered your memory mail-order and have no option but to install it yourself, you might look at the May 1988 *MacWorld* or the February 1989 *MacUser* for detailed instructions on how to install your own RAM upgrade. The rest of you might enjoy reading either of these articles to sound more knowledgeable when you discuss the upgrade with your dealer.)

System and Application Upgrades

A good part of keeping up involves updating your software when it's appropriate. Notice I said *when it's appropriate*, not *whenever there's a new version*. There's a big difference between those two phrases. In this section I'll give you a few recommendations that might help out.

Upgrading System Software

Apple releases new Mac system software at least once or twice a year. While it may sometimes seem that Apple does this only to complicate our lives, there are three sound reasons why this is necessary:

- To add new bells and whistles to the System. For instance, when MultiFinder was invented, Apple put out a new version of the System that incorporated it.
- To support new versions of the Macintosh, and new peripherals. One of the key jobs of the operating system is to route data from one part of the Mac to another. When new parts are invented, changes must almost always be made in the operating system to make sure the Mac can “talk” to the new equipment.
- To fix bugs in previous versions. No software is ever perfect, and operating system software is the toughest of all to get right: It must be able to work in combination with every application out there, as well as with every combination of desk accessories and other utilities, on every model of Mac—not an

easy assignment. No matter how much in-house testing Apple does, in the end the only real test comes when all of us get hold of the software and put it through its paces in every conceivable situation.

Apple used to recommend that *everyone* upgrade immediately when new system software was released. Recently, however, Apple has changed its official policy, suggesting that you upgrade only when a major new-features version of the System is released, or when you buy new equipment that requires a new version of the System.

How can you tell when there's a major new-features version of the System? It's hard *not* to know. The fact will be trumpeted in every Mac magazine in existence. If you do any reading (and I certainly recommend you do) or belong to a user group, or otherwise come in contact with other Mac users, you'll know about it.

You can also check with your local dealer, and ask what's the current version of the system software. Apple uses the same basic approach to numbering versions that most computer companies do: Version numbers consist of a whole number with decimals. A major revision to the program gets a new whole number, while minor revisions are reflected in the decimals. A look at a typical system software evolution demonstrates this:

Version 6.0	major revision
Version 6.01	bug fix for problems with Version 6.0
Version 6.02	bug fix for problems with Version 6.01
Version 6.03	new equipment release for Mac SE/30
Version 7.0	major revision

Whatever you do, don't wait for Apple to send you an upgrade notice. Even if you filled in your warranty card when you bought your machine, you won't ever receive notification of System upgrades. So don't hold your breath.

Wait Six Months. If you've been plagued by some particular bug in the System, or if you've bought new hardware, you may have no choice but to upgrade your System software as soon as you can. Otherwise, don't fix it if it ain't broke, as they say. Each version of System software tends to fix the old bugs, but new ones undoubtedly surface. I'd be a little wary of Apple's official line that you should upgrade immediately when there's a major revision. It's generally safer to wait about six months until Apple has put out a few interim versions of the software and fixed the worst of the bugs. Let the pioneers get the arrows in their backs, and you can follow later.

There's a real aura of elitism in all this. I walk in to my local computer store, and they all ask me what System I'm using. And it turns out I'm on Version 4.2 and they look at me like... Give me a break! I'm trying to run a business here. The worst case is when you have to upgrade your System to run one new thing, then nothing else you have works.

John Stephenson, Technical Writer

What Version Do You Have Now? You may already have the most recent version of the System software. You can check, anytime you're in the Finder, by pulling down the Apple menu and choosing About the Finder. If you don't see a screen like this when you choose About the Finder, then you have a very, very old Version of the System, and you should upgrade.

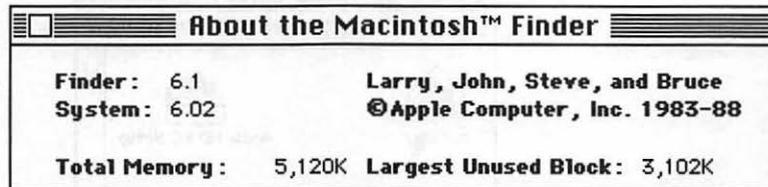


Figure 10.3 You can find out the System version you're currently using if you pull down the Apple menu and select "About the Finder. This machine is using system software 6.02.

How To Do It. When you do finally upgrade to new system software, you should use a special program Apple provides called the Installer. Don't simply drag a new System folder onto your hard disk and let it replace your old one. If you do, you run several risks:

- You'll lose any fonts and DAs you've added to your System.
- You'll erase any CDEVs and INITs you've added to customize your System.
- You'll lose any files your applications have placed in the System folder for their own use.

In other words, you're likely to let yourself in for a lot of tedious work installing all your applications and utilities over again before you can get back to work.

As I explained in Chapter 7, your System file is made up of building blocks called resources. It's the Installer's job to replace just certain re-

sources in the System, while leaving everything you put there, intact. It's kind of like pulling the tablecloth out from under all the dishes, but Installer generally does the job well. And it does save setting the table again! Here's how you should use Installer:

- (1) New copies of the System come on several disks. Turn on or restart your Mac with the one called "System Tools" in your floppy drive. You can't modify the System that's currently running the Mac.
- (2) Open the folder labeled Setup Folder. You'll see three icons, and you'll double-click on the Installer to launch it:

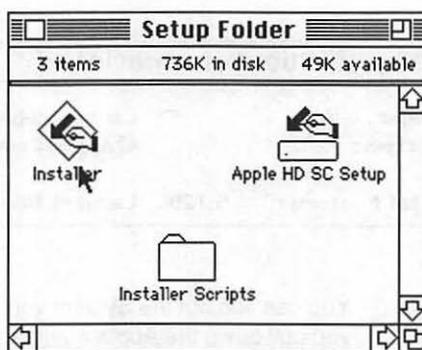


Figure 10.4 Apple's Installer program, located on your System Tools disk, lets you upgrade your system software without changing the fonts and desk accessories you've installed.

- (3) Then you'll see a list of the various Mac models. Click on the one that matches your machine. There will be a rather lengthy pause, as your Mac makes sure you have enough room on your hard disk to make the upgrade. Then make sure your hard disk is selected on the right-hand side of the screen. Use the drive button, if necessary, to select the hard drive.
- (4) Once you've selected the proper machine and the right drive, the Install button will be available to you. Click on it, and your System folder will be properly updated.
- (5) When the bottom of the screen tells you that the installation was successful, click on the Quit button.
- (6) Once you're back in the Finder, go to the Special menu and Restart

your Mac without the System Tools floppy, to make sure your machine starts up properly from your hard disk with its newly-installed System.

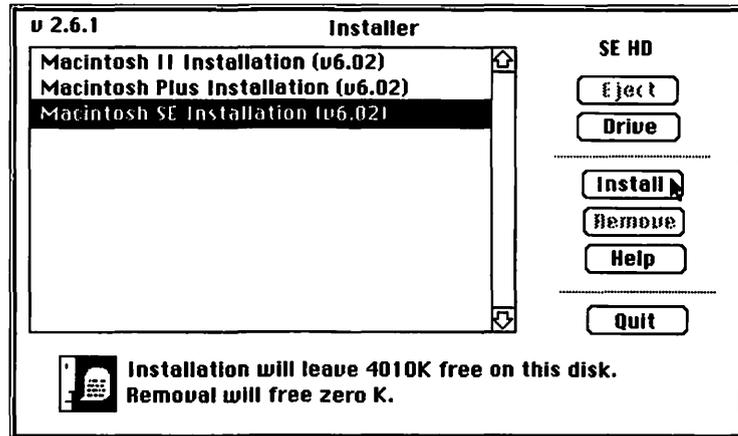


Figure 10.5 The Installer will tell you whether you have room on your hard disk to upgrade your System. Every new version of the System is bigger than the last!

- (7) Don't forget to upgrade your printer resources, too. This is the only part of your System folder that Installer doesn't automatically upgrade. Stick the disk labeled Printing Tools in your floppy drive. (You don't have to start up from this disk. It's okay to be running off your hard disk now.) Open up the disk, and drag the appropriate icons to your hard disk, and drop them in the System folder.

LaserWriter: LaserWriter and LaserPrep

LaserWriter & MultiFinder: LaserWriter, LaserPrep, PrintMonitor

LaserWriter SC: LaserWriter IISC

LaserWriter SC & MultiFinder: LaserWriter IISC, PrintMonitor

ImageWriter: ImageWriter

ImageWriter LQ: LQ ImageWriter

If you're sharing an ImageWriter or ImageWriter LQ with someone else over AppleTalk, make sure to pick the AppleTalk version of your printer driver instead.

Now your System folder has been entirely upgraded.

Upgrading Applications

Your application programs are another story. In general, you should upgrade these programs as soon as a new version is available, because

- Special upgrade prices for registered owners may only be good for a limited time.
- Older versions of application software tend to be more incompatible with newer versions of the System and with other utilities, INITs, CDEVs, and desk accessories.
- New versions often incorporate really useful new features, or really important bug fixes. (Many companies will charge you for new-feature upgrades, and give out “minor upgrades”—the polite term for bug fixes—free.)

Just like system software, major upgrades of application software are generally distinguished by a totally new integer; minor upgrades keep the same first integer and just increase the version number by a fraction. For instance:

version you have now	1.01
bug fix/minor upgrade	1.2
major new feature upgrade	2.0

In most cases, new application software is worthwhile. Besides, you’ve still got your old version if the upgrade doesn’t work out.

How to Upgrade Applications. The theory is that, if you send in your registration card when you buy new software, the company will notify you when there’s an upgrade. This generally works pretty well, well enough that it certainly makes sense to legally own and register any software you use for productive purposes. Some companies—whether through disorganization or whatever—never notify anyone about anything.

Keep your eye on Mac magazines. They’ll print reviews of new versions of your favorite software, or lists reporting the current version of dozens of popular programs (*MacUser* has such a list every month). Then you can call the company and ask them what their upgrade policy is. Usually you’ll pay a nominal fee (\$15–\$25 for minor upgrades; very major upgrades can cost considerably more). Check mail order prices before you send for your upgrade: Sometimes discount prices are less than what you’ll pay for your upgrade to the vendor itself.

Once you get an upgrade, follow the installation/upgrade instructions that come with it. Usually upgrading is just a matter of dragging your old program into the Trash, and dragging the new copy onto your hard disk. Occasionally software requires special installation procedures, though, so take the time to look over the instructions.

Orphan Documents. There is one real drawback to upgrading application software that you ought to be aware of. I call the problem “orphan documents.” The problem works like this: You throw away your old version of a program I’ll call MagicWriter 1.0, and copy the new version (MagicWriter 2.0) onto your hard disk. Then you double-click on a document you created with MagicWriter 1.0, to get to work. In all likelihood, you’ll get an error message that says, “The file “Smithers proposal” could not be opened/printed (the application is busy or missing).”

That’s because your file is searching for a copy of MagicWriter 1.0, and it can’t be found anywhere on the disk. The file doesn’t know enough to request the new version. You’ll have to open MagicWriter 2.0 first, then open your document from inside the application, with the File Open command. Once you save it again, it should open from the Finder just fine next time. You’ll have to do this with each of your old documents once, until they’ve all been “washed” through the new version of the application and have learned to recognize it.

Some applications are written in such a way that old documents can recognize the new version as their new “parent.” Most, though, force you to wash documents from previous versions.

Upgrading INITs, CDEVs, and Desk Accessories

Within the Mac community there’s a great focus on the pros, cons and general trauma of upgrading your System, and a lesser focus on upgrading applications—and almost no attention paid to upgrading the smaller programs and utilities that make up your work environment. That’s a shame, because upgrading INITs, CDEVs, and DAs can be important.

If you just drop INITs and CDEVs in your System folder and forget about them, the day will come when you’ve just upgraded your System, and bought some new application, and suddenly you’ll be getting crashes right and left. You won’t know what’s wrong—but the problem will be some INIT you picked up two years ago and have never upgraded.

Review your System folder every few months. Check with your user group, or with whatever source you got those INITs and CDEVs from in the

first place, and keep up with the latest version numbers. Some shareware authors come out with new versions of their products almost every month. The newest version is the one that's been tested the most with current versions of the System and popular applications, so you can contribute to the stability of your System if you don't let these little programs get outdated.

A Final Note on Upgrades

There's nothing shameful about quitting while you're ahead. Maybe you have a Mac Plus with MacWrite and MacDraw, and you've never upgraded any of your software since you got it. If it's doing everything you want it to do, you're in great shape: Hardware and software is never obsolete as long as it's doing something useful that works for you.

Just keep in mind that if you change any part of your equation, you'll probably have to upgrade everything before it all works together again. And in the meantime—enjoy your productivity!

Read, Read, Read

The Macintosh, while a bit more straightforward than most computers, is not as simple as a toaster and never will be: Handling information and ideas is just very different from handling rye and whole wheat. It's a good idea to be prepared to allot some time to supporting your Mac habit, largely through reading. Those who pretend they can just "do" computing are probably deceiving themselves.

Manuals (Yes, I'm Serious)

If you've reached the end of your rope, I recommend you start by reading the manual that came with your software. Now I don't mean that sarcastically, in the sense of, "You dummy. You should always read the manual first." I don't agree with that, and I don't do it myself. I recommend you read just enough of the manual to get started, then wing it as long as you can. Then, one afternoon when things are slow, take the manual off the shelf and read it through. You'll be amazed at how you'll be muttering to yourself, "Oh, I didn't know you could do that."

This is the way I always approach manuals. Once you've worked with a piece of software for a while, you're in a better position to appreciate all its less-obvious features and its shortcuts. That's when the contents of the

manual are more apt to stick in your head. Don't assume that the more you know about a program the less you need the manual. The exact opposite often happens to be true. (This may even be true of your Mac's own manuals—try it!)

As you read the manual, be aware that most good manuals have two main sections: the tutorial and the reference. The tutorial is aimed at getting you started, by taking you step by step through the basics of the program. This is the part you either read or ignored when you first got your software; it's often built around some oversimplified fictional company that's using the program to accomplish some compelling job.

The second part is the reference. It's where all the program's features and commands are explained one by one (usually either alphabetically or menu by menu) so that you can get more help once you're already into the program. It is the reference manual that you'll want to look at now. The best software comes with separate tutorial and reference books, so you can leave the tutorial on the shelf once you're up and running and need only the reference.

Books

If the manual doesn't have what you need, try a book. Most manuals are written hastily, while the software's still going through its final revisions. Since print times for manuals tend to be longer than duplication times for disks, sometimes changes are made in the software after the manual has already gone to press.

Six months later, some publisher will come out with a book that explains the program feature by feature, with many more in-depth examples than are in the manual. You'll balk at spending over \$20 for the book after you've already spent \$300 for the software—but if it saves you even an hour of frustration and confusion, the book probably pays for itself.

Books take one of three general approaches. Some are "Intro to..." books, that start at the very beginning, and may even tell you how to click and double-click. These are usually rather redundant with the program's manual. The second approach is the "Tips and Tricks" book, that assumes you're already using the program, and teaches you how to get the most out of its intermediate features, or how to take advantage of its shortcuts. The third approach could be called "The Encyclopedia," and includes a rash of books that purport to cover everything you could ever need to know about the program, from A to Z. Some of these are almost a thousand pages long, and to my mind, are rather daunting.

You'll have to decide for yourself which of these three approaches matches your needs in a particular situation. Store clerks won't know which of the three approaches a book takes (they're unlikely to know whether the book is for IBM or Mac users, even!), and the book jacket may not help. So take a good long browse through any book before you buy.

If you're buying a book to solve a particular problem, read that section before you buy. If it answers your question this time, it will probably come in handy next time you're stuck. Also take a look at a section of the book that covers something you already know. This is a good way to see if the author's approach and style matches the way you best absorb information. Finally, take a look at the index, and make sure you can find any information you want.

I like computer books that have specific information about programs and how you can put them to good use. I have Naiman's book [The Macintosh Bible]. Another one that was really useful was the Power User's Manual. I don't like the ones that tell you about the weather and how great the Mac is—they're not much use. Of course it's a Catch-22: The more specific they are, the quicker they go out of date. But I don't even consider them unless they have good evaluations of lots and lots of programs.

Gregory de Silva, Opera singer and voice-over artist

Magazines

You don't want to know what I read every month. Let's just say it's enough that I'm relieved every time another Mac magazine dies. The main magazines that I read right now are *MacWorld*, *MacUser*, and *MacWeek*.

MacWorld is a monthly magazine. It used to be a rather light weight publication that earned its nick name *MacFluff*. But in the past few years, *MacWorld*'s features have been getting better and better. The photography is excellent, the text is well-edited and readable, and the magazine is getting more and more timely.

MacUser is the other big monthly. Back in the days when *MacWorld* had very little content and was dreadfully stuffy, *MacUser* was the let's-have-fun-this-is-the-Mac alternative. *MacUser* has just started to get more heavily into benchmark lab tests, but still tends to be a shoot-from-the-hips informal publication. Some find its style a bit too informal and cute.

MacWeek, as its name implies, is a weekly magazine available free to "qualified volume buyers" (not your average independent busi-

nessperson) and at a cost of \$75 to unqualified folks. It tends to report on the future more than the past or present. If you have a burning need to know about the DEC/Apple alliance, the future of CD-ROMs, or what John Sculley said last week about High Definition TV, you'll find it in *MacWeek*. *MacWeek's* reviews are good, but if you can't get the magazine for free, you'll probably do fine without it in a small business.

I like MacUser and MacWorld. At this point I don't really find them all that different. MacUser has a lot more short things that are good to read at breakfast. MacUser used to be very different, with more articles and a looser format. I don't find any of the magazines as relevant to generating new ideas as I used to. I've changed and they've changed. They're all talking about \$100,000 color output systems, add-on boards, scanners. Small businesses don't need all that. I like reading my user group newsletter, because it's more down to earth.

Mel Reisz, Jeweler

How New Is the News? How Good Are the Reviews? You should know that, in the magazine business, lead times generally equal about four times the period of the publication. That is to say that much of the material in a monthly computer magazine will have been written about four months before you receive the magazine.

This means that writers and editors for the monthlies tend to hedge their bets: In reviewing a product, for instance, they may go lightly on some really horrendous bug that the software vendor is sure to fix by the time the magazine hits the streets. It also means that some software descriptions—and almost all new hardware ones—may be based on the writer's experience with prerelease versions of the product. It's the only way the magazine can come out with a splashy cover article that's concurrent with the release of some exciting new product.

What's more, most reviews are really just a single user's opinion. They are not the exhaustive result of dozens of technicians in white lab coats putting the program through every conceivable test. Reviewers are given at most a month to work with a product, and paid an amount that justifies about three days' work, including the actual writing. One reviewer may use the program for the entire month, in the course of his or her regular work. Another may load the program up and run a few benchmarks and work through the tutorial. Because of these compromises, you would do well to read at least two or three reviews of the same product before making a buying decision.

When to Read Magazines. Make some space in your office to store a year's worth of each of the Mac magazines you subscribe to. Then, when each issue arrives, just skim it once to see what's new and interesting. After that first pass, put the magazine away on the shelf.

I recommend this approach because there's no sense in reading anything until you need it. An article on viruses doesn't interest you in May when it's published: It begs to be read in September, when your machine's exhibiting strange behavior. That review of FileMaker doesn't grab your interest in February: It fascinates you the following November when you've decided to make a big mail-order push in your business. If you don't save issues for at least a year, you'll never have the reference material you want.

I save mine for two years, in fact: one year in my office, and the next year in less accessible storage. After two years, there's not much that's still current, in a field where things change so quickly.

If you expect not to make tons of mistakes buying stuff, you have to take the time to read. I live in an apartment, and I can't store magazines, or I'd have to move out. I clip things: I'll clip anything that has to do with the ImageWriter, and anything that has to do with the programs I use, and keep the clippings in files. The little things you read can really make a difference. For instance, I read that you shouldn't have the printer on the same surface as your Mac because of the vibrations [which can loosen your chips]. So I bought a little printer table. There's not enough attention paid to things like this—I didn't see that anywhere in the ImageWriter manual.

Robin Hartford, Assoc. Editor, Stock Car Racing magazine

Finding Other People to Help

Most of us who work for ourselves tend to be real lone rangers: We're used to doing everything ourselves, and it kind of irks us when we have to call on someone else for help. That's what this book—and especially this chapter—are for: To give you the tools you need to be more self-sufficient with your Mac, and to lessen the chances you'll need to search for someone who can give you a hand.

Others of us would like nothing better than to cry "Help!", but we're not sure how to go about finding someone to listen. This section will give you a few suggestions on when and where to find help, how to get it for free whenever possible, and how to get your money's worth when you do decide to pay for help.

Join a User Group

One of the best sources for finding helpful and knowledgeable people is your local Mac user's group. User's groups are associated in some people's minds with pimply teen-aged hackers meeting in a church basement to solder chips and exchange pirated software. Whether this was ever true a decade ago is questionable; it's certainly not appropriate today.

I'm a member of The Boston Computer Society, a national user group based on the East Coast. With over 30,000 members (of which about 14,000 are Mac users), BCS is not your typical user group in terms of size. But its members are no different from those in other groups. A recent BCS survey came up with the following typical user-group profile of age, employment, and computer experience:

- Average age of user group members is 41.
- 30 percent are corporate employees; 29 percent are self-employed or in small business; 12 percent are professionals (doctors, lawyers, accountants, etc.); 12 percent are teachers.
- Four percent have little or no computer experience; 45 percent are "comfortable with personal computers and application software"; 31 percent are "comfortable with modems and macros"; and 20 percent can be described as "programmers or fanatical hackers."

What's a Meeting Like. User groups typically meet one night a month, with about half the meeting as an informal Q&A session, and the other half an organized presentation. The small group of about 25 people that I run here in New Hampshire is typical: About an hour is spent with people standing up to say, "I can't get my ImageWriter to print the top line of a page" or "Does anyone know how to do footers in Word on legal paper?". Our other hour features a member demonstrating some piece of software, or a local software rep or computer-store employee showing some new product and answering questions.

The other way I try to keep up is by going to the user group in Hartford. You can meet anyone there, from the people who will tell you anything you want to know, to people who won't tell you anything because they took so long to learn it themselves. It's bedlam, but I like it: There are usually four submeetings going on at the same time, and a guest speaker, and someone off in the corner inking ImageWriter ribbons for a dollar.

Robert Batson, Technical/marketing consultant to the chemical industry

In addition to the monthly meeting, user groups often put out a monthly newsletter with tips and reviews. They often serve as a source for public

domain software (software that's legally free to copy) and shareware (software distributed freely, but paid for on the honor system, according to directions that come with the program). But the best part of a user group is the opportunity it presents to meet other people in your community who are using Macs, so you can call them up for help on all the days of the month when the user group *doesn't* meet.

How to Find a Group. Apple has the strongest program of any computer company, in encouraging and supporting user groups. In every Mac manual, Apple includes information on user groups, as well as the phone numbers of The Boston Computer Society and BMUG, the two largest Mac groups, and Apple's own user-group hotline, which you can call to find out the user group nearest you.

Boston Computer Society	617-367-8080
BMUG	415-849-1114
Apple User Group Hotline	800-538-9696

On-line Help

Another source of good information that's only slightly more costly is on-line services. Most services have something called forums, which are a lot like perpetual user-group meetings. You can call in over your modem and "listen to" other people's questions and answers, or you can leave a question on the forum for anyone else to answer. You'll incur whatever charges apply to the on-line service, and you may have to wait a few days for an answer to your question. But especially if you're in an area that's not well served by a user group, this may be a good approach.

Chapter 5 goes into the pros and cons of on-line services and forums in quite a bit of depth, so if you're interested and haven't yet read that chapter, have a look now.

Hiring a Consultant

No matter how many books, magazines, user groups, and on-line services you have available to you, there will still be times when it may make more sense to get a boost up from a consultant than to flounder on by yourself. When should you pay someone to show you the ropes? In general, you've got to ask yourself

- How much is my time worth?
- How long will it take me to figure things out on my own?
- Can I see any immediate payback from this information?

On my first job as a computer consultant, I was hired to find a time-billing system for a legal office. Terribly eager to do everything right, I spent weeks on the project, didn't bill for most of my time, and still ended up charging the lawyers over \$600—what seemed like an enormous sum to me at the time. I was terribly nervous about presenting my client with the bill, until a friend said, "Cynthia! They charge \$100 an hour in that office for legal advice. If you've saved them seven hours of work, you've given them a good deal. How long do you think it would take them to even find out what the options are? How much money would they waste if they bought the wrong thing? And how many extra dollars will they earn now that they can bill all their time accurately?"

You're on the lawyers' end of the story. But the only way you can assess a potential investment in consultant time or seminar fees is by knowing how much your time is worth, then figuring out what the potential savings in your time might be, and whether the information you'll gain will generate any immediate gain in productivity or in actual cash.

How To Find a Good Consultant. What I really mean here is, "How do you avoid getting ripped off?" In a time when everyone who knows two programs and has had a Mac for six months has cards printed up that say "Macintosh Consultant," how do you tell the really good folks from the bad? It's best to depend on word of mouth, and proceed only when you have a really strong personal recommendation from someone who's satisfied. But if you have to go forward on your own, or want some way to back up the personal recommendation, here are a few guidelines:

- Ask your local user group leader or computer dealer for the names of any consultants in your area.
- Call up and ask the person a question to which you already know the answer. You'll get to find out how clearly he or she explains things, and you might find out more than you knew before.
- Ask for the names of other clients, and call them to check up. You'd be glad to take a minute to pass on your experience, and others are, too.
- Hire the consultant for a small job before you consider a big job. This is the only way to find out whether he meets deadlines, and does a quality job.

What You'll Pay and What You'll Get. Expect to pay around \$50 per hour for good Mac consulting, with higher prices in the big cities on either coast and lower prices in some areas. Make sure to find out what's included, and when the meter starts running. I tell all my clients that they can call me anytime, and if I can answer their question in five minutes or less, I won't charge them. If it's something bigger, I'll make an appointment to come in, and charge. See how your consultant deals with the inevitable follow-up questions that come with any job, and find out if it takes a week to get your phone messages answered.

Since most consultants charge by the hour, get some idea of how long it's going to take to get the information or services you need. Be aware that database design and implementation can take a great many hours. If you blithely call up a consultant and ask her to "whip me up a little thing in FileMaker that will take care of my billing" or "set up something in 4th Dimension that will track sales prospects" you may be agreeing to a few thousand dollars worth of fees. Yet, this still may be cost effective for you, since database programs are the hardest ones to master on your own. Only you can decide.

It's also important to get an agreement in writing as to the scope of the work and the time estimated to complete it. This doesn't need to be a formal contract; it can be a detailed outline that both parties initial. The goal here is not a dry legal contract so much as a confirmation that both of you see the project the same way. If you do hire someone to do custom database or spreadsheet design for you, make sure you get some sort of manual to keep afterwards. Documenting the work that's been done takes time—and you'll be charged for that time—but it's essential to making sure you end up with some usable value for your money.

Finally, make sure you're ready to take advantage of someone else's skills: If you don't really know what you want, you can't tell someone else what to do. You'll waste hundreds of dollars of money if you keep changing your mind after the job's partway done, and you'll never end up with something that will help your business. Take the time to analyze everything you do.

I tried to write an inventory system on Double Helix for my store, and eventually decided it was too complicated, too slow, and beyond my abilities. I got a few pointers from a consultant, but I decided to write it myself because I looked at what it would cost, and it was going to be very expensive—on the order of \$2,500 to \$3,500. I worked on it almost compulsively for months, mostly at home, at night. But it was a change of

pace. I couldn't have just worked extra hours at the store to earn more money to pay someone. You only have a certain amount of energy for one type of activity.

It's just as well I didn't spend the money. We probably weren't ready to do it. One thing I found out in trying to write it myself was that we didn't know what we wanted to track. Now I'm looking at vertical market packages for jewelry stores, because they have categories that suggest what you ought to keep track of, based on experience with hundreds of stores.

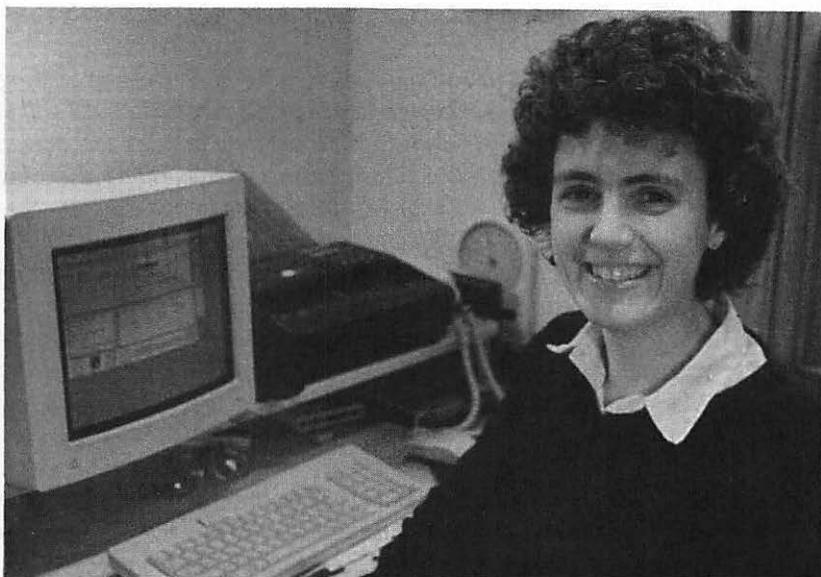
Mel Reisz, Jeweler

Who Knows What's Next?

As Mac small-business people, all of us are unusually fortunate. We own or work in small companies that provide us much more control over our lives than employees of large corporations can imagine. And, in large part, it's the Macintosh that makes our businesses possible. I hope that this book has helped you to expand your use of the Mac, and improve your business—and contribute to the lifestyle you enjoy.

It's important for us to do what it is we really want to do. I've done a little of everything. I started in a management training program for Montgomery Ward. Then I was at Disneyland for three years: I was a character in costume—Eeyore, from Winnie the Pooh—and manager of the Main Street electrical parade. I lived in a log cabin near Jackson Hole, Wyoming, and had my own radio program. I've taught everything from fourth grade to university, and I haven't even hit 40 yet. I don't know what will be next, but whatever it is, the Mac will be at the center of it.

Gregory de Silva, Opera singer and voice-over artist



Cynthia W. Harriman
Writer and Mac trainer

Cynthia Harriman is a writer, computer consultant and Mac trainer in Portsmouth, NH who thinks it only fair to bare her soul to the same extent she's asked others in this book to bare theirs. Cynthia runs her business from her home, on a Mac II, using Word, Excel, MacNet, Managing Your Money, MacDraw, and almost every other product mentioned in this book, many of which she grew to depend on during the course of writing *The Mac Small Business Companion*. She and her husband Lew, who also works from home, share a LaserWriter NT thanks to a basement that's crisscrossed with LocalTalk cabling.

I studied French in college, at a time when liberal arts majors didn't go near computers. As a result, I wasn't introduced to microcomputers until 1981, when I worked as clerk/bookkeeper at a small New Hampshire antique store. My boss was the retired CFO of a major corporation, determined to run his new business in the same organized way he had run a much, much larger company.

My education started the first day, when I was shocked to find that the computer store that had just taken \$3500 of our money would not even set up the Apple II we'd bought, let alone tell us anything about the Peachtree Accounting program we'd chosen. I was on my own, like most small businesses with their first computer. I came in nights and weekends to master that Apple II. I read books. And then, six

months later, I attended an intensive microcomputer-education program at Wesleyan University in Connecticut, called The Summer Computer Institute. I was hooked, and decided to make computers my work.

Now I spend about half my time writing. I started out writing because it was something I could do at home when my kids were little, but I still enjoy it now that they're entering their teens. I've written articles for magazines including *MacWorld*, *MacWeek*, *Macintosh Business Review* and *Lotus Magazine*, and have been a regular columnist for *Macintosh Today* and *Andrew Seybold's Outlook*. This is my third book, following on the heels of *The Macintosh Advisor* (with Ben Calica, Hayden Books 1986) and *The MS-DOS—Mac Connection* (with Jack Hodgson, Brady Books 1988). My writing reflects changes in the software available for the Mac: I wrote the first book in *MacWrite*, the second in *Microsoft Works*, and now do my writing in *Word*. Like most Mac users, I find that the consistent Mac interface makes it easy to move on to a new program when I need new features and am ready to absorb them.

The other half of my time is spent in training and consulting. The balance works for me: just when I'm tired of being holed up in my office, staring at the walls and writing, I get out in front of a class of people, and enjoy the buzz all teachers get from seeing light bulbs go off above their students' heads. *Works* is the most important program I use in my training business: Its unparalleled ability to mix text and graphics next to each other lets me avoid using a page layout program for my training materials.

Three things I've recently adopted have made a big difference in my productivity. The first is *MacNet*. I work in a loose cooperative relationship with three other Mac trainers under the name *The MacConsortium*, and we've adopted *MacNet* as our means of keeping in touch, since we're spread over two states. Calls from our ads come in to our answering service, and the one who's on phone-duty (we rotate this chore) posts the messages and training requests on *MacNet*, so that whoever's available and qualified can follow up and book the job. *MacNet* makes it very easy to make sure everyone in the group gets the same information at the same time.

The other two time-savers have been *QuickDEX* and a FAX machine. I had tried using *FocalPoint's* address book and dialer last year, but had found *HyperCard* to be so cumbersome — even on a 5M Mac II — that I didn't actually use it regularly. *QuickDEX* is small and simple, and it's always right there. I've used *QuicKeys* on my extended keyboard to add a keyboard shortcut for *QuickDEX*. When I want to call someone, I just hit the F7 key, type in part of their name or address, and press *Command-D* to dial over my modem. It's hard to believe how such a little program can make such a big difference, but I guess I shouldn't have been surprised — when I'm in the office I'm on the phone at least half the time.

I couldn't do what I do without The Boston Computer Society. I've been active in BCS since 1982, and find it a source of my most up-to-date information, as well as many of the referrals I get for my business. Being active in the BCS Mac group gives me access to great meetings, one of the best public domain/shareware collections in the country, an excellent (but erratically-published) newsletter, and a network of people to call when I have any questions. Of course, I have to be willing to give as much as I get: I probably field about a dozen calls a week from absolute strangers who start off, "I got your name from the BCS and they said that maybe you could help me with..."

I'm about an hour and a half from Boston, and I don't relish driving to the city very often. So I started my own user group here in New Hampshire. It's affiliated with the BCS — a nice arrangement that gets our meetings listed in their publications, and lets us sell their PD software — but we really run our own show. It's surprising how a small group of 25 to 30 people can be so diverse, and have so many skills to share with each other. People were a little shy at first, figuring they didn't know enough to say anything, but I think for most people the group is a great confidence-builder as they all find out they know things other people don't know, and that others are available who can help them for free.

I got my first Mac in 1984, when the 128K, single-floppy Mac was first introduced. I've seen the Mac flourish, falter, and almost die before it was accepted by the business public. I'm glad big business has embraced the Mac, because it ensures that the machine I depend on will be around for a while. But I'm a little disappointed that so many of the books and magazines on the shelves these days are filled with articles like "How you can add 256 workstations to your network" and "Workgroup productivity re-examined." I think the Mac is an essential part of small business, and I enjoy doing what I can to give equal time to those of use who are out here on our own.

Appendix

Product List

To help you find out more about the hardware and software mentioned in this book, here is an annotated list of products. Products referred to in specific chapters are marked with a chapter number. Products mentioned in several chapters or only in case histories have no reference, and may be listed separately after the main list.

1st Aid Kit (\$99.95)

1st Aid Software
42 Radnor Road
Boston, MA 02135
617-783-7118

(Chapter 9) A disk and file recovery program with a wonderful manual that explains every error message and problem you're ever likely to encounter on your Mac. 1st Aid Kit's Text Recovery feature is especially nice, but the program is not as good as SUM for undeleting files or attempting to recover hard disks that have been accidentally initialized.

Adobe Systems, Inc.

1585 Charleston Rd.
Mountain View, CA 94039
415-961-4400

(Chapter 6) Adobe created the PostScript language, which it licenses to printer manufacturers. Adobe also sells downloadable outline fonts that can be used with PostScript printers.

Bill-It (\$159)

Shopkeeper Software Inc.
PO Box 38160
Tallahassee, FL 32315
904-222-8808

(Chapter 4) Bill-It is a retail-oriented billing package that can also be used as a point-of-sale manager (electronic cash register). Lacks the flexibility and professional appearance necessary for a service business.

Bitstream Inc.
215 First Street
Cambridge, MA 02142
617-497-6222

(Chapter 6) Bitstream sells outline fonts that can be used on PostScript printers and on many non-PostScript printers.

BMUG (membership: \$40 per year)
1442 A Walnut St., Suite 62
Berkeley, CA 94709-1496
415-549-BMUG

BMUG is one of the best-known Mac-only user groups, and a potent force in supporting the Macintosh on the West Coast. It holds meetings almost every night of the week in Berkeley, where many Silicon Valley companies appear regularly to show their products and get user feedback. Membership includes two issues of the BMUG newsletter (over 400 pages each), access to the group's bulletin board service, a technical help line, and public domain software.

Boston Computer Society (membership: \$40 per year)
1 Center Plaza
Boston, MA 02108
617-367-8080

The Boston Computer Society is the world's largest personal computer group, with over 30,000 members. It's an umbrella organization of over 50 machine-specific and special-interest groups, including everything from the Macintosh Group (with 14,000 members) to groups like Disabled/Special Needs, Medical, Real Estate, and more. Membership includes two subgroup newsletters, public domain/shareware software at low prices, discounts from national software and hardware vendors, and meetings in the Boston area and throughout New England.

BRS Colleague (\$95 registration, plus usage fees)
1200 Route 7
Latham NY 12110
800-468-0908

(Chapter 5) BRS Colleague includes about 150 databases in all areas, although it's primarily geared toward the medical and healthcare end user. The service offers bibliographic citations, as well as access to the full text of about 70 medical journals and 20 textbooks. Usage fees: \$20/month minimum. \$30 per hour prime time, \$20 off-prime for medical databases, plus an extra fee for downloading documents.

CompuServe (\$39.95 subscription, plus usage fees)

5000 Arlington Centre Blvd.
P.O. Box 20212
Columbus, OH
800-848-8199 or 614-457-0802

(Chapter 5) CompuServe provides on-line services to over 350,000 subscribers, including electronic mail, on-line shopping services, airline and hotel guides, news, weather and sports, stock quotes, games, and dozens of forums—interactive discussion areas on various topics. CompuServe's Working From Home Forum may be of special interest to Mac small-business users. On-line fees \$12.50 per hour; some databases incur a surcharge.

Dac Easy Lite (\$69.95)

17950 Preston Road, Suite 800
Dallas, TX 75252
800-992-7779

(Chapter 4) One of the only inexpensive bookkeeping programs that includes billing. Dac Easy Lite allows multiple accounts, but is heavily oriented toward retail sales.

DataDesk MAC-101 Keyboard (\$169.95)

DataDesk International
7651 Haskell Ave.
Van Nuys, CA 91406
818-780-1673

(Chapter 2) A less expensive alternative to the Apple Extended Keyboard, the Mac 101's extra keys are great for those who like macros and keyboard shortcuts. Models available for both the Mac Plus and the SE/II.

Dialog (\$35 annual service charge, plus usage fees)

3460 Hillview Ave.
Palo Alto, CA 94304
800-334-2564

(Chapter 5) An on-line database service that offers access to about 350 different databases in a wide variety of business and professional fields. Usage fees vary from a low of \$30 per hour to over \$200 per hour—depending on the database being used—but average around \$100 per hour. Additional “format charges” for downloading or printing information in some databases.

Disk Express (\$49.95)

ALSoft, Inc.
P.O. Box 927
Spring, TX 77383
713-353-4090

(Chapter 9) Disk Express defragments your hard disk, reassembling all the pieces of each individual file into one continuous chunk. Going beyond some other programs, Disk Express also moves all the free space on your disk into one area, so that new files you add to your drive are less apt to get divided up into pieces as they're stored.

Disk First Aid (free with System software)

Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 9) Apple provides this disk recovery utility with every copy of the Mac System. It can fix some minor problems with your disks, but don't count on it as your only disk recovery tool (see SUM and 1st Aid Kit).

DiskFit (\$99.95)

SuperMac Technologies, Inc.
295 N. Bernardo Ave.
Mountain View, CA 94043
408-245-2202

(Chapter 9) DiskFit is a backup program that saves files in Finder-readable form. It's reasonably fast, and very reliable, but has relatively few options for selecting the files you want to back up.

DiskTop (\$49.95)

CE Software, Inc.
1854 Fuller Rd.
W. Des Moines, IA
515-224-1995

(Chapter 8) DiskTop duplicates most of the Finder's housekeeping functions—finding files, renaming disks, copying and moving files, etc—in a desk accessory that you can use from within any program. Its Find feature is especially nice, because it will not only locate but also open files.

Easy Envelopes (\$15 shareware fee)

Andrew Welch
Mark 3 Software
21 Grey Rocks Rd.
Wilton, CA 06897

(Chapter 1) Easy Envelopes handles most of what's involved in printing envelopes: It stores up to 99 frequently used addresses, centers the address properly for different envelopes and different printers, and much more.

Ferret (free)

Larry Nedry
Compuserve 71566,650
Delphi Nedry
MouseHole LNedry

(Chapter 9) A public domain/shareware virus-fighting program that scans your drive for Scores-infected files, and removes them if found.

FocalPoint II (\$99.95)

TENpointO
Mediagenic/Activision
3885 Bohannon Drive
Menlo Park, CA 94025
415-329-0800

FocalPoint is an all-in-one business-management program that includes telephone dialing and logging, appointment book with alarms, project organization, and billing. Some find it cumbersome because it requires HyperCard (and therefore can be slow and memory-hungry) but its features may be just what you need for a small business.

Font/DA Juggler Plus (\$59.95)

ALSoft, Inc.
P.O. Box 927
Spring, TX 77383
713-353-4090

(Chapter 7) One of the two leading programs for managing fonts, desk accessories and other resources (see also SuitCase II). A more advanced version called Master Juggler adds a few desktop-management features not found in Font/DA Juggler Plus.

FullWrite Professional (\$395)

Ashton-Tate
20101 Hamilton Ave.
Torrance, CA 90502-1319
213-329-8000

(Chapter 1) An impressive array of features combined in a word processor with outlining and page layout capabilities. More than 1M of RAM necessary to avoid sluggish performance, or to run FullWrite with a customized System file (added fonts, DAs, INITs, CDEVs, etc.).

GCC Personal Laser Printer (PLP) (\$2,099)

GCC Technologies
580 Winter Street
Waltham, MA 02154
617-890-0880

(Chapter 6) QuickDraw-based laser printer with outline fonts. Since it uses your Mac's memory and CPU to process pages, at least 2M of RAM in your Mac is recommended.

Gofer (\$79.95)

Microlytics, Inc.
One Tobey Village Office Park
Pittsford, NY 14534
716-248-9150

(Chapter 8) Gofer is a file-finder program that locates files not by their titles but by their contents: You can find all documents that mention a specific client, or job, or product, for instance. Once files are found, Gofer opens each one to show you the word or phrase you sought, in context.

Grappler (\$149)

Orange Micro Inc.
1400 N. Lakeview Ave.
Anaheim, CA 92807

(Chapter 6) Two products that help the Mac to connect to "non-Mac" printers. Grappler LQ is for connecting to parallel printers, and Grappler LS for serial printers like the HP LaserJet and HP DeskJet. Both products include cable and software for a complete solution.

Guardian —see SUM

HD Backup (free with System software)

Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 9) Apple's hard disk backup program. Very rudimentary, with virtually no options for selecting files to back up. Adds to your stack of backup disks each time you do an incremental backup.

HD TuneUp—see SUM

HP DeskJet (\$795)

Hewlett Packard Company
16399 W. Bernardo Dr.
San Diego, CA 92127-1899
800-752-0900

(Chapter 6) A 300 dpi ink-jet printer that produces results comparable in appearance to most laser printers, for a lot less money. Requires special driver to work with Mac.

HP LaserJet (\$2,595)

Hewlett Packard Company
16399 W. Bernardo Dr.
San Diego, CA 92127-1899
800-752-0900

(Chapter 6) A PC-oriented laser printer that offers less functionality and greater Mac incompatibilities than comparably priced QuickDraw printers like the GCC PLP and the Apple LaserWriter SC.

HyperCard (free with System software)

Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

HyperCard is an application that can be used to create, link, and retrieve information in "stacks" of "cards." An interesting concept with unlimited uses, HyperCard requires all the resources of a 1M Macintosh.

HyperDialer (\$39.95)
Data-Desk International
7651 Haskell Ave.
Van Nuys, CA 91406

(Chapter 5) A device that plugs into the handset port of any touch-tone phone; works with some Mac software packages to automatically dial phone numbers.

ImageWriter II (\$625)
Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 6) Apple's low-end dot-matrix printer. Mechanically reliable, but tends to have frequent paper jams, and poor feeding of single sheets and envelopes.

ImageWriter LQ (\$1429)
Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 6) Apple's 27-pin dot-matrix printer; the LQ stands for letter quality. Apple reissued this printer in the Spring of 1989, effectively recalling two years of production due to loudness and poor print quality. The new version is much improved, but other printers like the HP DeskJet offer better printing for less money.

INITPicker (\$49)
Microseeds Publishing Inc.
7030-B West Hillsboro Ave.
Tampa, FL 33634
813-882-8635

(Chapter 7) Program that helps to reduce the chaos that can be caused by INITs and CDEVs conflicting with each other. INITPicker is itself a CDEV; it lets you mark other CDEVs and INITs so that they will not be loaded into memory next time you start your computer.

Interferon (shareware, donation requested)

Robert Woodhead
The Vision Fund, c/o Robert Woodhead, Inc.
10 Spruce Lane
Ithaca, NY 14850

(Chapter 9) A virus-fighting program that detects the Scores and nVir viruses, and watches for changes in the System file. Woodhead requests a voluntary donation to the Vision Fund of any amount, from those who use his program.

LaserWriter II SC (\$2,799)

Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 6) Apple's single-user QuickDraw laser printer. Uses scaled bitmap fonts instead of outline fonts, so you may be limited in printing large-size fonts in best quality.

LaserWriter, LaserWriter Plus (discontinued)

Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 6) Apple's original PostScript laser printers, now discontinued. The LaserWriter Plus has more fonts than the LaserWriter, and is generally faster because it contains a later version of PostScript. A good buy on the used marketplace.

The Macintosh Advisor (\$19.95)

by Cynthia W. Harriman and Bencion Calica
Hayden/Howard W. Sams, updated 1988
4300 West 62nd Street
Indianapolis, IN 46268
317-298-5000

My first book. A good introduction to System issues, desk accessories, MultiFinder, and many more issues. Some product references are beginning to be outdated, but the explanations are still good.

Macintosh Hard Disk Management (\$19.95)

by Charles Rubin and Bencion Calica
Hayden/Howard W. Sams, 1988
4300 West 62nd Street
Indianapolis, IN 46268

A good all-round guide to hard disk management. Everything you ever wanted to know about hard disks and then some.

MacMoney (\$119.95)

Survivor Software
11222 La Cienega Blvd.
Inglewood, CA 90304
213-410-9527

(Chapter 4) MacMoney is a multiple-account personal and business book-keeping program.

MacNet (\$75)

Connect, Inc.
10101 Bubb Rd.
Cupertino, CA 95014
800-2MacNET

(Chapter 5) MacNet is an on-line service that couples electronic mail (Email) with on-line support forums and other services. It's available for both the Mac and the PC.

MacPrint (\$149)

Insight Development Corporation
1024 Country Club Drive
Moraga, CA 94556
415-376-9500

(Chapter 6) MacPrint is one of many third-party printer drivers for the HP LaserJet and DeskJet. Comes with serial cable.

MacroMaker (free with System software)

Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 2) Apple's macro-recording program, provided free with the

System. MacroMaker is a relatively simple program, with no editing features, and no loops, branches, or conditions. It is incompatible with many programs, especially several from Microsoft.

MacUser (\$27 year)
950 Tower Lane, 18th floor
Foster City, CA 94404
415-378-5600

(Chapter 10) A monthly Mac magazine.

MacWeek (\$75 year; free to corporate types)
525 Brannan Street
San Francisco, CA 94107
415-882-7370

(Chapter 10) A weekly Mac magazine. Heavy on what's new and future trends, but with the most up-to-date reviews.

MacWorld (\$30 year)
501 2nd Street
San Francisco, CA 94107
415-243-0505

(Chapter 10) A monthly Mac magazine.

Managing Your Money (\$219.98)
MECA Ventures, Inc.
355 Riverside Ave
Westport, CT 06880
203-222-9150

(Chapter 4) One of the best simple multiple-account programs for home accounting and for small professional/service businesses.

Mass Micro DATA • PAK (\$1,795)
MASS MICRO Systems, Inc.
550 Del Rey Ave.
Sunnyvale, CA 94086-3258
800-253-8900

(Chapter 9) A hard drive system with 45M removable cartridges, that connects to the SCSI port on your Mac. Cartridges cost \$149.95 each.

MCI Mail (\$18 year plus on-line fees)

MCI Mail
P.O. Box 1001
1900 M St. NW
Washington, DC 20036
800-624-2255

(Chapter 5) An electronic mail service. Not at all Mac-like, but widely used in business. MCI subscribers can also be Emailed through MacNet.

McSink (\$30 shareware fee)

Dave McWherter
Signature Software
2151 Brown Ave.
Bensalem, PA 19020

(Chapter 1) McSink is a desk accessory that performs over 20 text and file operations on the contents of the clipboard. One of the most useful—if your word processor does not support this feature itself—is McSink’s ability to change text from uppercase to lowercase or vice versa. A more powerful version of this DA with macro capabilities is available commercially. (See Vantage)

Microsoft Corporation

Microsoft
16011 N.E. 36th Way
Redmond, WA 98073-9717
206-882-8088

Microsoft Excel (\$395). Excel is the leading spreadsheet on the Mac, with the ability to calculate numbers and create graphs. Its built-in macro capability is simple to use for basic watch-me-and-record-this macros, but its more advanced capabilities (loops, branches, and other programming conditions) are a good bit more difficult to learn.

Microsoft Word (\$395). The most widely used business word processor for the Mac. Has keyboard shortcuts for anything you could want to do—but it may take awhile to find them in the manual.

Microsoft Works (\$295). An excellent starter package for new Mac users; may be all most businesses need ever. Works includes a very easy word processor with all the features businesses need for routine correspondence, simple drawing tools, a limited database, a spreadsheet (with charting), and a basic telecommunications package. Because everything is all in one package, it’s easy to use the database and the word processor together to create form letters and mailing labels. Highly recommended.

The MS-DOS—Mac Connection (\$22.95)
by Cynthia W. Harriman (with Jack Hodgson)
Brady Books/Simon & Schuster, 1988
15 Columbus Circle
New York, NY 10023
800-624-0023 (except NJ)
800-624-0024 (in NJ)

My second book, *The MS-DOS—Mac Connection*, offers solutions and suggestions for exchanging data between Macs and IBM-PCs. It explores different hardware approaches (direct-cable, external drive, network) as well as discussing the software issues of file translation. The book also stresses the human issues of MS-DOS—Mac connectivity, with three chapters aimed at helping users switch between the two machines, and a chapter of interesting case studies of workplaces that share the two machines.

Panasonic 1124 (\$529.95)
Panasonic Industrial Co.
Div. of Matsushita of America
2 Panasonic Way
Secaucus, NJ 07094
800-742-8086

(Chapter 6) A well-built 24-pin printer that's heavily discounted to \$350 or less. Can be used with the Grappler LQ to provide better quality printing than the ImageWriter for less money.

PowerStation (\$59.95)
Fifth Generation Systems Inc.
11200 Industriplex Blvd.
Baton Rouge, LA 70809
504-291-7221

(Chapter 8) A Finder alternative program that helps you to quickly locate and open the applications and documents you use most often.

Preview (\$10 shareware fee)
Randy Ubillow
COMPUTER:applications, Inc.
12813 Lindley Dr.
Raleigh, NC 27614

(Chapter 1) A simple shareware program that provides an on-screen bird's-eye view of your page in programs lacking this feature.

QMS PSJet Plus (discontinued)

The Laser Connection (a division of QMS)
7852 Schillinger Park West
Mobile, AL 36608
800-523-2696

(Chapter 6) Officially, this printer is discontinued. But many dealers can still obtain them occasionally for a very good price. If your dealer can't, ask for his/her best price on QMS's PS810, or look at other non-Apple PostScript printers.

QuickDEX (\$60)

Casady & Greene, Inc.
26080 Carmel Rancho, Suite 202
P. O. Box 223779
Carmel, CA93922
408-624-8716

(Chapters 1 and 5) A desk accessory that acts as a computerized Rolodex file, giving you quick access to names and addresses. Also lets you dial any phone number recorded on a card.

Quicken (\$49.95)

Intuit
540 University Ave.
Palo Alto, CA 94301
415-329-2721

(Chapter 4) Quicken is a simple, single-account bookkeeping program. With a very easy-to-learn interface, Quicken helps you record expenses, print out checks (if desired), and print simple transaction lists or an income statement. Quicken cannot print out bills, but can be used to summarize a particular client or project's expenses in order to write bills by hand. Highly recommended for those who run their businesses from a single checking account with few (if any) cash or credit transactions.

QuicKeys (\$99.95)

CE Software, Inc.
1854 Fuller Rd.
W. Des Moines, IA
515-224-1995

(Chapter 2) A utility program that lets you create keyboard equivalents for just about anything you can imagine. Highly recommended.

Redux (\$99)

Microseeds Publishing Inc.
7030-B West Hillsboro Ave.
Tampa, FL 33634
813-882-8635

(Chapter 9) An excellent backup program with very flexible options, to let you choose any particular group of files for backup.

Set Paths (\$20 shareware fee)

Paul F. Snively
3519 Park Lodge Ct, Apt E
Indianapolis, IN 46205

(Chapter 8) Desk Accessory with INIT. Tells your Mac where to look for any files it can't find. Useful when you don't want to keep an application like a word processor buried in the same folder as its auxiliary files (such as spelling checkers).

SideKick (\$99.95)

Borland International
4585 Scotts Valley Drive
Scotts Valley, CA 95066
408-438-8400

(Chapter 5) SideKick is a set of desk accessories that includes a spreadsheet, appointment calendar, to-do lists, and an address book with dialer and call-logger. The address book is relatively inflexible, with space for only one phone number.

Staircase (PD/shareware free)

Neil Radisch & David Goldstein
Eccentric Software
100 N. 17th Street, 15th floor
Philadelphia, PA 19103
800-332-4262

(Chapter 1) A program that adds "walk-down menus" to any application. With Staircase in your System folder, the commands in each menu are assigned a number—which appears on the menu when you pull it down—that you can press to avoid using the mouse.

StuffIt (\$18 shareware fee)
Raymond Lau
100-04 70 Ave
Forest Hills, NY 11375-5133

(Chapter 5) A utility program that compresses files so that they can be sent more quickly and economically over modems. Also decompresses files on the other end.

SuitCase II (\$59.95)
Fifth Generation Systems Inc.
11200 Industriplex Blvd.
Baton Rouge, LA 70809
504-291-7221

(Chapter 7) One of the two leading programs for managing fonts, desk accessories, and other resources. (See also Font/DA Juggler Plus).

SuperLaserSpool (\$149.95)
SuperSpool (\$99.95)
SuperMac Technologies, Inc.
295 N. Bernardo Ave.
Mountain View, CA 94043
408-245-2202

(Chapters 1 and 6) Spoolers for the LaserWriter and ImageWriter. Let you work on your Mac while you're still printing.

Symantec Utilities for the Mac (SUM) (\$99.95)
Symantec
10201 Torre Ave
Cupertino, CA 95014
408-253-9600

(Chapter 9) Utilities that can defragment your hard disk and help with disk and file recovery. (See also *1st Aid Kit*.)

Tempo II (\$149.95)
Affinity Microsystems Ltd.
1050 Walnut Street, Suite 425
Boulder, CO 80302
800-367-6771

(Chapter 3) The most sophisticated macro program available for the Macintosh. Includes the usual watch-me-and-record options of most macro programs, plus the ability to do loops, branches, and conditionals.

TimeSlips (\$299.95)
North Edge Software
239 Western Ave.
Essex, MA 01929
508-768-6100

(Chapter 4) TimeSlips, a billing program, consists of two parts, TSTimer and TSReports. TSTimer is a desk accessory used for entering the time and expenses you incur on a project. TSReports is an application that prints out bills—with a number of very flexible and professional options—and keeps track of your accounts receivable. TimeSlips cannot print out an income statement or easily export its data to other accounting programs, so it does not constitute a complete bookkeeping solution.

Vaccine (PD/shareware, free)
Donald Brown
1854 Fuller Rd, PO Box 65580
West Des Moines, IA 50265

CDEV. Notifies you when significant resources are being modified. Up to you to decide to continue. Don has made it very clear that he does not plan to get into an arms war with the twisted people who write viruses; he does not plan to update this program to deal with new threats, so it may not be effective on future viruses.

Vantage (\$99.95)
Preferred Publishers
5100 Poplar, Suite 706
Memphis, TN 38137
800-446-6393

(Chapter 1) A more powerful version of the McSink desk accessory (see McSink, above) that adds spell-checking and macros.

Virus Rx (free from any Apple dealer)
Apple Computer
20525 Mariani Drive
Cupertino, CA 95104
408-996-1010

(Chapter 9) Detects various viruses. Regularly updated by Apple, Version 1.4 checks for strains of the Scores, nVir, INIT 29, and Hpat viruses.

Many programs in this book were just mentioned in passing by those quoted. Rather than provide source information on every program mentioned—especially since many of them are well-known, popular programs—I'll just list each program and the company that sells it. Ask your dealer for more information about any of these programs.

Acta	Symmetry Corp	800-624-2485
Apple FAXmodem	Apple Computer Inc.	408-996-1010
Back to Basics	Peachtree Software	404-564-5700
BackFAX	Solutions International	802-229-0368
BPI General Accounting	Computer Assoc. Intl.	408-432-1727
BulkMailer	Satori Software	206-443-0765
Delphi	General Videotex Corp.	617-491-3393
Desktop Express	Dow Jones	800-257-5114
Dollars & Sense	Monogram	213-533-5120
Double Helix	Odesta Corp.	312-498-5615
FastBack	Fifth Generation Systems	504-291-7221
FileMaker	Claris	415-960-1500
Freehand	Aldus	206-622-5500
Heizer Templates	Heizer Software	415-943-7667
Illustrator	Adobe	415-961-4400
Inhouse Accountant	MIGENT	800-633-3444
Insight	Layered, Inc.	617-242-7700
MacDraw	Claris	415-960-1500
MacInTax	Softview, Inc.	805-388-2626
MacPaint	Claris	415-960-1500
MacWrite	Claris	415-960-1500
Microphone	Software Ventures Corp.	415-655-3232
More	Symantec	408-253-9600
NOVA drives	Microtech Intl, Inc.	800-626-4276
OnCue	ICOM Simulations	312-520-4440
OverVUE	ProVue Development	714-969-2431
PageMaker	Aldus	206-622-5500
PowerPoint	Microsoft	206-882-8088
Radius Full-page Display	Radius	408-434-1010
Rags To Riches	Chang Labs	408-246-8020
ReadySetGo	Letraset USA	201-845-6100
ReadySetShow	Letraset	201-845-6100
Reflex	Borland	408-438-8400
SBT Accounting	SBT Corporation	415-331-9900
Silicon Press	Silicon Beach	619-695-6956
Spelling Coach	Deneba Software	800-6-CANVAS
SuperPaint	Silicon Beach	619-695-6956
<i>The Macintosh Bible</i>	Goldstein & Blair	415-524-4000

Thunderscan	Thunderware Inc.	415-254-6581
WriteNow	T/Maker	415-962-0195

The following additional programs mentioned are public domain or shareware programs. Contact your nearest user group, or call The Boston Computer Society (617-625-7080) or BMUG (415-549-BMUG) for more information:

ColorCursor	MacInTalk	MacPassword
MenuClocck	PopUp	Private Eye
RWatcher	SaratogaKey	SpeakEasy
Staircase	SuperClock	The Guard Dog
Vaccine		

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Inside the Macintosh

Jim Heid
and
Peter Norton

At last, the book that Mac user's have long been waiting for, *Inside the Macintosh*. Master the basics and understand the inner workings of the Macintosh with the computer authorities, Jim Heid and Peter Norton. *Inside the Macintosh* provides the beginning Mac user with an understanding of how the Mac operates and gives practical technical advice on troubleshooting disk and file problems.

Experienced IBM users new to the Mac will benefit from comparisons of DOS and Mac features for business and personal applications. Even those already familiar with the Mac will find plenty of interesting and useful information here. The discussion of the toolbox and the architecture primer gives aspiring Mac developers the background needed to begin programming.

Also included:

- Networking Mac to Mac, Mac to PC, and Mac to mainframe
- Using MultiFinder and multitasking
- Navigating around the desktop
- Comparing the Mac SE, Mac II
- Customizing Macros
- And much more

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by Rusel DeMaria and George Fontaine

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A special section deals with application development and appendices offer tips for using the Mac and importing/exporting data. If you're new to the Mac, but not to dBASE, a chapter comparing dBASE III Plus with dBASE Mac shows you their similarities—and differences—to help ease you into effective data management on the Macintosh.

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