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# Macworld

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## YEAR'S BEST MAC PRODUCTS

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TOP PICKS,

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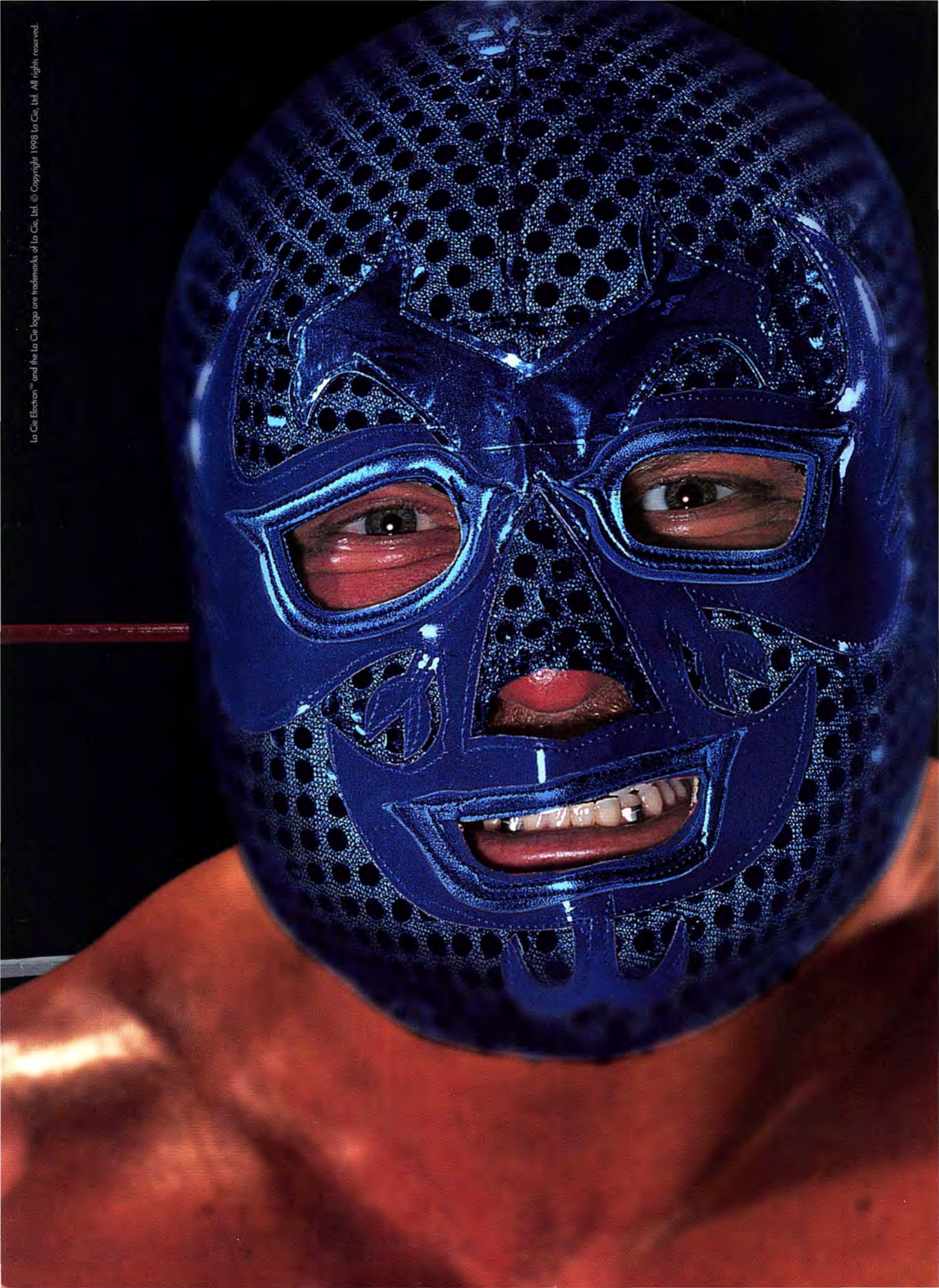
EXPERT GUIDE

## Microsoft Repents

Office 98  
Makes Up  
for Past Sins

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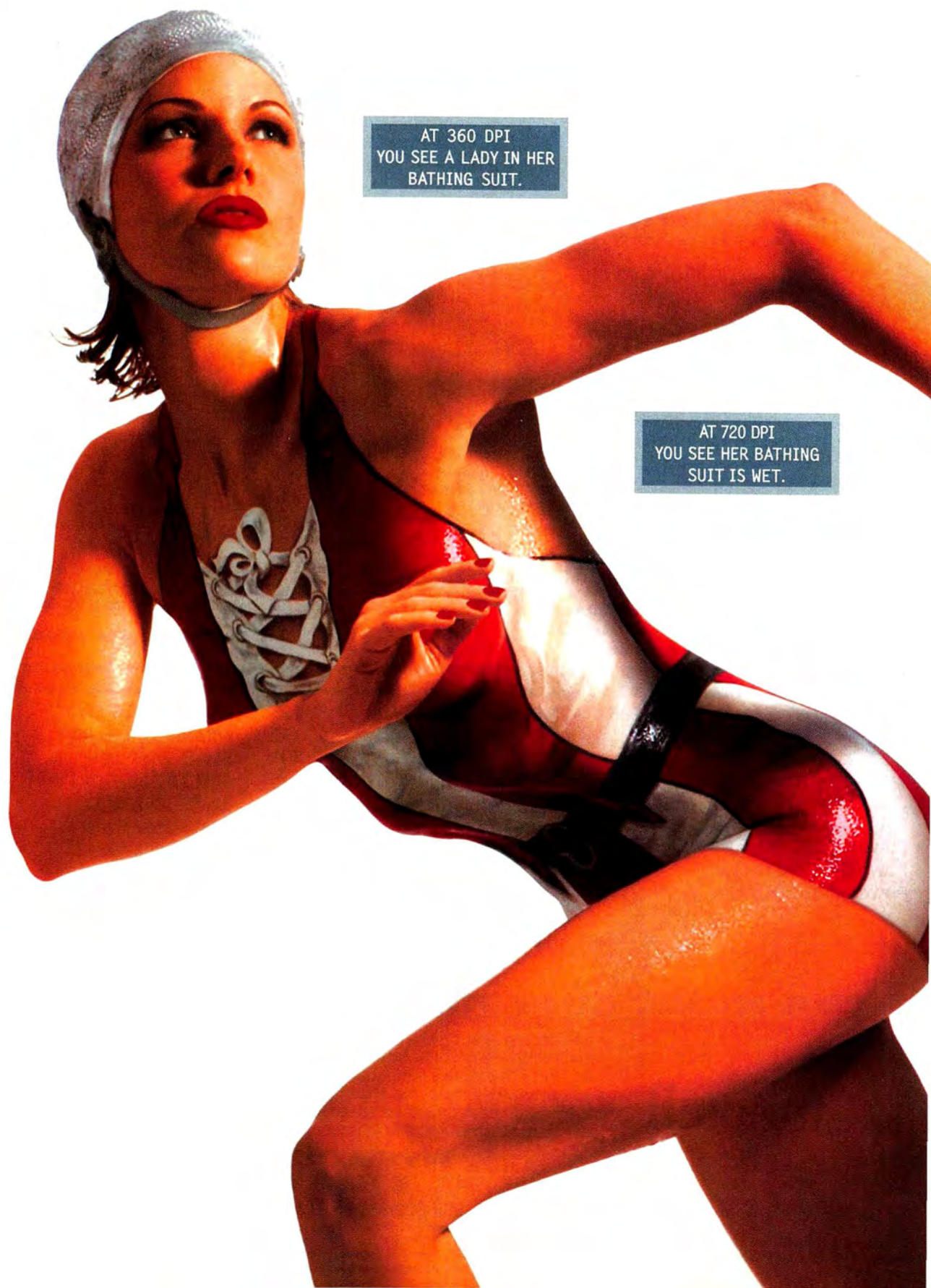
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# Letters

## The Lowdown on Tune-Ups

JOHN RIZZO'S "TIMELY MAC TUNE-Ups" was the clearest and most useful piece on Mac tune-ups I've seen anywhere (December 1997). Rizzo warned that Zip cartridges are not forever and advised against storing data on them for more than a few years. Does this apply to floppy disks as well?

JULES OLDER  
Albany, Vermont

*Floppy disks also go bad after a few years. If you get the message "disk error" when you try to read from or copy to a floppy, it's time to throw it away. Unlike with Zips, I wouldn't try to reformat (or reinitialize) a floppy.—John Rizzo*

I HAD MIXED FEELINGS ABOUT JOHN Rizzo's "Timely Mac Tune-Ups." The parts referring to data corruption, repairing invisible files, and reloading or upgrading system software and drivers concern me, because if the software is correctly written, why should these items become corrupted?

Certainly people who constantly load and delete software need to purge their machines occasionally and upgrade system software. But those of us who utilize a core group of programs shouldn't need the tune-ups you call for, and nobody should have to put up with file corruption that has no external cause (such as a power failure).

My office is a Wintel office, and those Pentiums get a lot of hard use with no "tune-ups"; they survive power failures, are operated by barely computer-literate personnel, and work well month after month. We ought to be able to say the same about our Macs.

CHARLES PALENZ  
Camp Hill, Pennsylvania



*The nature of hard-disk storage can lead to corrupted data regardless of how well or poorly the software stored on it is written. A hard drive stores data on a delicate magnetic medium that is affected by a variety of factors, such as magnetic fields generated by office equipment and lighting, and is not at all permanent. Windows machines also need regular tune-ups, as evidenced by the fact that Symantec sells many more copies of Norton Utilities for Windows machines than for the Mac. Without tune-ups, all computers—Macs and Windows machines alike—suffer from memory and file fragmentation, slow down, and are more likely to crash. In fact, many crashes users attribute to software are actually caused by easily fixable hard-disk problems.—J.R.*

THANK YOU FOR A VERY INFORMATIVE article. I have practiced the techniques John Rizzo described for a few years and have enjoyed relatively crash-free Macintosh computing ever since. I noticed that you didn't mention a few tricks I have seen published elsewhere,

including clearing the PRAM and deleting selected preferences files. What are the conditions under which these tricks should be done, and are they still valuable in OS 8?

JEFFREY A. SPEIR  
La Jolla, California

*Clearing, or "zapping," the parameter RAM (PRAM) and deleting preferences files weren't mentioned in the story because they aren't things you need to do on a regular basis. These are techniques for fixing problems. You don't want to do them regularly because both actions reset control panels and application settings back to their defaults.*

*Both techniques still work in Mac OS 8. You can zap the parameter RAM by holding down the P, R, ⌘, and option keys immediately after you hear the start-up tone. And as before, new preferences files for control panels and applications are created after you remove them from the Preferences folder (in the System Folder) and restart.—J.R.*

## The Ongoing Debate

GALEN GRUMAN'S "QUARKXPRESS versus PageMaker" gives short shrift to Adobe PageMaker's scripting language (December 1997). Sure, XPress supports AppleScript—but the difficulties of dealing with the syntax require a real computer programmer. PageMaker has the advantage of an integrated scripting environment with an English-like language even novice users can understand. Scripts can overcome many of PageMaker's limitations (such as character-based styles), and the convenient Scripts palette provides an environment in which average users can customize their software without spending money on expensive XTensions. *continues*

## CORRECTIONS

- *We incorrectly referred to the company MacSourcery as SoundSorcery ("Make Your Site Sing," December 1997).*

Dozens of free scripts are available online at the PageMaker Scripting Center, at [www.svprint.com/pmscripting.html](http://www.svprint.com/pmscripting.html).

MARC ZEEDAR  
Scotts Valley, California

I USE BOTH QUARKXPRESS AND PAGE-Maker extensively, and I prefer XPress over PageMaker for several reasons that were not pointed out in Galen Gruman's article. Often articles don't mention the small things that make a big difference when you're doing actual work.

One incredible timesaving feature XPress has is the ability to scale a text block and its type (size, leading, spacing, and so on) proportionally with the scale operation. I can't tell you how many times I've used this and what a wonderful timesaver it is. In PageMaker you have to manually resize and readjust everything. When you're designing a layout, functionality such as this is a must. This kind of feature is what makes XPress superior to PageMaker, and why most professionals prefer it.

CHRIS TYLER  
Kirkland, Washington

### Passionate for PowerBookUser

THANK YOU, THANK YOU, THANK YOU for *PowerBookUser* (December 1997)! This is some of the best stuff I've seen yet in your magazine. I recently acquired a PowerBook 3400c and thought life couldn't be better until I read *PowerBookUser*. Please keep this feature going strong. Better yet—how about a whole magazine called *PowerBookUser*? I'll buy a lifetime subscription.

MARK WHEELER  
Visalia, California

### Sagging Support at Apple

I JUST HAD THE UNPLEASANT SURPRISE of discovering that Apple will no longer provide free technical support for systems purchased before April 1996. I was told Apple had "redefined" support

and what it means. This is in violation of the introductory material that was included with my Performa 640CD, which clearly states that I will have free access to "a trained staff" for all of my technical problems.

I cannot express how angry this makes me. I love my Mac, but I don't think I can bring myself to purchase another one. I understand that Apple has its problems, but to blatantly disregard a previous agreement like this is inexcusable. What next—the one-year warranty is only good for a month?

Hopefully you can enlighten your readers about this new policy. I am sure many of them will be unaware of it until they attempt to call for support and that they will be equally upset.

CHRISTOPHER RICHARDS  
Antioch, Tennessee

### Something Missing in OS 8?

SO THE GRAPHICS IN MAC OS 8 (*THE Desktop Critic*, December 1997) are tidier; the platform is slick and stable; and the menu windows click down and pop up and, for all I know, run around and do tricks—but there is still no keystroke command for Save As!

Is there some big obstacle in the way? Or do developers think Save As is a command nobody uses often? I use it ten times as often as Save, especially when I'm cranking out dozens of almost identical Web-site buttons. C'mon now, guys, deliver and make it quick—my mouse hand isn't getting any younger.

WILL OWEN  
Nashville, Tennessee

### Feeling Misled

YOU LET US DOWN! SHORTLY AFTER reading "Print It" (November 1997) I upgraded my Macintosh system and purchased an Epson Stylus Color 600 printer to go along with it. After all, your review gave the printer four stars and a high recommendation.

The box proudly proclaimed "Macintosh and Windows Compatible," as did the advertising literature at the reseller store where I purchased it. I rushed home, followed the "Quick Setup Guide," loaded the driver software, . . . and discovered that it printed only pages of

zeros. Sure enough, I discovered buried in the manual, "Make sure AppleTalk is disabled, and you are using a standard Apple System Peripheral-8 cable."

A call to the dealer and Epson customer service revealed the sad truth: the Stylus Color 600 does not support AppleTalk. So much for my AppleTalk-networked office. I can still keep AppleTalk on by plugging the printer into the modem port, but the Stylus Color 600 can't serve as a network printer.

Shame on you, *Macworld*. You should have advised us of this. And shame on Epson for calling the printer Macintosh compatible when it should really have said, "partly compatible, but not networkable." (The Epson Web site now admits that the 600 is a "single-user" printer.)

Please take more care in the future and advise your readership when all is not what it appears to be.

BILL PALMER  
Paisley, Ontario, Canada

### Singing Site Switch

I ENJOYED CHRISTOPHER BREEN'S article about audio for the Web, but it seems he had it backward about bit-depth reduction resulting in a loss of "brightness" and resolution reduction causing graininess and indistinctness.

Bit-depth reduction limits the dynamic range of the music, causing a grainy sound, whereas reducing resolution (say, from 44.1kHz to 22kHz) cuts off the highest frequencies, causing a loss of brightness.

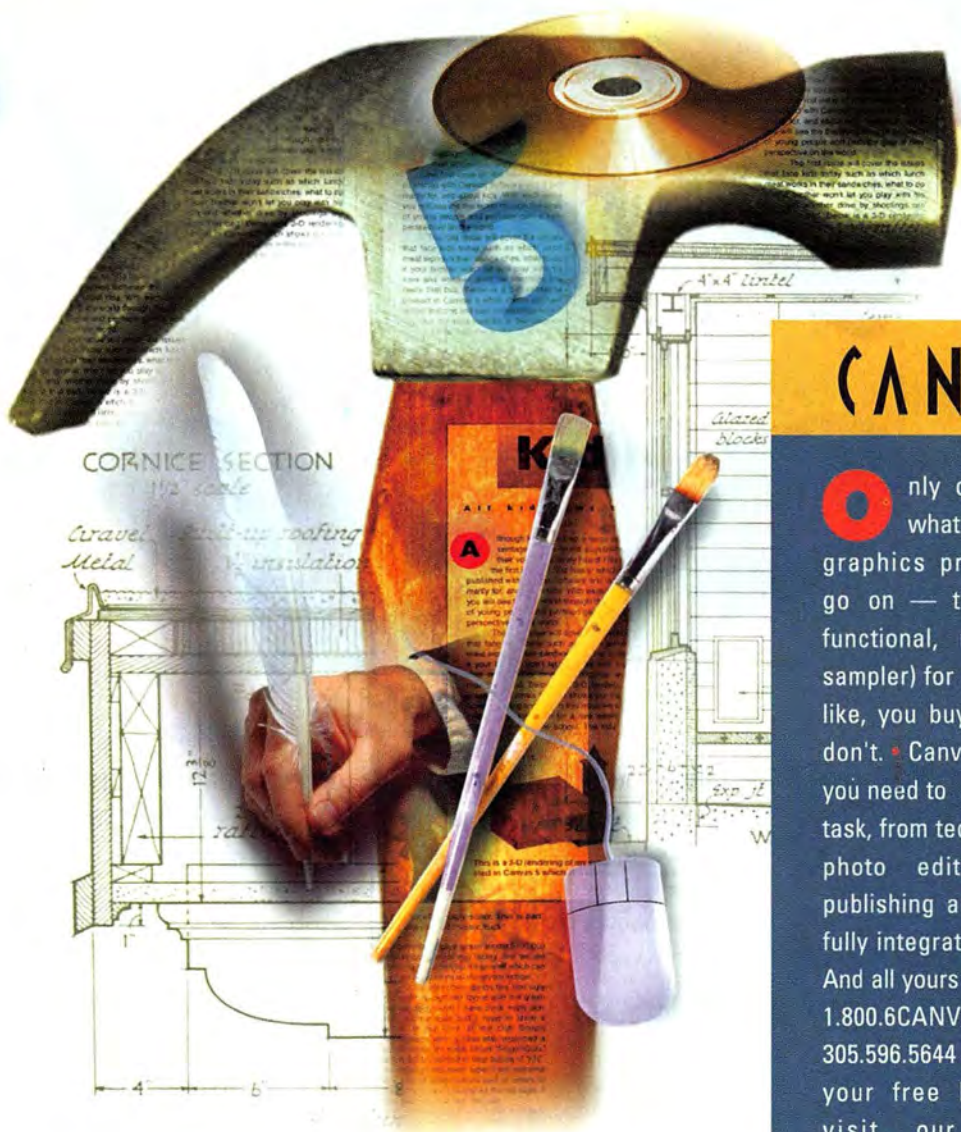
RICK JOBE  
Huntsville, Alabama

*Rick, you're absolutely right; the effect of these reductions got switched around. As you state, reducing resolution decreases brightness, not the other way around.—Christopher Breen* **m**

Letters should be sent to *Letters*, Macworld, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically via CompuServe (70370,702), MCI Mail (294-8078), America Online (keyword Macworld), AppleLink (Macworld1), or the Internet ([letters@macworld.com](mailto:letters@macworld.com)). Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*.

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# The Vision Thing

by Andrew Gore

## Lessons Learned

MICROSOFT PAYS TRIBUTE TO THE MAC'S SUPERIORITY WITH OFFICE 98

IT IS OFTEN SAID THAT IMITATION is the sincerest form of flattery. In Microsoft's case, it is also the most effective form of copyright infringement.

It's no secret that over the years Microsoft has "borrowed" from the Macintosh interface to improve Windows' ease of use. PC industry pundits who can (or care to) remember where Microsoft got much of the inspiration for its advances usually say the OS behemoth is simply acknowledging the superiority of the Mac experience, as if we in the Mac market should appreciate this. Microsoft has almost *acknowledged* the Mac into a historical footnote, and like a feudal lord taking over a subject's well-tended farmland, it seems to think it's showing us favor by letting us stay in the farmhouse. I have wished many times that Microsoft would stop trying to foist its Mac-like user experience upon Mac users, which it does mainly through its near-monopoly of office productivity software. (Microsoft hates it when journalists use the "M" word, but I'm at a loss for how else to describe Microsoft Office's dominance.)

I never expected to have my wish granted—that's why I may be even more surprised than David Pogue seems in this issue's "Microsoft Repents: Office 98 Makes Up for Past Sins." I know it's hard to imagine, but the latest incarnation of Office is a *real* Mac product, one that looks like it's actually designed for the Mac.

### Shameware

What brought about this remarkable turn of events? While Office 4.2 sales were strong, a lot of Mac users chose not to install all the apps, especially Word 6.0, cheating Microsoft out of hundreds of thousands of upgrades (and I think we all know how Bill Gates feels about losing money). Even more important, Microsoft was publicly embarrassed by how the Mac market received Office 4.2. So what

evidence do I have that Microsoft was shamed into making Mac Office 98 a true Mac application suite?

While a good Mac upgrade will earn Microsoft more revenue, it also costs a lot to develop. Hiring a dedicated Mac development team, plus doing tons of research and beta testing, can't have been cheap. And there was the company's public reaction to a column I wrote when Office 4.2 first shipped in November 1994, proclaiming that the product, well, sucked. Within days, Microsoft representatives demoing Office 4.2 for two major Mac user groups denounced my characterization of their product. What was surprising wasn't that the product managers

### The Mac Advantage

The result, I'm happy to say, looks good for Mac users. For once we seem to be the beneficiaries of Microsoft's dogged efforts to one-up itself in successive software releases. To borrow a phrase from David's feature, Office 98 is still bloatware—but it's bloatware in the best sense: big and beautiful instead of big and ugly.

In reexamining its errors with Office 4.2, Microsoft seems to have come to the conclusion that its biggest mistake was to believe its own marketing spin—that there is little difference between Windows and the Mac OS. The best things about Mac Office 98 are that it takes advantage of the Mac's unique capabilities and it integrates smoothly into the Mac's interface metaphor, instead of actively resisting it as Office 4.2 seemed to.

In effect, Microsoft has acknowledged and even endorsed the Mac's approach to interface design. Office 98 behaves as it's supposed to, and it supports the technologies any Mac software should support. More to the point, even its ubiquitous features, such as the interactive help system, *feel* as if they belong on the Mac.

It'll be interesting to see how Mac-like the next version of Office for Windows is, considering how Mac-like Office 98 for Windows is. That's right: Microsoft has already integrated what it learned from the Office 4.2 debacle into its Windows software.

No doubt Windows users will continue to reap the benefits of the Mac's advantages in their office-automation software. Too bad most of them will never know whom they have to thank. **m**

*You know whom to thank if you liked this column, and whom to blame if you didn't. And you know where you can go to express your opinion: [visionthing@macworld.com](mailto:visionthing@macworld.com).*



felt the need to defend Office, but that any Microsoft employee would challenge a columnist, which was against company policy. Obviously my words had hit home.

After the heat of the first reviews died down, Microsoft began hearing from its Mac customers—in unheard-of numbers—about the problems with Office 4.2. To its credit, the company didn't turn a deaf ear. Instead, Microsoft did what it does best: returned to the drawing board and dispassionately examined its mistakes in the hope of creating a much-improved product.



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# News

systems

## Mac OS Update Frees Your Hard Drive

NEW FILE SYSTEM,  
FASTER LAUNCH TIMES  
HIGHLIGHT MAC OS 8.1

by Henry Bortman

**N**early six months after shipping Mac OS 8, Apple Computer (408/996-1010, [www.apple.com](http://www.apple.com)) is poised to release its first update of the operating system. Largely a bug-fix that adds a few relatively minor features, Mac OS 8.1 also delivers a new disk format, HFS+, that allows most Macintosh users to employ their hard disks more efficiently.

When you format a disk, your computer divides it into *allocation blocks*, the smallest unit of space a file can use to store data (see diagram, page 30). The current Hierarchical File System (HFS)—devised in the early days of the Mac when hard disks typically offered 5MB of storage—is limited to 65,536 allocation blocks.

While this may sound like a lot of little compartments in which to store your data, these compartments can get pretty big when you're formatting one of today's multigigabyte disks. For example, when you



save a file to an HFS-formatted 4GB drive, the minimum file size is 64K—even if the file contains only 10K of data.

**Reclaimed Territory** With HFS+ (otherwise known as Mac OS Extended Format), you can reclaim that unused space. The new storage format supports more than 4.25 *billion* allocation blocks. The result: allocation-block sizes (and thus

minimum file sizes) shrink to between 0.5K and 4K.

So simply by reformatting your disk volumes with HFS+, you can reclaim significant amounts of space. And the larger your volume size, the more space you're likely to recover. When I reformatted the 1GB disk drive on my PowerBook 1400 with HFS+, the space required to store

my 8,200 files shrank from 770.6MB to 661.5MB.

When you update to Mac OS 8.1, you don't have to reformat your disks with HFS+; this is a separate operation that can be done at a later date. Some users may want to think twice before moving to HFS+, and owners of most Mac clones will not be able to upgrade unless

*continues on page 30*

# Jobs Announces \$45 Million First-Quarter Profit for Apple

SURPRISE ANNOUNCEMENT FROM INTERIM CEO

HIGHLIGHTS MACWORLD EXPO KEYNOTE

by Stephen Beale

**A** new CEO is nowhere in sight, and Apple's long-rumored network computer (NC) still awaits its debut. But Mac enthusiasts attending the 1998 Macworld Expo in San Francisco got one surprising piece of good news: during the January 6 opening keynote, Apple interim CEO Steve Jobs announced that the company expected to report a \$45 million profit on sales of nearly \$1.6 billion for the first quarter of fiscal 1998. Most analysts had predicted that Apple would report a small loss.

## G3 Takes Off

Apple cited two major reasons for the results: continued cost-cutting measures and stronger-than-expected sales of its new G3 systems (see *Reviews*, in this issue).

Apple's new online store and its beefed-up presence in many CompUSA outlets also appear to be bearing fruit (see "Apple Unveils Web Sales Strategy," *News*, February 1998). In December, Apple says, Mac CPUs accounted for 14 percent of system sales in CompUSA outlets that include new Apple areas. This compares with 3 percent in October.

Apple declined to predict if profitability would continue into the second quarter, but during a press conference following the Jobs keynote, Apple sales chief Mitch Mandich described the quarterly tally as a "solid and legitimate profit." Apple's last

quarterly profit—\$25 million in the fourth quarter of 1996—was followed by four straight quarters of steep losses, prompting speculation that the company had used accounting gimmicks to improve its results.

## QuickTime Debuts

Apple's announcement that it had turned a quarterly profit brightened what could have been a lackluster keynote session. Earlier, Apple had promised that it would have a new CEO in place by the end of 1997, and observers had speculated that Apple would also unveil its NC. Instead, Apple said that it could not meet its original timetable for selecting a new CEO, and it was clear that any NC announcement was weeks or months away.

However, Apple did unveil Mac OS 8.1, an OS update that includes a new version of the Mac's Hierarchical File System (see "Mac OS Update Frees Your Hard Drive," at left). And Apple officially launched QuickTime 3.0, which

was first announced a year ago. During the Jobs keynote, senior QuickTime architect Peter Hoddie demonstrated new audio- and video-streaming capabilities, as well as new video-compression technology developed by Sorenson Vision. Hoddie also announced that Apple will offer a \$30 Pro version of QuickTime that lets you drag and drop one video clip into another.

John Wookey, vice president of financial applications for Oracle, joined Jobs on



stage to announce that Oracle will offer its full suite of enterprise applications—written in Java—to Macintosh users.

## New Products

Macworld Expo provided a launching ground for many other new products, including *Macworld's* Best of Show picks (see "Best Products," on the next page) and the following:

- Ricoh (973/882-2000, www.ricoh-usa.com) and Fuji Photo Film (800/755-3854, www.fujifilm.com) both introduced digital cameras. Ricoh's RDC-4300 features 1,280-by-960-pixel resolution and a 3× rotating zoom lens; you can annotate each picture with an eight-second sound clip. Pricing was not available at

press time. Fuji's \$599 DX-9 features a 3× zoom lens and 640-by-480-pixel resolution.

- Caere (408/395-7000, www.caere.com) launched OmniPage Pro 8, an upgrade to its text-recognition software that features improved accuracy and enhanced multilingual functions.

- Linotype CPS (516/434-2000, www.linocolor.com) introduced the Circon, a \$15,000 triple-lens flatbed scanner that captures transparencies and reflective originals at 42 bits per pixel. Each lens provides a different optical resolution—800 by 2,400, 1,200 by 2,400, and 2,400 by 2,400 dpi.

- Pantone (201/935-5500, www.pantone.com) introduced ColorWeb Pro, a \$70 program that makes it easier to use the 216 Web-safe colors. It lets you choose from among 1,012 Pantone Matching System colors, then finds the closest equivalent from the Web-safe palette.

- Several vendors introduced new graphics plug-ins. Extensis (503/274-2020, www.extensis.com) showed PhotoFrames, a \$130 plug-in that adds frames and borders to Adobe Photoshop images. Chroma Graphics (650/375-1100, www.chromagraphics.com) introduced EdgeWizard, which adds edge effects to Photoshop masks. Vertigo Technology (604/684-2113, www.vertigo3D.com) unveiled 3D PopArt, which converts 2-D Adobe Illustrator graphics into 3-D objects.

- Adobe Systems (408/536-6000, www.adobe.com) launched the Adobe Image Library, a line of royalty-free stock images. The first release consists of 30 photography titles for \$300 each, 3 illustration titles for \$230 each, and 6 video titles for \$250 each.



IT'S SHOW TIME, AND ONCE AGAIN *Macworld's* editors have picked the hottest new products to be introduced at Macworld Expo in San Francisco. To be eligible, the product had to be brand-new—announced for the first time at, or shortly before, Macworld Expo. We also had to see the product in action, although software evaluations often were based on beta versions.

**FREEHAND 8**

Macromedia (415/252-2000, www.macromedia.com) has upgraded its popular illustration program with transparency capabilities and other new features (see "FreeHand 8 Goes Transparent," in this section).

**PLUSMAKER**

This \$20 utility from Alsoft (281/353-4090, www.alfsoftinc.com) solves what would have been a thorny problem for owners of Mac clones: upgrading to Apple's new HFS+ storage format (see "Moving to Apple's New File System," in this section). Whether you own a clone or an Apple-branded Mac, PlusMaker greatly simplifies the task of upgrading to HFS+.

**SURFEXPRESS**

The clever folks at Connectix (650/571-5100, www.connectix.com)—the same people who brought you RAM Doubler and Speed Doubler—have performed another sleight of hand by speeding up your Web browser. SurfExpress uses sophisticated caching techniques to boost the performance of Netscape Navigator and Microsoft Internet Explorer—all for just \$35.

**DEBABELIZER 3**

Equilibrium (415/332-4343, www.equilibrium.com) has added a host of features to its \$595 graphics-conversion program. A revised interface offers interactive image previews, drag-and-drop capabilities, and batch-

automation functions. DeBabelizer scripts can now be made more intelligent with if-then-else statements. And you can convert from RGB to a variety of CMYK formats and vice versa.

**MAXPOWR G3 6100 AND 7100/8100**

The latest CPU upgrades from Newer Technology (316/943-0222, www.newertech.com) provide a six- to sevenfold performance boost for the Power Mac 6100, 7100, and 8100. Two upgrades are available: one for the 6100, the other for the 7100



and 8100. With a starting price of less than \$600, these are among the most cost-effective CPU upgrades ever released for the Mac. Newer Technology also introduced a PowerPC G3 upgrade for the PowerBook 2400.

**TEST STRIP 2.0**

This upgrade to the popular Adobe Photoshop plug-in from Vivid Details (805/646-0217, www.vividetails.com) adds several new features. It functions as a Variations feature on steroids, letting you preview a wide range of color modifications on-screen or on a color proof. New features include a repeating nine-up display, 50 special-effects filters, an editable task list, and support for the Photoshop 4.0 Action palette. The Exposure panel now has an Auto White/Black button for expanding the image's tonal range.

**systems**

**New Laptops on Course**

DUE IN MAY, WALL STREET AND MAIN STREET WILL SPORT G3 CPU

by David Morgenstern, MacWeek

**N**ew PowerBooks will take to the streets this spring as Apple releases a pack of G3-based models. Sources say the machines, which are code-named Wall Street and Main Street, will shift the company's notebook line to new performance levels.

Two entry-level Main Street notebooks and two high-end Wall Street notebooks are due in mid-May. Both models are based on the speedy PowerPC 750 CPU, called G3. In November, Apple released its first 750-based portable, the \$5,699 PowerBook G3.

**Wall Street** Aimed at mobile creative professionals, the Wall Street models will provide the largest displays yet on an Apple laptop and bring the line into parity with high-end Intel-standard PC notebooks.

Sources say the top-of-the-line Wall Street will feature a 14.1-inch active matrix color display. (The current PowerBook G3 has a 12.1-inch display.) This high-performance model will come with a 292MHz 750 CPU, 64MB of RAM, and a 5GB hard drive. The system will cost about \$6,300.

A \$4,600 Wall Street will reportedly have a 13.3-inch active matrix display. This Wall Street will come with a 250MHz G3 processor, 32MB of RAM, and a 4GB drive.

One source familiar with

Wall Street says the line will introduce a slimmer case design. Instead of the boxy look of the PowerBook 3400c and PowerBook G3, the new enclosure will be more "organic and integrated."

**Main Street** According to sources, the basic \$2,400 Main Street model will come with a 233MHz G3 processor and a 2GB drive; a \$3,600 version will include a 250MHz CPU and a 3GB drive. Both will ship with 32MB of RAM.

While the 250MHz Main Street will use the familiar 12.1-inch active matrix display, sources say the new entry-level Main Street will use a less costly passive matrix LCD screen.

Both Wall Street and Main Street models will reportedly come with 512K of backside cache running at half the processor speed. Similar to the current Power Mac G3 desktop models, the forthcoming notebooks will feature a 66MHz system bus rather than the 50MHz bus of the PowerBook G3.

In addition, sources say all the notebooks will include a 20X CD-ROM drive, and all but the basic Main Street model will come with a combination Ethernet and 56-Kbps modem card.

**Better Batteries** The new Mac notebooks will also herald the arrival of second-generation mobile technologies. Sources say the models will be the first to use enhanced lithium-ion batteries that offer 50 percent longer life.

In addition, the new machines will provide speedier wireless throughput via the IrDA port.

The notebooks will also support the CardBus PC Card standard, allowing them to connect to a wider range of peripherals, including FireWire-based devices.

Apple representatives declined to comment.

# INTERNET CONFUSION

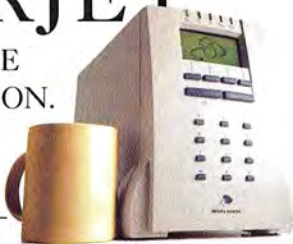
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Sneak  
PEEK

## FreeHand 8 Goes Transparent

BY SANDEE COHEN

Hang onto your vectors! Macromedia's (415/252-2000, [www.macromedia.com](http://www.macromedia.com)) FreeHand 8 does what was once thought impossible—it provides transparency in an illustration program. Simply place one object over another and apply the new Lens fill to the top object to make it transparent. Not only can you vary the opacity level but you can also set the Lens to produce other effects, including lighten, darken, invert, and magnify.

These are not path-cutting filters but objects whose transparency changes as they're edited. A Snapshot feature lets you turn a lens into an independent object that can serve as a call-out—perfect for technical drawings or maps. And unlike the transparencies in MetaCreations' Expression, which must be output as TIFFs, FreeHand 8's transparent objects can be saved as EPS files, exported to a page-layout program, and brought back into FreeHand for further editing.

**No Béziers Required** You might expect the rest of FreeHand 8's new features to be minor by comparison, but that's hardly the case. Using the Freeform tool, you can intuitively reshape an object just by pushing and pulling lines—without grabbing a single Bézier handle. The Image Hose is similar to Illustrator's Ink Pen, but instead of drawing a path and then filling it with hatches, you brush in hatches anywhere on the page to get a painterly look.

Other new tools include Shadow, for creating fuzzy drop shadows of any size, position, or offset; the Emboss path operation, which produces emboss, deboss, chisel, ridge, and quilt effects; and Mirror, which provides kaleidoscopic effects.

Macromedia also lets you customize all keyboard shortcuts and ships with presets for Adobe Illustrator 7, Adobe PageMaker 6, QuarkXPress 3.3, Corel-Draw 6, and others. In addition, you can add and remove items in the toolbox and tool bars, keeping only those tools you want in your workspace.

Macromedia made Web animation a priority with Animation Powerpack, which converts FreeHand files into Flash 2 animations. Now that function has been built into FreeHand 8, and the resulting animations are even more compact. The one drawback is Flash's inability to recognize FreeHand 8's transparent objects.



FreeHand 8's Lens fills can create transparent objects and shadows as well as magnify portions of an image.

online

Out of the  
In-box, into  
the TrashKEEPING JUNK E-MAIL  
UNDER CONTROL

by Geoff Duncan

It's become a ritual: You dial your Internet service provider (ISP), download your e-mail, and then—muttering under your breath—delete the usual array of unwanted sales messages. While you won't find any surefire way to stop all junk e-mail, you can keep some of it from reaching you by devising your own filters or using the filtering capabilities of programs such as Qualcomm's Eudora or Claris Emailer.

If you use e-mail only to communicate with specific people, you can set up filters that accept mail only from them, rejecting everything else. This works if you expect mail only from family, friends, established mailing lists, and your ISP. But it's not practical if you often get legitimate e-mail from others.

Junk e-mailers usually suppress the recipient lists on their messages, so you can set up a filter that looks for your e-mail address on the To or CC (carbon copy) line of each message you receive. If the filter doesn't find your address, it deletes the message or labels it as possible junk e-mail. Unfortunately, this technique won't work if you're routinely sent blind carbon copies of legitimate e-mail, because your address won't appear in the To or CC line; similarly, if you subscribe to mailing lists,

you'll want to screen out those messages separately *before* applying this filter, since most mailing lists also suppress their recipient lists.

Another option, though time-consuming, is to filter for known junk e-mailers. You can find tools that automatically generate these filters (see [www.public.usit.net/nwcs/Spam/Spam.html](http://www.public.usit.net/nwcs/Spam/Spam.html) and [www.fogcity.com/em\\_utilities2.0.html](http://www.fogcity.com/em_utilities2.0.html)), but junk e-mailers are often several steps ahead since they typically forge e-mail addresses, use bogus accounts, and route their messages through unsuspecting third parties.

If you do set up spam filters, stash all suspect messages in a separate mailbox or mark them with a unique tag or color rather than delete them



outright. Otherwise, you'll never know if your filters deleted legitimate e-mail.

Most ISPs make some effort to reject junk e-mail before it reaches you, and some even offer filtering capabilities. America Online provides a simple form of filtering at keyword Mail Controls.

None of these techniques truly solves the problem; they just reduce the clutter until a better solution comes along. In the meantime, to avoid landing on junk-e-mail lists, never use list-removal features described in the message: they typically just confirm that your address is a prime target. Similarly, avoid posting to large public mailing lists and Usenet newsgroups and consider removing your e-mail address from Web pages.



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## "MAC OS UPDATE FREES YOUR HARD DRIVE"

continued from page 24

they have a pair of external hard drives—or PlusMaker, a handy \$20 utility from Alsoft (see the sidebar, "Moving to Apple's New File System").

**Other Features** In addition to the revised file system, Mac OS 8.1 adds several other new features.

- It is Apple's first release to make Microsoft Internet Explorer the default Web browser. (Department of Justice, please take note.) If you are already using Netscape Navigator, it will remain your default browser.

- It delivers Apple's Mac OS Runtime for Java (MRJ) 2.0, which fully implements Sun Microsystems' standard Java specification. MRJ 2.0 includes the Just-in-time Java compiler for PowerPC- and 680X0-based Macs, which improves Java-applet performance over the Web. Internet Explorer fully supports MRJ 2.0, but Navigator uses its own

### HFS+ Liberates Your Disk Space

The current Hierarchical File System (HFS), shown at left, divides your hard disk into 65,536 allocation blocks. On an HFS-formatted 4GB drive, the minimum file size is 64K, even if the data itself consumes just 10K. HFS+, shown at right, supports more than 4.25 billion allocation blocks. The result: allocation-block sizes, and thus minimum file sizes, shrink to between 0.5K and 4K.

version of Java and cannot take advantage of the new software.

- It includes version 1.3 of Apple's Open Transport networking architecture, which supports multiple IP addresses on a single computer and improves the speed of copying files over a network.

- By modifying virtual memory, Apple has been able to cut by as much as 50 percent the time needed to launch a

number of popular applications. Some programs benefit most the first time you launch them. Others show more improvement when you quit and then relaunch them.

Macworld Lab confirmed that key applications—including Adobe Photoshop 4.0.1; Claris FileMaker 3.0; and Microsoft Word 6.0.1, Excel 5.0, and Internet Explorer 3.01—launch faster under Mac

OS 8.1 than under OS 8.0.

- Mac OS 8.1 includes new versions of key software components. Version 8.5.1 of the LaserWriter driver lets you work with non-Apple-Talk printers that support TCP/IP. PC Exchange 2.2 is aware of Windows 95's long file names (it truncates them to 31 characters) and does a better job of handling Iomega Zip and Jaz cartridges.

Apple also fixed several bugs, including a flashing question mark that sometimes appears at start-up on the Performa 6400 and on Power Mac 5400, 5500, and 6500 models.

Mac OS 8.1 should be shipping by the time you read this. An 8.0-to-8.1 updater, which takes up 12MB to 15MB of disk space, will be available free online. Apple will also ship a full Mac OS 8.1 installer on CD-ROM for \$20 with proof of 8.0 purchase.

Anyone running Mac OS 8.0 will likely benefit from the 8.1 upgrade, though you may need to upgrade some of your favorite utilities. My recommendation: back up your 8.0 system, install the upgrade, and see how it goes. If you have problems, you can always go back to 8.0. Once you're comfortable with 8.1, you can consider installing HFS+.

## Moving to Apple's New File System

SHOULD YOU REFORMAT YOUR disk drives with HFS+? That depends on how adventurous you are—and, especially if you're a clone user, on how many extra disk drives you have lying around.

**Read Me+** Unless you're running Mac OS 8.1 or later, you won't be able to read data on HFS+-formatted volumes; all you'll see is a Read Me file. Therefore, if you routinely bring your removable cartridges to a service bureau, you may want to think twice before formatting them with HFS+ unless the service bureau is also running Mac OS 8.1.

If you want to reformat your Mac's internal disk with HFS+, you'll need an external drive with

enough capacity to back up your data. Then you'll need to reboot from a Mac OS 8.1 full-install CD—or a hard disk that has Mac OS 8.1 installed as the boot system—because you must be running 8.1 to format a disk with HFS+. Apple is charging \$20 for the CD.

**Clone Woes** If your Mac doesn't have an Apple CD-ROM drive—and most Mac clones don't—you've got a bigger problem. Because the Mac OS 8.1 CD doesn't include drivers for non-Apple CD-ROM drives, you won't be able to boot your Mac clone from the CD. Instead, you'll need *two* external hard drives to convert to HFS+: one to back up your data, and another

on which to install Mac OS 8.1 and then reboot.

Alsoft (281/353-4090, [www.alsoftinc.com](http://www.alsoftinc.com)) has provided a handy solution to the HFS+-upgrade conundrum in the form of PlusMaker, a \$20 utility that simplifies the process of upgrading to the new file system. PlusMaker automatically converts HFS-formatted disks to HFS+ in a simple one-step operation; it also retains aliases and performs minor directory repairs. In theory, PlusMaker lets you move to HFS+ without backing up your media. However, you should still back up your data even when using PlusMaker to make the HFS+ conversion.—HENRY BORTMAN



Which CAD software  
outgunned all others  
in  
head-to-head competition?

You may be surprised...



# MiniCAD 7: Winner of the 2nd as “BEST OVERALL ARCHITECTURE SOFTWARE”

## The CADD Shootout Challenge:

The annual 3D Designers CADD Shootout competition called together design teams representing 12 of the world's top CAD softwares for a head-to-head competition judged in 22 categories. The winner, as judged by a panel of 12 real-life architects, CAD professionals and industry experts along with more than 400 architects and professionals in attendance, walked away with the title of “Best Overall Architectural CADD Software” and the prestigious CAD Cup Trophy.

Each 3-member design team was challenged to flex their CAD software muscle by producing a full design project complete with elevations, perspectives and QuickTime animations, in only three hours.

## The Case:

The goal – to produce a New England-style church, built on a slope facing the sea – was not revealed until the start of the shootout. And, to add realism to the event, aspects of the design criteria were changed every 30 minutes for the first 1.5 hours of the competition!

## The Champion:

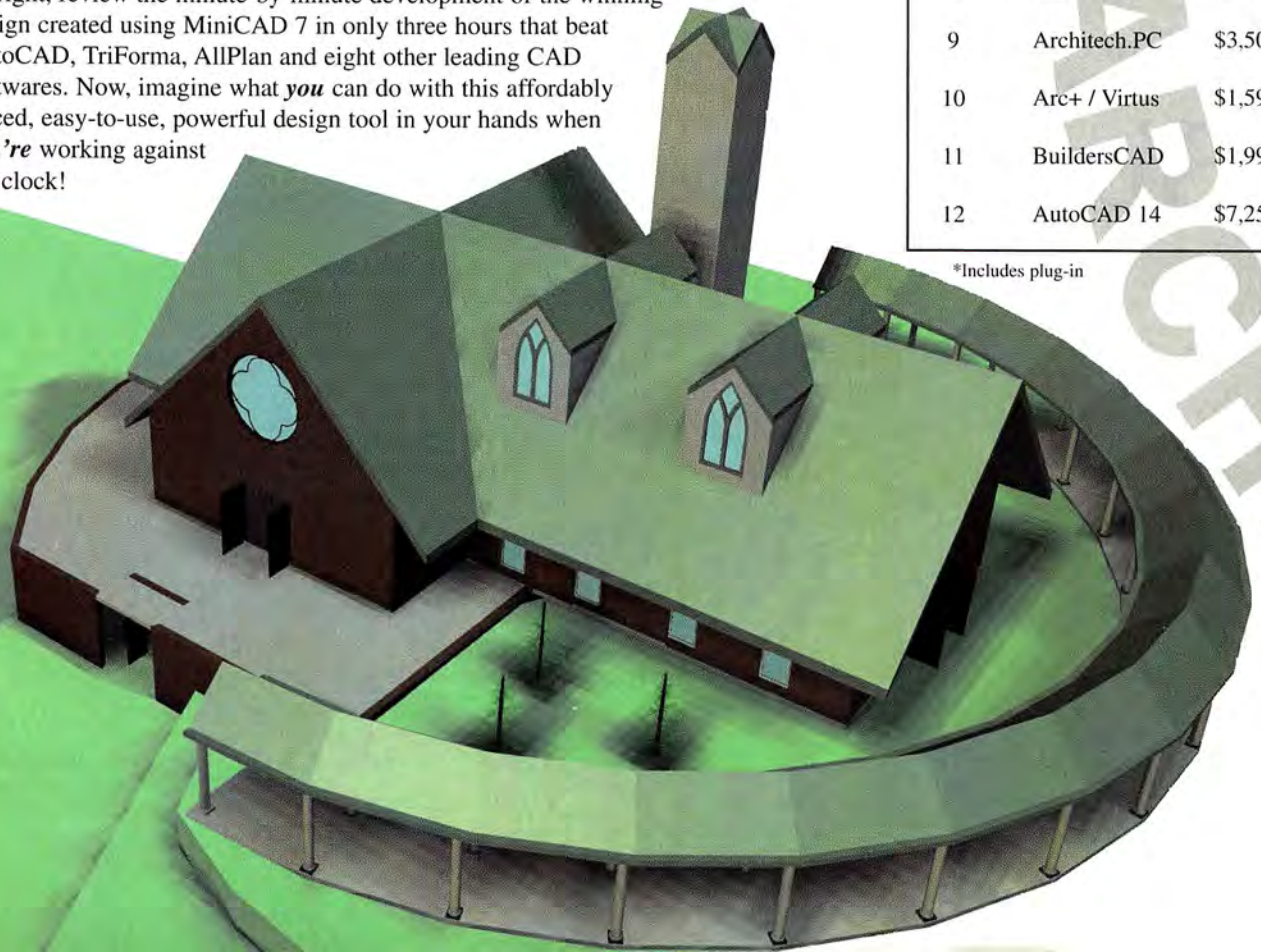
MiniCAD 7 outperformed them all—winning the event as “ the Best Overall Architectural CADD Software”, and placing in 18 of the 22 categories, including first place in six categories!

At right, review the minute-by-minute development of the winning design created using MiniCAD 7 in only three hours that beat AutoCAD, TriForma, AllPlan and eight other leading CAD softwares. Now, imagine what *you* can do with this affordably priced, easy-to-use, powerful design tool in your hands when *you're* working against the clock!

## Overall Competitor Standings

Ranking	Program	Retail Price
1	MiniCAD 7	\$ 795
2	AllPlan	\$4,995
3	TriForma	\$5,325
4	ArchiCAD	\$4,995
5	Arris	\$4,250*
6	DataCAD	\$ 249
7	DenebaCAD	\$ 799
8	Architron	\$4,000
9	Architech.PC	\$3,500
10	Arc+ / Virtus	\$1,595
11	BuildersCAD	\$1,995
12	AutoCAD 14	\$7,250*

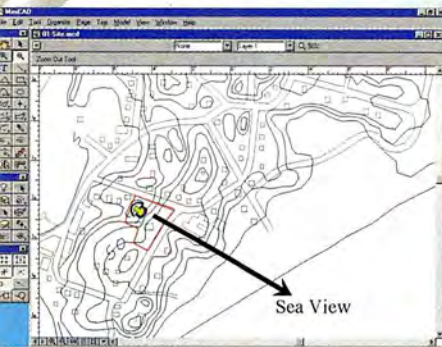
\*Includes plug-in



# Annual Architectural CAD Cup "BEST ARCHITECTURAL CADD SOFTWARE"

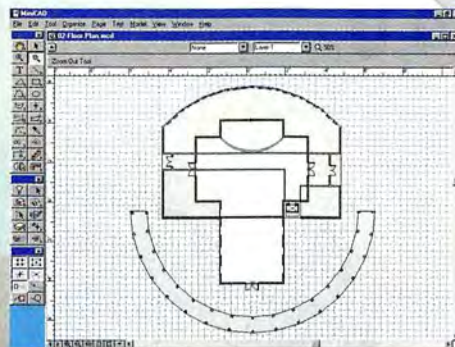
Designers 3D CADD shootout, Build Boston, Nov. 97

What can be accomplished in 3 hours using MiniCAD 7  
...even when the client makes changes every half hour?



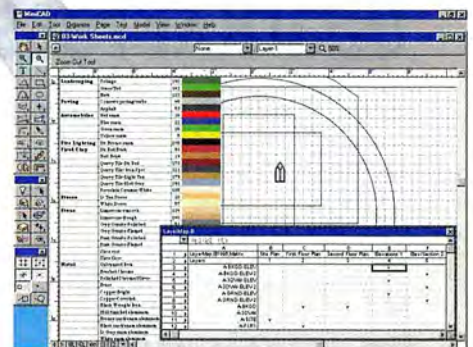
0:03:01

MiniCAD 7 quickly and easily imports the existing site plan as defined by contest sponsors, using it as an accurate basis for site delineation. This illustrates MiniCAD 7's ability to use and augment data files from other CAD softwares - on Windows or Macintosh.



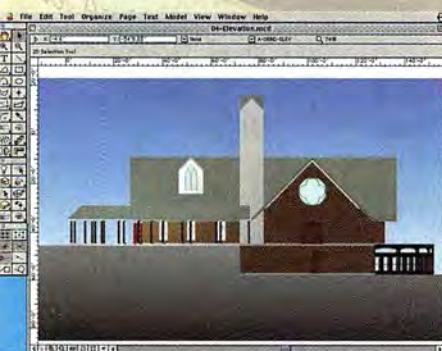
0:45:05

MiniCAD's powerful hybrid design environment allowed the MiniCAD team to develop in 2D and 3D simultaneously. Here you see the exterior walls of the project developed in just under an hour.



1:10:22

As the real nuts and bolts of the design are worked out, MiniCAD 7 keeps highly detailed worksheets and material takeoff lists.



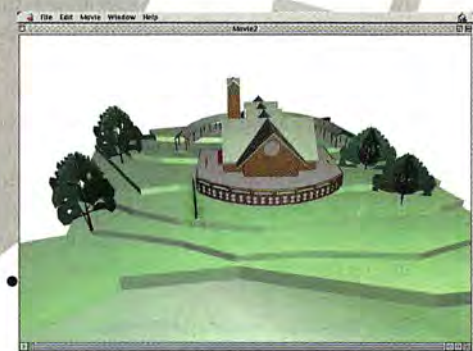
2:03:30

The MiniCAD team used MiniCAD's unique 'Layer Linking' capability to easily create this elevation and to instantly view in 3D any changes made to the plan.



2:03:00

Fully-rendered interior design generated in MiniCAD 7 with the Lightworks 3D plug-in. This feature greatly enhanced the design presentation by allowing for a variety of real-life visual effects such as multiple light sources, lighting effects and shadows.



2:55:30

Final output, a QuickTime movie created with MiniCAD 7's built-in QuickTime animation feature depicts the beauty and architectural majesty of the MiniCAD 7 design. The judges panel was impressed too, voting MiniCAD 7 "Best Overall Architectural CADD Software", ahead of competing softwares costing thousands more.

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# Reviews

## QuarkXPress 4.0

LONG-AWAITED UPGRADE  
TAKES PROGRAM  
IN NEW DIRECTIONS

**F**OR NEARLY TWO YEARS, QUARKXPress users have been waiting for version 4.0. Quark was in no hurry to release the new version, deciding instead that the main competitor was no real threat and that it was more important to create new products in new areas. The company's attempt to diversify its portfolio didn't pan out—only the QuarkImmedia authoring tool ever shipped—but Quark was correct that the several PageMaker updates (first from Aldus and then from Adobe Systems) did not threaten QuarkXPress, whose sales continued to grow despite its age.

Four years after version 3.3's debut, QuarkXPress 4 gives the venerable page-layout program several major new features—including graphics creation and long-document publishing, both of which help reach new audiences—while improving its superior layout capabilities.

### Day-to-Day Improvements

In many respects, designers using QuarkXPress won't notice a lot of changes that affect their daily work. QuarkXPress's layout tools have long been superior to PageMaker's, and frankly there's not a lot to be added. But don't let first impressions fool you: version 4 has worthwhile enhancements for everyday use.

The best of these is the addition of



JOHN BLECK

character styles, which let you apply a series of text formats to selected text, much as traditional paragraph styles let you apply formatting to whole paragraphs. A thoughtfully revised Append dialog box lets you move color definitions, H&J sets, style sheets, printer styles, and custom line patterns from one document to another. Not only can you move more elements among documents but you can also now choose specifically *which* elements.

New to version 4 is the ability to create line styles—patterns of dots, dashes, and stripes—for both box frames and

rules. Because these are vector patterns, they reproduce nicely at any size, unlike the block patterns created by the hoary Frame Editor utility.

Other significant enhancements to common layout functions include the integration of the QuarkPrint utility—which provides printer styles that save settings for specific printers and allows the printing of noncontiguous page ranges—into the product, and a plug-in manager that lets you group plug-ins into Conflict Catcher-like sets. You also gain greater control over file options when saving a

REAL PRODUCTS  
REAL RATINGS

Reviews you can trust: Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

OUTSTANDING: ★★★★★

VERY GOOD: ★★★★

GOOD: ★★★

FLAWED: ★★

UNACCEPTABLE: ★

page as an EPS file (although you still can't save just a selected part of a page); the ability to have text run around all sides of a graphic contained within a text box (rather than just to one side); and broader color features, including Hexachrome support and the ability to mix colors from several color models. The use of tabbed panes keeps all features manageably arranged in dialog boxes, helping keep menu clutter down.

Version 4 offers no significant changes to QuarkXPress's typographic controls. The small but annoying omissions of the past continue: there is still no special shortcut for an em space, the program still doesn't convert two consecutive hyphens into an em dash as you type, and there's no fraction builder.

More annoying, the program still lacks a table editor, which forces you to experiment with tab stops to build complex tables. QuarkXPress now supports thousands of tabs in a paragraph rather than just 20, but it still takes too much work. Quark says it is working on a free plug-in to create tables; Tableworks (425/392-7745, [www.tableworks.com](http://www.tableworks.com)) sells the \$249 Entable program, which bridges this significant gap.

### Several New Twists

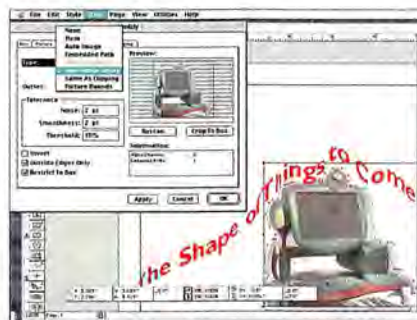
QuarkXPress 4 offers not only Bézier box tools to contain both text and graphics but also Bézier lines and Bézier text paths. And QuarkXPress lets you control how letters follow the text path, including an option that warps the characters into a near-3-D perspective based on the curve's shape.

There's pretty much no shape you can't draw in QuarkXPress. And new tools let you merge shapes to create new ones, with options for union, intersection, difference, exclusive or, and join that let you do more than merely group shapes (see *Publishing Workshop*, January 1998). Combine those boxes and curves with QuarkXPress's colors, frames, and blends, and you can draw a huge array of shapes. You'll still need Macromedia FreeHand or Adobe Illustrator for complex pieces, but in many cases you'll never have to leave QuarkXPress.

The use of Bézier boxes goes beyond drawing. QuarkXPress now imports clipping paths from EPS files and alpha channels from TIFF files and lets you use them as text-wrap boundaries. You can even have the text wrap follow the path

or channel outside the box that contains the picture, and you can edit the path or channel as if it were a Bézier shape created within QuarkXPress. You can also convert text into boxes, into which graphics or a line of text can be imported.

QuarkXPress's other major new thrust is long-document production—one of the few areas in which PageMaker historically has surpassed it. The new version includes several tools that let you create lists (such as tables of contents) and indexes. A new Books feature lets you



**Curves Ahead** Among QuarkXPress's new features are Bézier text paths and Bézier text wraps.

manage styles and page numbers across several documents, useful for multichapter publications. One document contains the master settings applied to all the other documents in the book.

Alas, you can't import index entries from word-processor documents, and there is no mail-merge-like capability for using conditional text. Adobe FrameMaker and the Windows-based Corel Ventura Publisher remain the leaders in long-document tools; QuarkXPress merely achieves parity with PageMaker with these additions.

### Unnecessary Blemishes

QuarkXPress does have some shortcomings. Its file-import capability is more limited than PageMaker's and more limited than appropriate. QuarkXPress does not support HTML files, Microsoft Excel spreadsheets, native Adobe Photoshop images, CorelDraw graphics, or QuickTime movies. Nor does it support the newest Microsoft Word or Corel WordPerfect formats. QuarkXPress's Windows version doesn't import several Mac formats that its Mac counterpart does; likewise, the Mac version doesn't import several PC formats that the Windows version does.

QuarkXPress's installation method requires both a floppy disk *and* a CD; try

installing QuarkXPress on a PowerBook—you'll need an external CD-ROM drive so you can also use your floppy drive. Quark says that it requires both disks to cut down on illegal copying, but it could have provided the same antipiracy controls by letting customers install off the CD and then insert the floppy disks when first launching the program.

Quark released the Mac and Windows versions of QuarkXPress 4.0 simultaneously, and the two read each other's files with no hassle. Because Windows does not support ligatures, neither does Windows QuarkXPress; the program simply converts them to standard characters and alerts you. I found no performance edge or interface advantage on either platform.

### Macworld's Buying Advice

QuarkXPress 4.0 is a no-brainer upgrade for current users; upgrades cost \$300 if you own version 3.3. The ability to save documents in version 3.3 format—which removes 4.0-specific features from the document, converting them to the closest equivalent—will ease the transition.

QuarkXPress 4 is a compelling product for PageMaker users looking to switch. (New copies sell in catalogs for close to \$700.) While Adobe has labored to improve PageMaker several times in the last four years, the program has yet to match QuarkXPress's core layout strengths—something Adobe apparently acknowledges as it reportedly moves on to create a new PageMaker replacement known as "K2" (see [www.macweek.com/mw\\_1148/nw\\_adobe.html](http://www.macweek.com/mw_1148/nw_adobe.html)). With this upgrade, there is nothing major that PageMaker does significantly better than QuarkXPress, and there are many places where QuarkXPress surpasses PageMaker. Although PageMaker offers some interface advantages, they don't justify the shortcomings in its capabilities. QuarkXPress isn't perfect, but it's more capable than the competition.—GALEN GRUMAN

**RATING:** ★★★★★ **PROS:** Well-designed graphics-creation tools; serviceable long-document features; improved interface; layout-oriented enhancements. **CONS:** No table editor; typographic niceties missing; inadequate file import. **COMPANY:** Quark (307/772-7100, [www.quark.com](http://www.quark.com)). **LIST PRICE:** \$995 (\$1,895 for Passport version, which supports 11 European languages).

# DOS-Emulation Software

PENTIUM EMULATION DOESN'T MEAN PENTIUM SPEED

**A**RE THERE REALLY PEOPLE OUT there longing to play DOS games on their Macs? Evidently there are; both Connectix and Insignia Solutions say they released their new DOS-emulation packages—Virtual PC DOS and RealPC, respectively—in direct response to customer demand. Both of these programs provide a robust emulation of a real Pentium-based PC running a full version of MS-DOS, but as

RealPC, however, isn't simply SoftWindows 95 minus Windows 95. Insignia Solutions has beefed up RealPC's emulation engine to include support for SoundBlaster Pro and SoundBlaster 16 compatibility and MMX, making RealPC much more suitable for playing PC games—provided that they run under DOS 6.22, which comes preinstalled. RealPC comes with a CD-ROM containing 20 DOS-based action games, most of which are demo versions or shareware.

Insignia boasts that RealPC runs games "shockingly fast." Connectix more modestly promises "playable performance." Both claims are only half true. RealPC does run programs faster than you might expect from software emulation but still considerably slower than any PC you've used in the last five years. Likewise, VPC's emulation delivers surprisingly brisk performance with some games—in many cases running them faster than RealPC—but it's still nowhere near what you'd get from hardware. Many games are indeed "playable," but both products' speeds are far from the screaming-fast performance demanded by serious gamers.

In Macworld Lab's speed tests, RealPC scrolled through a WordPerfect 5.1 document almost twice as fast as VPC, finishing the task in 25 seconds, compared to VPC's time, 53 seconds. But VPC did better in the game-based tests, which corroborated my own results when playing a variety of games.

Though VPC offers a more intuitive scheme for sharing folders between the

Mac and PC environments, it lacks RealPC's support for AppleScript. Also, VPC allows only one-way copying—from Mac to PC—while RealPC allows you to copy and paste in either direction. RealPC even allows you to drag and drop selected text from the PC environment right onto the Mac desktop.

## Macworld's Buying Advice

We've said it before, and I'll say it again: PC-emulation software is practical for only very light use, such as occasionally accessing information from a PC program. Either of these programs can fill that bill for a great price, though Virtual PC provided better performance in most of our tests. But if action-packed game play is really important to you, think about picking up a used PC instead. Even a first-generation Pentium will give you several times the rush you'll experience with even the best emulation.—JOSEPH SCHORR



**Screen in Screen** Virtual PC lets you run DOS within a window on the desktop. The button bar along the bottom of the window lets you eject CDs, set up shared folders, and jump into full-screen mode.

with any software-based PC emulation, speed is disappointing.

At the core of Virtual PC DOS is exactly the same engine that drives Connectix's other Virtual PC products: a sturdy, fully implemented emulation of an Intel Pentium with MMX. In addition to MS-DOS 7.0, the program also comes with special versions of three well-known DOS sports games—Madden NFL Football, PGA Tour 96, and Need for Speed.

## RealPC 1.0

**RATING:** ★★★ **PROS:** Bidirectional copy and paste between Mac and PC; good drag-and-drop support; AppleScript support. **CONS:** Much slower than an actual PC; slower performance than Virtual PC in some games. **COMPANY:** Insignia Solutions (408/327-6000, www.insignia.com). **LIST PRICE:** \$79.

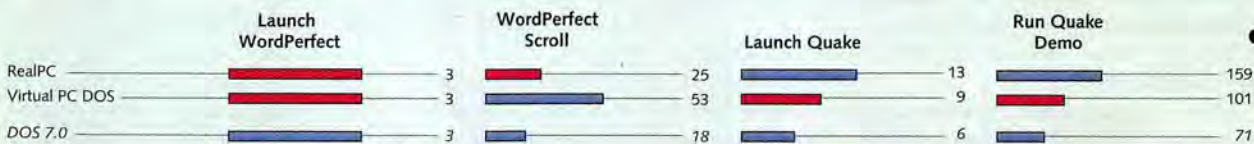
## Virtual PC DOS

**RATING:** ★★★½ **PROS:** Intuitive folder-sharing setup; faster than RealPC in some games. **CONS:** Much slower than an actual PC; can't copy PC text to Mac environment. **COMPANY:** Connectix (415/571-5100, www.connectix.com). **LIST PRICE:** \$69.



## DOS Emulators: Slower Than an Old Pentium PC

Best result in test. Times are in seconds. Shorter bars are better.



### Behind Our Tests

The emulators were tested on a 200MHz Power Mac; DOS was tested on a 90MHz Pentium PC. For detailed information on our methodology, see [www.macworld.com/tests/](http://www.macworld.com/tests/). —Macworld Lab testing supervised by Susan Silvius

# PowerPC 750 Systems

APPLE GOES AFTER DELL, BUT UMAX STEALS THE SHOW

**S**TEVE JOBS WOULD LIKE NOTHING more than for Dell Computer to replace Microsoft as the company Mac aficionados love to hate. Jobs has touted the new Power Mac G3 systems, which use the new PowerPC 750 CPU, as Apple's answer to Dell's successful model of fast, cheap PCs.

Apple's new systems are fast, and they are cheaper than previous Apple systems . . . but Dell shouldn't lose any sleep.



SUZANNE ROADY

Power Mac G3 tower and desktop; SuperMac S900Base with Maxpower

A 266MHz Apple Power Mac G3 tower with 64MB of RAM, a 4GB hard drive, a 4MB video card, a 56-Kbps modem, and a 24x CD-ROM drive costs \$3,049; a 300MHz Pentium II-based Dell system costs \$2,267 (\$2,609 if you want a SCSI system), including a Microsoft Office 97 bundle, which Apple doesn't offer. You can now custom-configure your Mac through Apple's online store, but beware: Apple charges a premium for peripherals such as monitors, modems, and Zip drives. (Apple's Trinitron monitor, for example, costs twice

that of Dell's, and both are made by Sony.)

Apple's systems look like the 7300 and 8600 models they replace, and at first glance they're the same as those old models except for the faster CPU. But Apple did make other changes to its architecture that cut both costs and quality. For example, Apple cut the G3's RAM slots from eight to three and replaced the internal SCSI-2 Fast chain with two IDE connectors, limiting you to 6 SCSI devices total, versus 12 on previous Macs. Apple is also using the slower Mesh SCSI chip.

Apple's newest systems are a clear response to the clone systems from Power Computing and Motorola Computer Group that died when Apple killed most of the clone industry. Apple's systems are cheaper than those clones, but they're also slower and less expandable. Had the clone makers not been blocked, Apple's systems would seem far less compelling.

Although Apple intends to maintain its more expandable, PowerPC 604e-based Power Mac 9600 line, it offers no PowerPC 750-based systems designed for high-end content creators. The G3 line has too few RAM slots, insufficient SCSI support, and too few PCI slots (a mere three). If you want speed *and* expansion, you aren't going to get it from Apple.

But you *will* get it from Umax Computer, whose new SuperMac S900Base with Maxpower Pro+ 250 bundle takes a very expandable tower system and adds a PowerPC 750-based CPU card. (Because of Apple's licensing constraints, Umax is obligated to ship the systems with a

150MHz 604e CPU card and offer a coupon for the easily installable 250MHz PowerPC 750 card.)

The price isn't low—\$4,090—but for \$1,000 more than Apple's comparable G3 configuration, you gain eight RAM slots, six PCI slots, a second CPU slot, a second SCSI chain, an easier-to-open case, and Connectix's Speed Doubler 2 software but lose a modem. Even though the upgrade card is slower than Apple's CPU, it matches its performance, thanks to its 1MB backside cache.

## Macworld's Buying Advice

Jobs's posturing notwithstanding, Apple hasn't yet learned to play Dell's game at Dell's level. Although the price is a bit high, the Umax system is the clear choice for image editors, digital-video creators, animators, and others seeking a Mac that can hold its own.—GALEN GRUMAN

### Power Macintosh G3 tower ★★★

### Power Macintosh G3 desktop ★★★½

**PROS:** Speedy; custom-configurable. **CONS:** Limited RAM, drive, and PCI-slot expansion; overpriced peripherals. **COMPANY:** Apple Computer (408/996-1010, www.apple.com). **DIRECT PRICE:** \$3,049 (266MHz tower; \$450 less for desktop case and \$250 less for 233MHz CPU).

### SuperMac S900Base, Maxpower Pro+ 250

**RATING:** ★★★ **PROS:** Excellent performance; highly expandable. **CONS:** A bit pricey. **COMPANY:** Umax Computer (510/226-6886, www.supermac.com). **COMPANY'S ESTIMATED PRICE:** \$4,090.



## G3 Systems Set New Speed Standard

Best overall performance. Longer bars are better. Bold indicates best result in a specific test. ▶ New system. An Apple Power Macintosh 7100/80 has a SpeedMark score of 1.0.

### SpeedMark

- ▶ Apple Power Macintosh G3/266 tower ————— 4.5
- ▶ Apple Power Macintosh G3/266 desktop ————— 4.5
- ▶ Umax SuperMac S900Base with Maxpower Pro+ 250 ————— 4.5
- ▶ Apple Power Macintosh G3/233 desktop ————— 4.0
- Apple Power Macintosh 9600/300 ————— 4.0
- Apple Power Macintosh 7300/200 ————— 2.6

	CPU	FPU	Disk	Video
Apple Power Macintosh G3/266 tower	5.0	4.7	2.9	7.1
Apple Power Macintosh G3/266 desktop	5.0	4.6	2.7	7.1
Umax SuperMac S900Base with Maxpower Pro+ 250	4.9	4.5	2.7	<b>9.3</b>
Apple Power Macintosh G3/233 desktop	4.5	4.1	2.5	6.7
Apple Power Macintosh 9600/300	4.3	4.3	2.5	7.4
Apple Power Macintosh 7300/200	2.9	2.9	1.6	3.6

### Behind Our Tests

For detailed information on our systems benchmarks, see [www.macworld.com/tests/](http://www.macworld.com/tests/).—Macworld Lab testing supervised by Jeffy Milstead

# ScanJet 6100C

HP SCANNER HAS MUCH TO BE MODEST ABOUT

**H**EWLETT-PACKARD'S 600-DPI, 30-bit color HP ScanJet 6100C strongly resembles the HP ScanJet 4c it replaces. As with its predecessor, the ScanJet 6100C's street price (\$799) places it squarely between the current crop of low-end, sub-\$400 flatbed scanners and their professional-quality cousins in the \$1,400-to-\$1,800 range. Also like the ScanJet 4c, HP's new scanner includes Adobe Photoshop LE rather than the full edition of Photoshop. It's the inheritance of its fore-



ARNOLD TIGER

runner's limitations in scan quality and the aging DeskScan II plug-in, though, that keep the ScanJet 6100C from being a suitable budget substitute for the professional units.

The ScanJet 6100C captures color that's more eye-grabbing than it is accurate. The tones in our 6100C test scans were rich and vibrant, but also oversaturated—we saw slight posterization in blue and yellow areas, and marked inaccuracy in the greens. Although these colors aren't

ideal for print publication, they're more appealing than the duller, muted tones typical of low-end scanners, making the ScanJet 6100C a fine choice for snappy Web graphics. The ScanJet 6100C's sharpness proved adequate, but fine textures were blurred in our test image. The scanner also has some difficulty resolving shadow detail.

Scanning speed is one area where the ScanJet 6100C excels (see the benchmark, "Newest ScanJet Boasts Excellent Speed"). Its final scan speeds are among the fastest of the 24-bit and 30-bit scanners we recently compared ("Scan It," November 1997) and outpace the 36-bit scanners in our last roundup ("Scanners That Get the Details," December 1997).

HP's DeskScan II plug-in is functional, but it doesn't go much beyond a minimal set of the most essential features. Its interface is also sorely in need of an update—and not just because it looks like a holdover from the days of System 6. For example, DeskScan II makes you select scan types and output devices from pop-up menus, and you have to modify scan parameters—color depth, image resolution, and so on—in an edit mode.

The ScanJet 6100C comes with a neat little gizmo: a small 35mm slide adapter.

Essentially, this is just a triangular box, open on one side and lined with mirrors on the other two sides for reflecting light from the scanner back down through a slide. Although this simple device is no match for a proper transparency adapter—which HP sells for \$699—it's adequate for scanning placeholders and other rough images.



**Not Ready for the Pro League** Compared with our reference drum scan (left), in the ScanJet 6100C's scan the fabric is too smooth and the wrong shade of green. Note the posterized lemon and lack of shadow detail around the rosemary.

## Macworld's Buying Advice

If you're hoping to find a professional-quality scanner at a fire-sale price, you won't find it here. But if you're searching for a product that's a step up from an entry-level scanner, it's worth looking at the ScanJet 6100C.—PETER M. STOLLER

**RATING:** ★★★ **PROS:** Moderately priced; captures rich, vibrant colors; handy 35mm slide adapter. **CONS:** Lacks sharpness and color accuracy; scanning software needs interface update. **COMPANY:** Hewlett-Packard (415/857-1501, [www.hp.com/go/scanjet](http://www.hp.com/go/scanjet)). **LIST PRICE:** \$921.

Macworld  
LAB TEST

## Newest ScanJet Boasts Excellent Speed

■ Best result in test. Shorter bars are better. Times are in seconds. ▶ New product.  
Discontinued product shown in italics for comparison.



\*Tested in March 1996 on a Power Mac 7100/80; all other systems tested on a Power Mac 7500/100.

### Behind Our Tests

For detailed information on our methodology, see "Scanners That Get the Details," December 1997, or [www.macworld.com/tests/](http://www.macworld.com/tests/).—Macworld Lab testing supervised by Suzanne Courteau



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2D Performance – MacBench 4.0	
ATI NEXUS GA	316
IXMicro TwinTurbo 128MB	297
Matrox Millennium	254

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# Network Laser Printers

HP'S OFFERING IS FASTER, CHEAPER THAN APPLE'S

**T**WO NEW OFFERINGS FROM printing stalwarts Apple and Hewlett-Packard question many traditionally held notions of standard network printer features, with mixed results. Apple's LaserWriter 8500 and HP's LaserJet 4000 TN are both fast, network-ready workgroup printers with the usual suit-and-tie-pleasing extras like duplexing units for double-sided printing, high-volume

## Focus on Content Creation

Considering Apple's much-touted refocusing on its core graphics users, it's not too surprising that the LaserWriter 8500 boasts full-bleed capabilities on 11-by-17-inch paper and prints on a much wider variety of paper sizes than the LaserJet 4000 TN can. Its paper-handling capacity ranges from just under 4 by 6 inches up to a whopping 13 by 20 inches; the LaserJet's maximum paper size is 8.5 by 14 inches.

What else does the 8500 have to offer that the 4000 TN doesn't? True Adobe PostScript, for one thing. The LaserWriter 8500 is one of the first printers to ship with Adobe's new PostScript Level 3, while the LaserJet 4000 TN, in contrast, relies on emulated PostScript Level 2, following the end of Hewlett-Packard's licensing agreement with Adobe in early 1997.

However, the LaserWriter 8500 does not boast the LaserJet 4000 TN's resolution.



Apple LaserWriter 8500 (left) and HP LaserJet 4000 TN.

paper trays, and high-capacity toner cartridges. The 20-ppm LaserWriter 8500 comes equipped with 16MB of RAM and a parallel port for cross-platform connectivity; the LaserJet 4000 TN, a 17-ppm unit with 8MB of RAM, ships with HP's JetDirect network interface card, which allows Macintosh users to connect via an Ethernet port. However, aside from their network capabilities and fast print speeds, there are more differences than similarities between these two workgroup models.

HP cranks its printer's default resolution up to 1,200 dpi, via either interpolation or true optical resolution (although the 4000 TN's rated speed drops to 8.5 ppm in the latter case). The best news is that this increased, interpolated resolution doesn't come at the cost of a printed-page slowdown—the LaserJet surpassed the faster-rated LaserWriter in most Macworld Lab speed tests (see the benchmark, "LaserJet Blasts Past Faster-Rated LaserWriter").

Print quality is as important as speed in an office printer; does the difference

in PostScript implementation make a difference in document quality? Macworld Lab testing showed that the LaserJet 4000 TN had no significant problems rendering any of our test files, although we occasionally saw vertical banding in some graphics prints. The biggest difference between the two printers' implementations of PostScript is in their price: the Level 3-equipped LaserWriter 8500 costs roughly \$900 more than the clone-equipped LaserJet 4000 TN.

## Macworld's Buying Advice

If you need a printer that can handle jumbo paper and tackle full-bleed 11-by-17-inch prints, the Apple LaserWriter 8500 is a solid choice. Otherwise, HP's LaserJet 4000 TN prints faster than the LaserWriter, offers higher resolution, and—best of all—costs \$900 less. That more-for-less equation makes the LaserJet 4000 TN a smart choice for an office of any size.—SUZANNE COURTEAU

### Apple LaserWriter 8500

**RATING:** ★★★½ **PROS:** Supports a wide range of paper sizes; full-bleed printing up to 11 by 17 inches; true Adobe PostScript Level 3. **CONS:** Expensive compared with competing products. **COMPANY:** Apple Computer (408/996-1010, www.apple.com). **COMPANY'S ESTIMATED PRICE:** \$2,500.

### HP LaserJet 4000 TN

**RATING:** ★★★ **PROS:** Optical and interpolated 1,200-dpi resolution; speedy performance; good value. **CONS:** Some banding in graphics. **COMPANY:** Hewlett-Packard (800/527-3753, www.hp.com). **COMPANY'S ESTIMATED PRICE:** \$1,599.

**Macworld**  
LAB TEST

## LaserJet Blasts Past Faster-Rated LaserWriter

■ Best result in test. Times are in seconds. Shorter bars are better.

	Short Multi-font Memo	Long Single-Font Report	Spreadsheet	Illustration	Bitmapped Photograph	Newsletter	Web Browser
Hewlett-Packard LaserJet 4000 TN (17 ppm)	27	56	31	168	113	26	34
Apple LaserWriter 8500 (20 ppm)	29	55	36	190	224	31	31

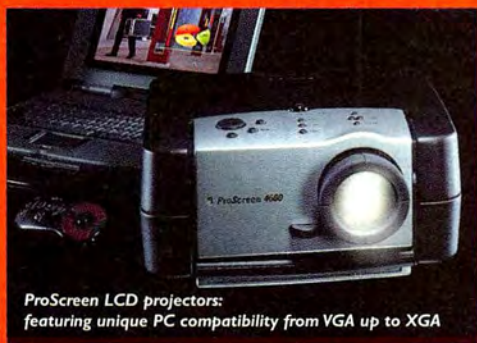
### Behind Our Tests

For detailed information on our methodology, see "The Best Personal Printers," June 1997, or [www.macworld.com/tests/](http://www.macworld.com/tests/). —Macworld Lab testing supervised by Suzanne Courteau

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# PHILIPS

# Serial-Port Multipliers

THREE CARDS ADD FOUR MODEM JACKS EACH—SORT OF

**W**ITH EACH SUCCESSIVE model, the Mac's numbers look better—at least in terms of megahertz, RAM, and hard-disk space. But one important spec hasn't changed in 14 years: the number of serial ports, which remains steady at two (or one, on PowerBooks). Meanwhile, the number of devices vying for those jacks has exploded, making for a lot of plugging into and unplugging from jacks that weren't designed for such repetitive stress.

Three serial PCI cards, Creative Solutions' Lightning-PCI, Keyspan's SX-4, and MegaWolf's Romulus, each give you four additional modem ports to play with. Depending on your particular assortment of appliances, one of these cards may let you keep all your doodads plugged in all the time. But there are no guarantees: serial-port multiplication is a black art laced with gray areas, and no port multiplier works for all devices.

## A Black Art

Understanding the modem-port shortage requires a bit of knowledge about Apple's Communications Toolbox. In the 1980s, serial-port programs were hard-coded to "speak" directly to your modem or printer port. Apple later created a flexible, expandable intermediary software layer called the Communications Toolbox (CT) to handle any current or future serial port, whether built-in or on a card.

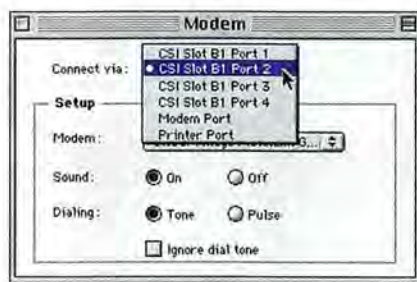
CT-savvy software works beautifully with the Lightning-PCI, Romulus, and SX-4. Simply install the card in your Mac and drop an extension into the System Folder, and you have six serial ports to choose from instead of just two. (Keyspan's \$229 SX-2 and MegaWolf's \$249 Remus add two ports instead of four; MegaWolf's \$724 Rufus card offers eight extra modem ports.) Your CT-savvy programs can even operate simultaneously on all your jacks.

If your primary interest is in modem software, you're in luck. Nearly every telecom program—including America Online, Open Transport/PPP, Apple Remote Access, SoftArc's FirstClass, and most fax software—is CT-savvy. (A few

nonmodem programs are also CT-savvy and work fine with these cards.) You can plug your modem into one of your new jacks, leave your printer in its traditional jack, and use your built-in modem port for a non-CT-savvy gadget.

## The Plot Thickens

Unfortunately, life gets a little more complicated if you're hoping to accommodate more than one non-CT-savvy program, such as the software for MIDI gear, digital cameras, the Connectix QuickCam, LocalTalk, the GeoPort pod, or Seiko's label printer—and, surprisingly, Apple's own Chooser. Out of the



**Ports Aplenty** Comm Toolbox-savvy programs, such as Open Transport, instantly recognize port-multiplying cards such as the Lightning-PCI.

box, these products can't even see the Lightning-PCI, Romulus, and SX-4 serial cards. (The Chooser's lack of CT compliance is especially disappointing; it means that you can't move your printer to your new jacks.)

Software can help. The Lightning-PCI card's MagicPort control panel can route non-CT-savvy programs to one of your new modem ports. Alas, MagicPort works only for *applications*; it won't help desk accessories such as digital-camera plug-ins. The Lightning-PCI also includes MagicPrint, an extension that makes the Chooser CT-aware. With it, you should be able to move your ink-jet printer to one of the Lightning-PCI card's four ports—but MagicPrint doesn't work with System 7.6 or later.

A semisolution is to use Stalker Software's \$44 PortConnector, a control panel that can intercept data from *any* non-CT-savvy program and reroute it to

a PC Card modem or a port-multiplier card. Unfortunately, PortConnector's two "virtual ports" intercept *all* traffic destined for your modem and printer ports. Combined with a port-multiplier card, PortConnector lets you leave all your gadgets hooked up at all times—but you have to open PortConnector to switch from one device to another.

## Macworld's Buying Advice

The extra jacks that the Lightning-PCI, Romulus, and SX-4 cards provide are fast, solid, and reliable—with CT-savvy programs. If one more port would remedy your shortage, buy the two-port SX or Remus card and plug your modem into it, leaving the Mac's built-in modem port free for other uses. If you have more than one non-CT-savvy application, buy a Lightning-PCI card instead and use its MagicPort software to set up your four new ports.

Through all this, remember two cold, hard facts of life. First, MIDI devices, the QuickCam, most digital cameras, and LocalTalk work *only* when plugged into built-in ports, no matter what. Second, for about \$30, you can buy an A/B box that redirects your modem port's attention to various devices with the turn of a knob, no RAM required.—DAVID POGUE

## Lightning-PCI

**RATING:** ★★★ **PROS:** Accommodates a wider range of modem-port gadgets than the SX-4 and Romulus cards. **CONS:** Expensive; still doesn't work with some devices. **COMPANY:** Creative Solutions (410/766-4080, [www.creative-solutions-inc.com](http://www.creative-solutions-inc.com)). **LIST PRICE:** \$479.

## Romulus

**RATING:** ★★★ **PROS:** Relatively inexpensive; works with Visioneer PaperPort; decent manual. **CONS:** Doesn't work with cameras, printers, and so on. **COMPANY:** MegaWolf (203/562-1243, [www.megawolf.com](http://www.megawolf.com)). **LIST PRICE:** \$349.

## SX-4

**RATING:** ★★★ **PROS:** Relatively inexpensive. **CONS:** No manual; doesn't work with QuickCam, MIDI, printers, and so on. **COMPANY:** Keyspan (510/222-0131, [www.keyspace.com](http://www.keyspace.com)). **LIST PRICE:** \$329 (SX-2, \$229).

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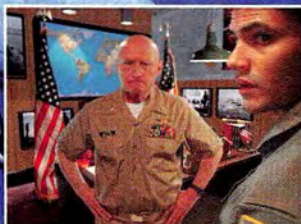
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# QuickTime VR Authoring Studio

APPLE DELIVERS POWERHOUSE QUICKTIME VR PRODUCTION TOOL

**A**LMOST THREE YEARS AFTER releasing QuickTime VR, Apple has finally delivered easy-to-use QuickTime VR development software. QuickTime VR Authoring Studio 1.0, which replaces the Authoring Tools Suite, is straightforward enough for novices but sophisticated enough for high-volume VR production. It also compares favorably to third-party QuickTime VR development tools (see *Reviews*, November 1997): unlike those programs, Authoring Studio is able to handle all aspects of the QuickTime VR production process. It can make panoramic movies, which let users explore 360-degree views of a scene, as well as object movies, which let them "pick up" and rotate objects.

## The Panoramic Landscape

Stitching a panorama in Authoring Studio is a straightforward process: you import your images and specify the focal length and field of view of the lens you used. Authoring Studio contains presets for several common 35mm lenses and Apple's QuickTake 150 and 200 digital cameras. You can also create new lens presets by using Authoring Studio's Lens Estimator. The final step is to click on the Stitch Pano button and then sit back and marvel as Authoring Studio combines your images and blends them to create a seamless panorama. (Don't worry if problematic images don't stitch perfectly; Authoring Studio's manual-stitching features are the best I've seen.) The result is a QuickTime VR panoramic movie and a PICT file containing the stitched images.

QuickTime VR Authoring Studio is the only VR production tool that lets you create a multiple-node panorama—a single movie file containing several panoramas linked via hot spots. You simply draw arrows in the Scene Maker window to connect the individual panoramas and create hot spots that link them.

## Object Lessons

Authoring Studio's object-movie-making features are equally complete, supporting single-row object movies (which let users rotate an object) as well as multiple-row

movies (which let users examine an object from above and below while rotating it).

Making multiple-row object movies requires taking dozens of images, moving the camera and object precisely after each one. QuickTime VR Authoring Studio streamlines this arduous process by supporting the growing number of motorized object platforms being offered by third parties. Authoring Studio can communicate with a motorized object platform through AppleScripts, snapping frames and moving the object and camera as necessary after each frame. If you have a Mac with video-input capabilities, you

and go to lunch while Authoring Studio crunches through each movie.

Although QuickTime VR Authoring Studio is beautifully designed and implemented, it saves movies in QuickTime VR 2.1 format, which can't be played by Windows versions of QuickTime prior to 3.0 (still in beta testing as of this writing). Although QuickTime VR 2.1 and QuickTime 3.0 offer significant advantages over their predecessors, it will be some time before most Windows users upgrade. For now, at least, that means the QuickTime VR 1.x format is preferable for Web-destined movies. It also means you have to run Authoring Studio's output through a conversion utility to produce QuickTime VR 1.0 movies. Apple's free conversion utility should be available by the time you read this; meanwhile, you can use ConVRter (\$20), from VRtools ([www.vrtools.com](http://www.vrtools.com)).



**A VR Studio** Authoring Studio's Project Manager (upper left) makes short work of creating complex projects, while the Panorama Stitcher (bottom) combines images seamlessly (upper right).

can digitize the frames for an object movie directly within Authoring Studio. The program's video-capture window displays guides and crosshairs that help you position the object and camera.

## Managing Your Media

A large QuickTime VR project can comprise dozens of VR movies and hundreds of source images. QuickTime VR Authoring Studio's Project Manager window helps you tame this morass of media by acting as a container for object movies, panoramic movies, and scenes. You use the Project Manager to add icons that represent each VR movie the project will contain. Double-clicking on one of the icons opens the appropriate Authoring Studio tool; you specify the particulars for that movie—its source images and movie settings—and move on to the next one. When you've finished, click on the Build Project button

## Macworld's Buying Advice

Does QuickTime VR Authoring Studio blow away the third-party competition? Not quite. Panimation's Nodester remains a superb choice for creating single-node movies,

thanks to its built-in image editor, support for QuickTime VR 1.x, and \$169 price tag. Another program to watch is PictureWorks' Spin Panorama 2.0, which adds automatic stitching; it's due to ship by the time you read this. These tools can't create multiple-node panoramas, however, nor can they match Authoring Studio's rich array of project-management features. QuickTime VR Authoring Studio is the ultimate QuickTime VR production tool.—JIM HEID

**RATING:** ★★★★★/5 **PROS:** Elegant user interface; creates multiple-node panoramas; excellent project-management features. **CONS:** Can't save in QuickTime VR 1.x format. **COMPANY:** Apple Computer (408/996-1010, <http://quicktimevr.apple.com>). **LIST PRICE:** \$395; upgrade from Authoring Tools Suite, \$199.

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# Interpol

FIREWALL IN A BOX

**W**HEN YOU CONNECT YOUR LAN to the Internet, a firewall is essential—both to keep interlopers out and to control the Internet services users are accessing. Until now, you had to choose between inexpensive but limited router-based, packet-filtering firewalls and full-featured but expensive computer-based proxy firewalls. Sonic Systems' Interpol falls somewhere between the two in both price and capabilities; this dedicated network appliance offers access protection, network-address translation, public-server connectivity, content filtering, and even telecommuting. Its Web administration and automatic content-filter updating make this the easiest of all firewalls to set up and maintain.

The Interpol is a simply designed, modem-size box with three identical Ethernet ports and three corresponding sets of status lights. One port connects to your Internet router with a supplied Ethernet crossover cable, the second connects to your LAN hub, and a third optionally connects to one or more servers the public can access via your Internet connection. Sonic thoughtfully provides both 10BaseT and coaxial Ethernet connections for each port, making the unit easy to connect with older network gear. Once you've attached the Interpol to your network, configuration takes just a few minutes using any Web browser on your LAN. The comprehensive user's guide explains IP-addressing fundamentals and offers step-by-step setup instructions.

## Surfing Setup

The Interpol's Web-based administration features are a joy to use and a model of quality Web-interface design. Using Java to ensure security, the Interpol requires an administrative password for access. A main status page displays at-a-glance status as well as a summary of pending warning and alert messages; a more detailed message-history page records firewall access as well as any attempted security breaches. You can configure the Interpol to mail the message log to you automatically at regular intervals, a refreshing

improvement over the Unix-logging approach of more traditional firewalls.

A series of Web pages lets you configure the Interpol's various features. You can set up the Interpol as a screening firewall, where your users all have Internet-routable IP addresses, or as a network-address-translation (NAT) firewall, where your users all get private addresses. The screening approach gives you the flexibility of allowing telecommuter access through the firewall to individual machines on your network, to run Netopia's Timbuktu or AppleShare IP, for example. A configurable user list lets you establish up to 100 telecommuting users. Using a



SUZANNE BOADY

Web browser, a remote user connects to the Interpol by entering one of the listed user IDs and passwords; the Interpol then creates a temporary hole through the firewall for that user's single IP address, automatically closing the hole after a predetermined period of inactivity. (The screening configuration requires that your ISP supply an IP address for each of your network users, which will likely entail additional service fees.) The NAT configuration prohibits telecommuter access, but it's more secure and requires only a single Internet-routable IP address from your ISP.

## Solid Security

The Interpol automatically protects all connected devices from the three currently known denial-of-service attacks: IP spoofing, Ping of Death, and Syn flooding. By default, the Interpol blocks all incoming connections to computers on your LAN but permits all outgoing connections; that way, your users have transparent network access without being exposed to the Internet directly. Because you can open holes in the firewall for individual servers, your servers can run from behind the firewall. A better option, however, is to connect public servers to the

Interpol's third Ethernet port. Anyone on the Internet can access these servers freely, but you avoid denial-of-service attacks and letting public Internet traffic onto your protected network.

One of the Interpol's most interesting features is a built-in, self-updating content filter that lets you block specific categories, such as content dealing with the drug culture or pornography. The software uses a combination of IP addresses and URL matching to detect and block inappropriate sites, so it's not as comprehensive as filtering products that also scan Web-page content. For an annual subscription fee, you can have the Interpol automatically download an updated filter list each week. You can also block all Usenet news access and disable Java and ActiveX applets to prevent security breaches.

I tested the Interpol on a large corporate network with more than 100 users and a 1.5-Mbps T1 Internet connection. It had no problem keeping up with the traffic flow, and all security features worked as advertised. Although it lacks some of the features—dynamic port mapping, for example—of more sophisticated (and expensive) firewalls, the Interpol will meet most small networks' requirements.

The one conspicuously missing feature—Dynamic Host Configuration Protocol (DHCP)—will be added in a future release, according to Sonic, as will scanning of Web-page content. The Interpol's Web-uploadable firmware makes installing software upgrades painless.

## Macworld's Buying Advice

The Interpol is an excellent all-in-one solution for protecting a network. To get equivalent protection with a traditional firewall, you'd have to buy a dedicated firewall computer, routing software, and a content-filtering package and spend several days getting it set up. With its Web-configuration interface, content filtering, upgradeable firmware, excellent security, and comprehensive feature set, the Interpol is simply a great deal.—MEL BECKMAN

**RATING:** ★★★★★ **PROS:** Web-configuration interface; translates network addresses; DMZ support; content filtering; excellent performance. **CONS:** Lacks DHCP support. **COMPANY:** Sonic Systems (408/736-1900, www.sonicsys.com). **LIST PRICE:** \$1,499; with a filter-list subscription, \$1,999.





# Alternative MIDI Sequencers

FREESTYLE AND METRO STRIKE BACK AGAINST MIDI BLOAT

IT'S EASIER TO MAKE MIDI MUSIC on a Mac than on other computers, but that's not saying much. Today's best-selling sequencers, Opcode Systems' Vision and Mark of the Unicorn's Performer, have become so sophisticated that they can overwhelm the hapless songwriter who just wants to produce a decent-sounding demo tape. Mark of the Unicorn's FreeStyle 2.01 and Cakewalk's Metro 3.5, both newly overhauled, attempt to simplify MIDI recording without curbing flexibility. Each departs dramatically from the Vision/Performer mold, and each is a smashing success in its niche.

## An Easy Ride on the Metro

Unlike Vision, Performer, and FreeStyle, Metro requires no key disk or hard-drive authorization as copy protection; instead, it cheerfully asks—on day 1 only—that you type in a programmer's name from a specific page of the manual. And Metro is the only professional sequencer that requires no system extensions, a chronic headache for MIDI musicians.

One Metro window lists each track's name, synthesizer sound, sound-level graph, and map of recorded measures. A second window—an impressive graphic editor—displays each note as a bar on a timeline, ready for mouse manipulation. In the third window are tape-deck-style controls, such as Play and Rewind; a counter; and tempo, looping, punch-in/punch-out, and count-off buttons. You process your music by using the usual arsenal of menu commands, such as Quantize, Transpose, Human Feel, and Velocity.

This design should sound distinctly familiar to Performer users; in fact, Metro 3.5 is surprisingly reminiscent of, say, a 1992 copy of Performer, right down to the keyboard shortcuts and somewhat homemade look. But Metro costs half as much and runs on every Mac back to the Macintosh Plus in as little as 800K of RAM. It lacks a sheet-music view but otherwise offers a state-of-the-art feature list:

chunk-based song rearranging, SMPTE time-code support, animated mixing faders, OMS support, and more.

Metro also offers a few features all its own. For example, it can run concurrently with Macromedia's Deck II digital-audio program, jog your inspiration with a "rhythm explorer" that plays your piece in various rhythmic grooves, and even sync up with a QuickTime window so you can compose a movie



**Song Building Made Easy** Both FreeStyle and Metro let you build a song by rearranging chunks on a timeline.

score while viewing the scene. Metro's only significant drawback is the unnecessarily technical manual.

## The Sequencer Rethought

If Metro is Performer in a time warp, FreeStyle is from another planet. Its refreshing design halves the typical sequencer's complexity, particularly if you have a General MIDI-labeled synthesizer. A long list of innovations sets FreeStyle further apart from its rivals. For example, FreeStyle intelligently records and plays back pickup notes (even in the case of repeats). You can "scrub" (listen to the music under your dragged cursor) in bargraph as well as sheet-music views. If you wish, the program can start and stop recording automatically. An unlimited "takes" feature quietly stores every attempt you make at recording a track; later, you can select the best parts of each. And you can control the software by pressing keys on your synthesizer, so you don't have to keep rushing back to your Mac.

Loop Override is a stroke of genius:

FreeStyle can endlessly repeat a measure or two through an entire song, as is typical in drum tracks. But what drum part *never* changes? Loop Override momentarily replaces the looping with snippets or fills you've recorded at specific spots.

FreeStyle is delightful, but it's not perfect. The copy-protection scheme is nerve-racking and intrusive. The new Sense Tempo command purports to free you from having to record to a metronome's click, continuously analyzing your playing to calculate which beat you're on—but it rarely works. And while FreeStyle's notation view turns whatever you play, even *as* you play, into fully beamed sheet music, you can't add articulation markings, proper dynamics, note-attached lyrics, metronome markings, or other standard sheet-music elements, and there's no way to hide an empty staff.

## Macworld's Buying Advice

If you're a sophisticated MIDI-head unafraid to stray from the herd of Vision and Performer users, Metro's long list of high-end features (and its modest resource demands) make it worth considering for the heart of a MIDI studio. FreeStyle, on the other hand, is nearly irresistible. This program will bring delight to first-timers and relief to complexity-weary veterans.—DAVID POGUE

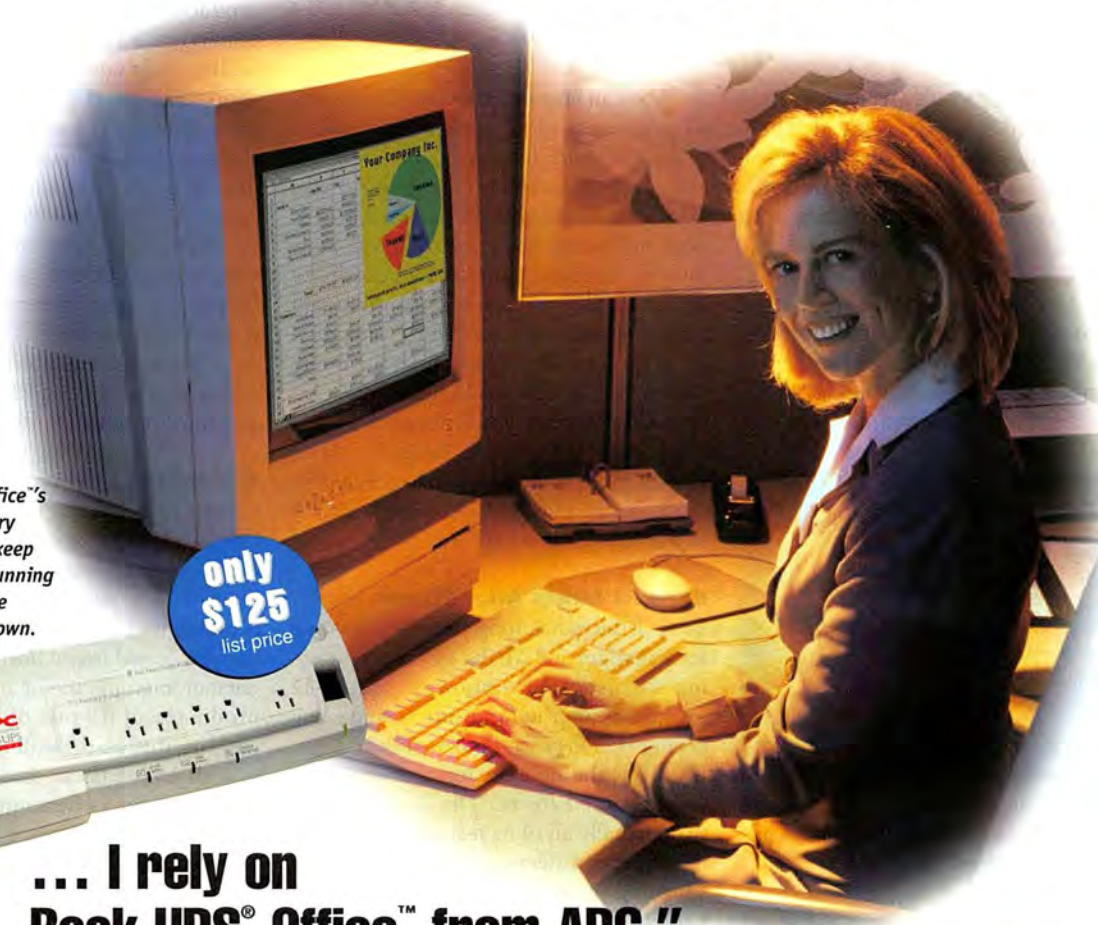
## FreeStyle 2.01

**RATING:** ★★★★★/5 **PROS:** Simplifies MIDI setup; ingenious scrubbing, pickup, keyboard-control, and looping features; impressive sheet-music transcription. **CONS:** Intrusive copy protection; sheet-music features extremely limited. **COMPANY:** Mark of the Unicorn (617/576-2760, www.motu.com). **LIST PRICE:** \$195.

## Metro 3.5

**RATING:** ★★★★★/5 **PROS:** Runs even on a Mac Plus, with no extensions or key-disk requirement; sophisticated feature list. **CONS:** No sheet-music mode; unnecessarily technical manual. **COMPANY:** Cakewalk (617/441-7870, www.cakewalk.com). **LIST PRICE:** \$199.

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# Video-Effects Software

PLUG-INS SIMULATE FILM, ADD TRANSITIONS

**A**FTER EFFECTS USERS, YOUR universe has just expanded. Three new plug-in collections have joined the sizable array of third-party add-ons that tap into Adobe's video-effects powerhouse. DigiEffects' CineLook Broadcast 1.0 simulates the look of motion-picture film, right down to the dust and scratches. Artel Software's Boris FX 3.0.3 creates impressive 3-D and color effects; it also works with Adobe Premiere and Data Translation's



**Filmmaking** CineLook's exotic interface simplifies parameter adjustments by displaying thumbnail previews of various settings.

Media 100. Finally, Alien Skin Software's Eye Candy 3.0 for After Effects provides a grab bag of visual sweets.

## The Look of Film

Videotape and digital video are economical and convenient, but they lack the rich look of film. The grain of a film's light-sensitive emulsion, its unique color sensitivity, and the shutter movement of a movie camera and projector combine to create a richness that makes videotape look harsh and clinical by comparison.

With DigiEffects' CineLook Broadcast, you can give your digital video the look of film. CineLook doesn't just add faux grain—its presets mimic the characteristics of dozens of commercial films from Agfa, Fuji, and Kodak, in color and black-and-white 8mm, 16mm, and 35mm stock. In addition, several offbeat presets simulate old movies and deliver grungy effects suitable for MTV. The Film Damage plug-in, for example, gives clips a vintage look by simulating scratches, dust, and projection stuttering.

You can customize any of CineLook's 52 parameters within each preset to tweak grain size, color balance, shutter motion, and more. You can also use After Effects keyframes to animate the parameters over time and create new presets to recall your favorite settings. CineLook's beautifully designed user interface streamlines the adjustment process (see "Filmmaking").

CineLook Broadcast limits the frame size to 768 by 486 pixels. Thus, if you're outputting to film, you'll need the \$1,995 CineLook FilmRes; it supports After Effects' maximum frame size of 4,000 by 4,000 pixels. FilmRes should be available in the first quarter of 1998.

## Boris FX Meets After Effects

Boris Effects has long been a must-buy for Premiere and Media 100 users, offering sophisticated motion control, 3-D image mapping and transitions, and color keying (see *Reviews*, January 1997). Boris FX 3.0 is the first version that also runs under After Effects. The good news is that virtually all of its features have made it into After Effects; the bad news is that adjusting effect parameters within After Effects is less than straightforward. In Premiere and Media 100 systems, Boris FX offers an attractive interface that lets you, for example, drag a 3-D cube to specify its rotation. When you use Boris FX under After Effects, however, you must specify all parameters using After Effects' bare-bones Effects Settings window, which offers no such luxuries.

Still, being able to access Boris FX's arsenal from within After Effects is a boon. Boris's DVE effect, for example, makes short work of creating clips that spin and tumble, complete with feathered borders and drop shadows. Version 3.0 also adds a large selection of curvilinear filters that let you add ripple, bulge, and wave effects, along with color-correction filters for adjusting brightness and contrast, creating tints, and solarizing.

## Making Eye Candy

Alien Skin's Eye Candy is a popular Adobe Photoshop effects plug-in (see *Reviews*, August 1997); Eye Candy 3.0 for After Effects puts 19 of that package's best

filters and effects into motion. Most are true to Eye Candy's name: the Squint filter simulates an out-of-focus lens; Jiggle produces a bubbling distortion; and Star draws stars, triangles, and other polygons. Unlike their counterparts in the Photoshop version of Eye Candy, however, these filters can be animated. You can use them to make something gradually come into or go out of focus, for instance, or create stars that spin and change color.

While CineLook and Boris FX add unique capabilities to After Effects, Eye Candy for After Effects has some stiff competition, which makes its \$599 price tag a bit tough to swallow. Two similar candy factories, DigiEffects' Aurorix 2 and Berserk, sell for just \$289 each.

## Macworld's Buying Advice

CineLook Broadcast is the most groundbreaking of these three collections, bridging the gap between digital video and film as no other personal-computer-based product has to date. At \$695, however, it isn't for casual users. Boris FX 3.0.3 is an outstanding upgrade of an already stellar product, and it's one of the few effects plug-ins that works with Premiere as well as with After Effects. And Eye Candy 3.0 for After Effects offers some appealing filters and effects you won't find in other products.—JIM HEID

## Boris FX 3.0.3

**RATING:** ★★★★★ **PROS:** Extremely versatile array of effects and transitions; also works with Adobe Premiere and Data Translation's Media 100. **CONS:** Native user interface unavailable in After Effects. **COMPANY:** Artel Software (617/451-9900, www.artelsoft.com). **LIST PRICE:** \$495 (Media 100 version, \$695).

## CineLook Broadcast 1.0

**RATING:** ★★★★★½ **PROS:** Stunning film simulation; superb interface. **CONS:** No printed documentation. **COMPANY:** DigiEffects (415/841-9901, www.digieffects.com). **LIST PRICE:** \$695.

## Eye Candy 3.0 for After Effects

**RATING:** ★★★★★ **PROS:** Appealing mix of filters; good documentation. **CONS:** A bit pricey. **COMPANY:** Alien Skin Software (919/832-4124, www.alienskin.com). **LIST PRICE:** \$599.



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# Java-Based Web Multimedia Tools

EMBLAZE CREATOR, MBED INTERACTOR, AND WEBMOTION DELIVER MIXED RESULTS

**J**AVA MAY OR MAY NOT TRANSFORM computing as we know it, but this programming language is definitely making its mark on the Web. Among other things, Web developers are taking advantage of Java to spice up their sites with animation and enhanced user interfaces—ones whose buttons highlight and play a sound when clicked, for example, as they might in a CD-ROM title.

Three new authoring programs that let you create Java-based animations and interfaces are Astound's \$69.95 WebMotion 1.0, Geo Publishing's \$995 Emblaze Creator 2.5, and mBed Software's \$249 mBed Interactor 1.1. Of the three, WebMotion is the cheapest, easiest, and most limited, suitable primarily for creating basic animations and interfaces. Emblaze Creator and mBed Interactor are much more complex and capable, supporting streaming audio (and in Emblaze Creator's case, audio and video) and allowing for more-sophisticated projects, such as interactive games.

All three programs let you import media elements, such as graphics and sounds, created in other programs. From there, you position elements within a layout window whose dimensions match those of your final project. You can animate elements and specify interactivity—for example, you can turn a graphic into a clickable button by assigning it a URL. When you're finished, you can embed the final product in an HTML page.

## Surveying the Environment

In spite of their common ground, each program paves its own path to the browser. The simplest of the three is WebMotion, which sports just four menus. You import graphics to create *actors*, WebMotion's term for the cast of characters that appear on screen. When you've finished, you can save your efforts as an HTML page containing the tags necessary to play the animation. You can also save your project as an animated GIF file, but at the expense of interactivity and sound.

Where WebMotion opts for simplicity, Emblaze Creator thinks it's Macromedia Director. But although you store

media elements in a MediaBank window akin to Director's Cast window and build the project using a TimeLine window similar to Director's Score window, Emblaze Creator is no Director. Its performance is glacial, it crashed occasionally during testing, and its interface strays too far from standard Mac OS interface guidelines and relies too heavily on often-incomprehensible tool bars.

mBed Interactor takes a completely different approach. You create a project out of building blocks called *players*; you

containing a set of HTML-like tags describing your project's media elements, animations, and interactivity.

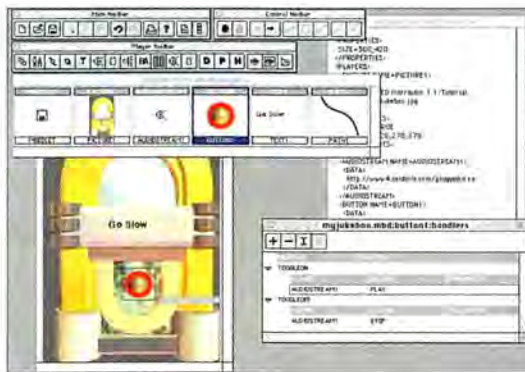
While WebMotion and Emblaze Creator are Java-centric, meaning that users won't need a plug-in to view them, mBed Interactor lets you author in any of three modes depending on your project's requirements and the target browsers. In Dynamic HTML mode, Interactor's end product is a Dynamic HTML page that works with both Netscape Navigator 4.0 and Microsoft Internet Explorer 4.0. In

Java mode, Interactor relies on an included Java applet to play back embedlets. And in its native mode, Interactor requires users to download the mBed browser plug-in or ActiveX control.

## Manipulating the Media

Another key point of comparison concerns the way you work with media elements. Emblaze Creator's rudimentary vector-drawing tools let you create various shapes; with WebMotion and mBed Interactor, you must create all graphics in a separate program and import them. Emblaze Creator can also import QuickTime movies and AIFF sounds. But importing video and audio can be tricky: you have to use a video-editing package to resize QuickTime movies to one of three non-standard pixel resolutions. If you try to import a 160-by-120-pixel movie, for example, you get an error message. Sound fared only slightly better in my tests, with Emblaze Creator tending to crash during the import process.

mBed Interactor supports sound in two ways. For short clips—such as a click sound effect that plays when the user presses a button—you can import sounds stored in AU or WAV format. Neither is native to the Mac OS; you have to use a sound editor such as Macromedia SoundEdit 16 or Bias's Peak.



**Media Makers** Emblaze Creator's interface (top) borrows from Macromedia Director's but relies too heavily on arcane tool bars. With mBed Interactor (bottom) you create interactivity by choosing commands from pop-up menus.

can choose from 12 types of players, including sounds, buttons, animation paths, and effects. The process is fast and efficient once you get the hang of it, and a built-in, interactive tutorial helps you get up to speed (though more details in the manual would be a welcome improvement). The result is an *embedlet*, a text file

Both Emblaze Creator and mBed Interactor support streaming audio, essential for playing lengthy clips such as songs. Emblaze relies on its own streaming scheme, which offers only fair sound quality and playback reliability; mBed Interactor does it right by supporting an industry standard, RealNetworks' RealAudio. This makes mBed Interactor ideal for creating a customized interface, such as an on-screen jukebox, for RealAudio content. You can also synchronize an animation's playback to a RealAudio file.

As for text, forget about built-in word-processor windows like those in Director—the best you get from these three are text-entry boxes for headlines and the like. And those headlines will be poorly spaced, because none of the three programs offers character-level kerning. Only mBed Interactor can import text files, display scrollable text blocks, and create antialiased text.

### Animation and Interactivity

On the animation front, all three programs make it easy to create such effects as moving text banners and bouncing balls. Creating animation paths is easiest in WebMotion and mBed Interactor, both of which let you draw and edit paths directly within the project window.

The ability to create enhanced forms of interactivity is one of the best reasons to use a Java authoring tool. WebMotion supports the narrowest range of interactivity options; you can specify that one of several things happen when a user single- or double-clicks on an element—go to a URL, go to a different frame of the animation, play a sound, pause playback, or change playback speed. WebMotion can't create multiple-state buttons (ones that change shape or color when the mouse pointer is over them or when they're clicked on).

Emblaze Creator offers two paths to interactivity. At the basic level, you can create clickable buttons by filling out a dialog box; at the advanced level, JavaScript programmers can create scripts that add more advanced forms of interactivity, such as zooming in on an image when a user clicks on it. The advantage of this approach is that nonprogrammers can implement common forms of interactivity without programming, while more advanced users can tap into JavaScript.

In mBed Interactor, you add interactivity by assigning *handlers* to players. A

handler looks much like a script, but you create it by choosing options from a pop-up menu—no typing required.

### Macworld's Buying Advice

If all you want to do is spice up your animations with occasional sounds and some interactive buttons, Astound's WebMotion is the best choice of the three; it's inexpensive, straightforward, and well-documented. Of the two high-end authoring tools, mBed Interactor is the one to watch. Besides being cheaper, faster, and more reliable than Emblaze Creator and less complex than Director, it supports industry standards such as RealAudio and Dynamic HTML.

You might want to investigate Macromedia's Flash 2.0 (see *Reviews*, September 1997); it also works with RealAudio, and it now supports Java-based playback without requiring plug-ins. Just remember that adding any Java-based content to your Web site introduces potential compatibility and reliability problems. Older browsers and offbeat surfing devices such as TV set-top boxes may not speak Java, and those that do can crash when running complex proj-

ects. Until these issues are resolved, Java-based animation and interfaces will take a back seat to good old HTML, JavaScripts, and animated GIFs.—JIM HEID

## Emblaze Creator 2.5

**RATING:** ★★ **PROS:** Advanced interactivity options. **CONS:** Slow; buggy; expensive. **COMPANY:** Geo Publishing (818/703-8436, www.emblaze.com). **LIST PRICE:** \$995.

## mBed Interactor 1.1

**RATING:** ★★★ **PROS:** Versatile authoring environment and playback options; excellent RealAudio support. **CONS:** Inadequate documentation. **COMPANY:** mBed Software (415/778-0930, www.mbed.com). **LIST PRICE:** \$249.

## WebMotion 1.0

**RATING:** ★★★★ **PROS:** Inexpensive; easy to use. **CONS:** Limited interactivity options. **COMPANY:** Astound (415/845-6200, www.astound.com). **LIST PRICE:** \$69.95.

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## InterJet 200

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**L**IKE ITS PREDECESSOR, THE InterJet 100/150 (see *Reviews*, June 1997), the InterJet 200 is a Web-administered, toaster-size box containing everything you need to put your network on the Internet. But unlike its predecessor—and other all-in-one Internet solutions—this version isn't limited to ISDN's 128-Kbps speed; the InterJet 200 boosts the speed limit to an amazing 1,544 Kbps by adding support for a leased digital T1 line. Just be aware that you must use an Internet service provider (ISP) that specifically supports the device (at the moment that includes more than 150 regional ISPs and 1 national ISP).

The new model offers the 100/150's two Ethernet ports; DHCP, DNS, mail, and Web servers; firewall; and communications ports. A new synchronous port supports bandwidths of up to 1,544 Kbps over a T1 or fractional T1 line using an external channel service unit (not included). The InterJet 200's dual Ethernet ports let you connect optional public Web servers to form a perimeter network outside the InterJet's firewall.

Setup consists of connecting all the cables and entering a 24-digit code in the unit's front panel; the InterJet then calls your ISP and configures itself. Your office computers—Mac, Windows, or Unix—configure themselves using DHCP. The new software features front-panel access to status and diagnostic information, new dial-up scheduling options, Web-page caching, and remote POP-3 e-mail access so users can check their messages when they're away from the office.

**Macworld's Buying Advice** As long as you don't mind being limited to one of the Whistle-authorized ISPs, you'll find the InterJet 200 to be the easiest and cheapest route to a full-service, dedicated Internet connection.—MEL BECKMAN

**RATING:** ★★★½ **PROS:** One-step configuration; Web-based administration; cross-platform Internet services and file serving; perimeter LAN; up to dedicated-T1 speed. **CONS:** Still works only with specific ISPs. **COMPANY:** Whistle Communications (650/577-7000, www.whistle.com). **LIST PRICE:** \$3,495.



# DenebaCAD

DRAFTING IN 3-D

**M**OST ARCHITECTS WILL TELL you that their clients aren't buying wiring diagrams or a bill of materials; they're buying dreams. That's why architectural CAD has a unique requirement among CAD specialties: after all the 2-D layouts have been drawn, the software had better produce some pictures beautiful enough to make people want your work.

Deneba Software's DenebaCAD 1.0.2 shines—literally—at controlling surface reflections, transparency, lighting effects, and other photo-realistic details. If you've got the time and processor power, it can also generate QuickTime VR walk-throughs of your structures and stereoscopic 3-D blue-red drawings (stereo glasses are included). DenebaCAD's ability to produce stunning visuals is unmatched by any CAD package short of Bentley's \$3,995 MicroStation 95 (see *Reviews*, December 1997). The ray tracing in renderings results in spectacular realism, and the resolution and antialiasing of renderings can be optimized for particular displays.

With its advanced 2-D capabilities, however, the program is more than just basic CAD grafted onto the sculpting and rendering features of Deneba's Canvas. Its chamfering and filleting tools are complete and intuitive, and you can specify dimensioning according to SAE or DIN standards. DenebaCAD also gives you more ways to handle free-form curves than Diehl Graphsoft's MiniCAD 7 or IMSI's TurboCAD 2D/3D 3.0. Its line control is flexible, with freely variable line width and a choice of line eccentricities, and its 2-D and 3-D Boolean operations can work with arbitrarily reshapable groups of objects. In fact, DenebaCAD's 2-D and 3-D functions are so well integrated that you can start with 2-D drawings and extrude and spin your way into the 3-D world. Or if you prefer, you can start in 3-D, using objects from the library, and have DenebaCAD generate 2-D drawings from your 3-D views. If your background is mainly in 2-D drafting, you can expect to spend considerable time mastering all the 3-D features here.

A nice drawing touch in DenebaCAD lets you combine a floating Layers palette with an unlimited number of open windows, so you can rapidly click through a



**Light Lines** DenebaCAD can import drawings from nearly any other CAD program and use them to produce picture-perfect renderings.

structured assortment of project views (all simultaneously updated). The program's long list of import/export formats includes nearly error-free DXF and DWG translation, making DenebaCAD an impressive walk-through generator using DXF files from other programs as input.

DenebaCAD's main shortcoming as a high-end CAD system is its lack of a programming language, whether through scripting, macros, or a simple syntax of its own. Another deficiency is reliance on a special Save As option to save a description of your drawing and its details as a

plain text file for export to word processors or spreadsheets. The program also shows some evidence of version-1.0 haste: misspellings in file names wreak havoc with the examples, and endlessly repeated error messages can arise from a single command. Library content is uneven, with lots of furniture but not enough building hardware. And some material you would expect to appear in the manual shows up in various PDF files instead.

## Macworld's Buying Advice

DenebaCAD packs considerable value into this package, from more-than-competent 2-D drafting to the most impressive architectural rendering this side of \$1,000. Once its version-1.0 problems and lack of a macro language are remedied, it will be a top choice as an all-in-one package for architects.—CHARLES SEITER

**RATING:** ★★★½ **PROS:** Superior architectural renderings; good 2-D and 3-D CAD capabilities.

**CONS:** Lacks programmability; some betalike glitches. **COMPANY:** Deneba Software (305/596-5644, www.deneba.com). **LIST PRICE:** \$799.95.

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# MacAdministrator 1.6

EVOLUTIONARY, NOT REVOLUTIONARY

**E**ASE OF USE HAS ALWAYS MADE the Mac a great instructional machine, letting teachers set up environments that are tailored to each tutorial situation. But that flexibility turns to tedium when you have to copy that setup on dozens of computers for multiple classes. MacAdministrator 1.6 automates that chore by centralizing the setup process, letting you quickly reorganize the hard disks in a roomful of Macs to suit any situation. The upgrade adds a host of small, incremental improvements over the earlier version (see *Reviews*, December 1995), although it fails to address the absence of built-in report printing.

MacAdministrator consists of a server application containing a central database of computers and users and a client application that locks access at each remote Mac to control who uses that computer, arrange and audit content, and collect usage statistics. Once MacAdministrator is installed on a client computer, the server determines who can access each client and when, what applications they can run, when clients' computers are backed up, and what files are visible to the user. The server also keeps track of page-printing budgets for each user, letting you limit access to expensive printing resources.

MacAdministrator uses a suite of agent applications that run periodically—at system start-up or shutdown, at user log-in or log-out, or at a particular time of day—on client computers. These agents protect various Mac files from access or tampering, mount and unmount disks, reestablish a common setup, back up documents, and audit installed applications and hardware.

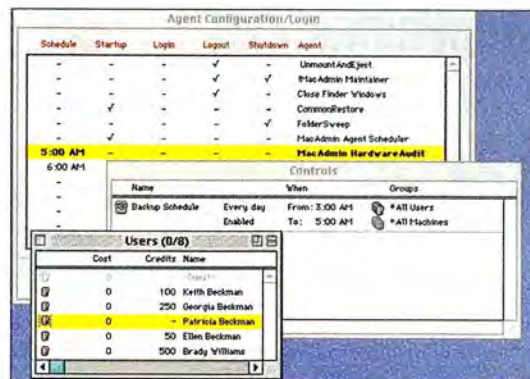
Version 1.6 adds features that improve performance, simplify operation, strengthen security, and add convenience for both users and administrators. All MacAdministrator agents are now PowerPC-native, as is much of the server software, and completely compatible with Mac OS 8 and IP-based AppleShare. Where MacAdministrator 1.0 required a separate log-in for each user, version 1.6 lets you create group log-ins. If a user logs out and back in, MacAdministrator will go through a streamlined log-in process

to avoid delays or the need to reconfigure the Mac.

The new version's security and reliability improvements include the ability to operate up to three servers (to ensure one's always available), block apps launched from Internet browsers, and detect and prevent attempts to circumvent MacAdministrator controls. There is a slew of cosmetic improvements—such as spoken error messages, hot links to online documentation, and the ability to sort lists. These enhancements address all previously reported problems but one: you still can't print reports from within MacAdministrator, but must instead export them to FileMaker Pro or Excel.

## Macworld's Buying Advice

Teaching time is precious and money for assistants scarce. MacAdministrator automates the most time-consum-



**Agents of Change** MacAdministrator's agents help keep remote systems organized the way you want them while collecting useful information on user activity.

ing chores of classroom Mac administration, leaving instructors more time to spend with students.—MEL BECKMAN

**RATING:** **PROS:** Inexpensive; reliable operation; events can be scheduled; comprehensive data collection. **CONS:** Can't print reports directly. **COMPANY:** Hi Resolution Software (508/543-6955, [www.hi-resolution.com](http://www.hi-resolution.com)). **LIST PRICE:** Ten-user pack, \$395.

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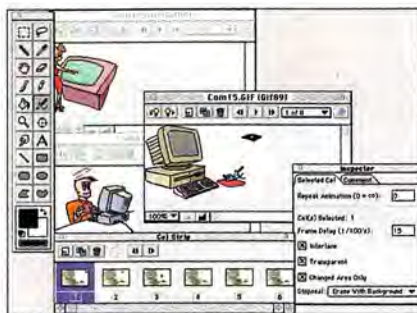
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# WebPainter 2.0

BARE-BONES WEB ANIMATION EDITOR

**W**EB ANIMATION TOOLS RUN the gamut from the freeware GIFBuilder to professional special-effects packages such as Adobe After Effects. Targeting the lower end of the market, Totally Hip Software's serviceable WebPainter does a decent job as a general-purpose animation editor and creator—as long as you have the artistic talent to create nice-looking images. The new version, 2.0, adds some nice but subtle interface improvements and comes with a collection of animated clip art that's bound to please animation novices.

WebPainter is very easy to set up and use, with a tool set that will be familiar to anyone who has used a basic painting program. You begin by defining the format (such as GIF), bit depth, size, overall rate of playback, and color palette; you can choose from the standard 216 Web-safe colors and the system colors, or you can load external palettes. The result is a multicel animation with basic onion-skinning, though you can see only the frames that appear immediately before and after the current frame; you can't see a user-defined number of cels. A



**Devil in the Details** WebPainter 2.0's straightforward interface has some fairly sophisticated tools, such as a hexadecimal color calculator and an Inspector palette that makes it easy to specify timings and frame delays in animation files.

bigger drawback is that WebPainter can't create even simple animated effects automatically; everything has to be done by hand.

WebPainter's selection of creative tools is relatively limited, consisting of the requisite paintbrush, pencil, paint-bucket, and finger-smudge tools as well as primitive shapes. It also includes a basic text tool that supports antialiasing but lacks advanced typographical controls such as leading and kerning. The selection tools are also fairly low-end, and the "airbrush" tool is more reminiscent of the outdated, MacPaint-style splatter effect than a true airbrush.

One of WebPainter's advantages over the competition is the variety of file formats it supports: the expected GIF and QuickTime, Totally Hip's proprietary Sizzler (which requires that users download a free browser plug-in), Java, and ActiveX. WebPainter can also import layered Adobe Photoshop documents and place each layer in its own cel, though I encountered some nonreproducible problems when I tried that. WebPainter also includes a utility that lets you simulate various download speeds so you can see how fast the animation appears in the browser window.

**Macworld's Buying Advice** For the price, WebPainter is a decent basic editor for existing animated GIF files and a serviceable tool for creating animations. If you don't have the artistic talent to make magic from scratch, however, you may want to start with a program that takes a more automated approach.—DAVID BIEDNY

**RATING:** **★★★** **PROS:** Simple interface; good file-format support; can simulate download speeds; includes sample GIFs. **CONS:** Unreliable support for layered Photoshop files; doesn't have automatic effects and animation generation. **COMPANY:** Totally Hip Software (604/685-6525, www.totallyhip.com). **LIST PRICE:** \$89.95.

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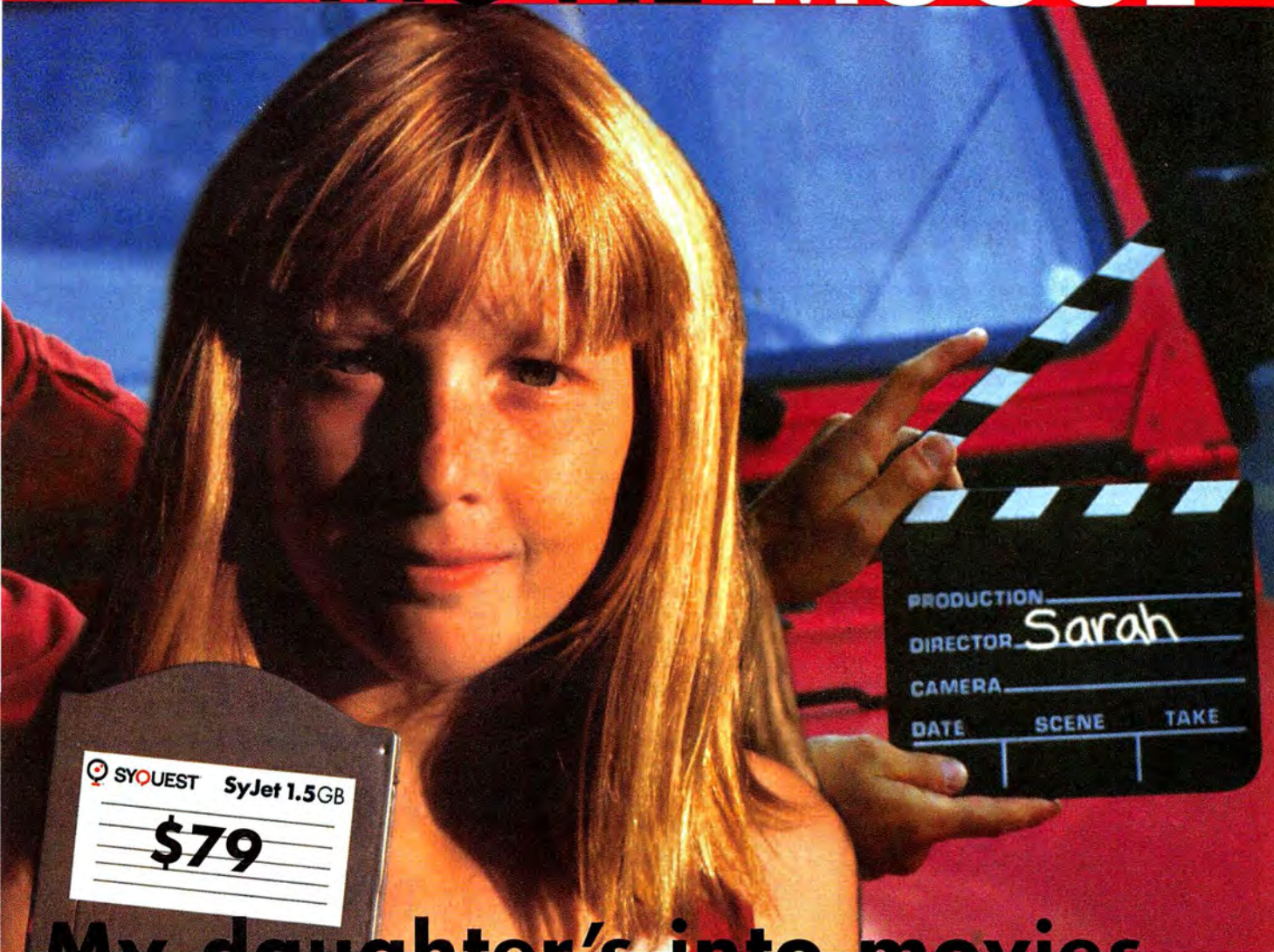
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# Emblaze WebCharger

GRAPHICS UTILITY DOES VERY LITTLE, SLOWLY AND POORLY

**I**N THE CONTINUING QUEST TO slim down Web-destined graphics, Geo Publishing has released a program it claims compresses images 400 percent more than JPEG. But aside from the curious fact that Emblaze WebCharger 1.0 outputs JPEG files exclusively, the compression results are nothing special and the limitations downright maddening.

Launching this stand-alone application—which, given its limited utility, really should have been an Adobe Photoshop plug-in—brings up a retro, 1950s-style interface that makes WebCharger difficult to decipher and use. The interface irregularities extend to core image-editing and file-manipulation functionality, such as scrolling, zooming, opening, and saving. For example, there's no magnifying-glass tool; you can zoom only to 50, 100, and 200 percent magnification.

Another significant drawback is that WebCharger can take up to ten times longer than Photoshop to open large PICT files, a downright deadly performance limitation. Compounding the problem, only one image file can be open at any time,



**In-Your-Face Interface** Emblaze WebCharger's elaborate interface, while interesting to look at, does little to enhance the program's dubious JPEG-compression and -export capabilities.

there's no way to batch-process images, there's no support for Macintosh drag and drop, and the resulting JPEG files can't load progressively (gradually resolve into view on a Web page). Even though the Mac and Windows versions of the application are both delivered on one CD-ROM, users of either platform will be confused by the gratuitous interface conventions.

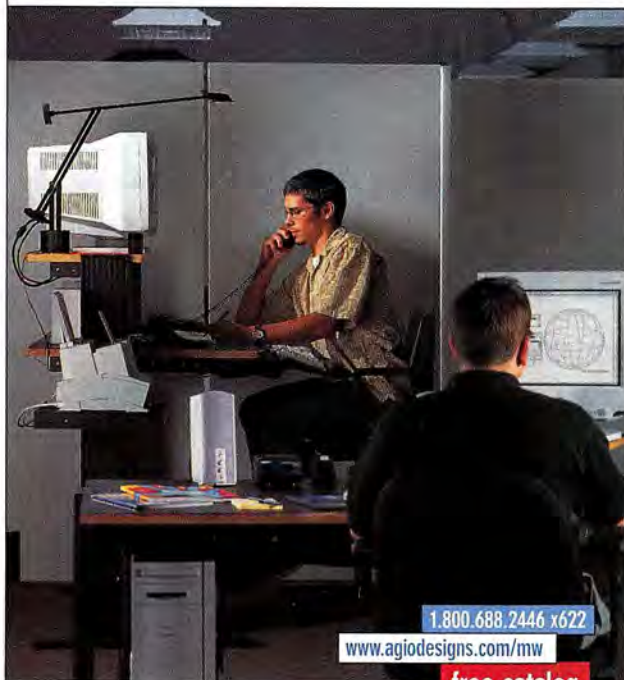
WebCharger does succeed in one of its

goals: you can apply different levels of standard JPEG compression to distinct areas of an image. But although basic selection tools let you choose portions of the image and apply specific compression settings to them, you can't save selection "templates" and apply them to multiple images. Geo also boasts that WebCharger, given a specific set of compression parameters, has the unique ability to predict file size and download time. But a competing and far superior product, Digital Frontiers' \$99 HVS JPEG 2.0 (a Photoshop plug-in), has that capability *and* offers essentially the same functionality as WebCharger; the only thing missing is the ability to apply different JPEG settings to separate portions of an image.

**Macworld's Buying Advice** Emblaze WebCharger is simply not worth buying. If you want to create the best-looking JPEGs with maximum flexibility, get HVS JPEG; it offers better, faster tools for about the same price.—DAVID BIEDNY

**RATING:** ½ **PROS:** Can apply more than one level of compression to an image. **CONS:** Confusing interface; sluggish performance; blurs image detail; no support for batch processing or drag and drop. **COMPANY:** Geo Publishing (818/703-8436, www.emblaze.com). **LIST PRICE:** \$99.95.

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# Myth: The Fallen Lords

A BEAUTIFUL REALM WITH A STEEP LEARNING CURVE

**R**IDING TO THE RESCUE OF A formulaic, stagnating genre, Myth: The Fallen Lords is poised to revitalize the category of real-time wargames. Set in a world where the forces of light are hard-pressed by armies of the dead, Myth sacrifices some traditional elements of the genre to raise tactical gaming to new heights.

Myth's 25 levels of beautifully rendered 3-D landscapes offer a vast variety of terrain, including barren deserts, murky swamps, and eerie caves. Each landscape poses a unique challenge, from adverse weather conditions to dangerous statuary. Myth's realism isn't limited to the scenery, either: soldiers who die bounce and break according to realistic physics, missile flight is affected by weather, and climbing a hill to reach your enemy is a sure way to die.

All this beauty isn't without flaws. Myth's back story is riddled with holes and inconsistencies, and the cut-scenes between battles are childish and disjointed. Even so, most players won't mind; these weaknesses are limited to garnishing elements that have no effect on game play.

You're offered a range of 16 types of military units, all rendered with stunning graphical detail and equipped with a wide range of capabilities. As in real warfare, you're given a limited number of units for each mission. As a result, Myth's game play is a realistic mixture of scouting, sorties, ambushes, and raids.

Partially due to the game's richness and variety, Myth's learning curve is steep. Since you can zoom and pan your vantage point a full 360 degrees, you have to master many more keys than in similar games. Myth also allows you to organize units into formations and control their facing—a realistic aspect that will thrill wargame fanatics—but these details will likely stun novices.

Once you've mastered its complexity, you'll be rewarded by Myth's network play. Although the game can't generate random maps in network mode—you're limited to a set of ten—Myth's highly addictive network play does offer a variety of games, each requiring a different strategy. In Body Count, for example, you simply slaughter opponents; Last Man on the Hill tests your timing and your ability to conserve lives.



**Beautiful Carnage** Breaking the wargame mold, Myth: The Fallen Lords offers visually stunning environments as well as realistic tactical challenges.

**Macworld's Buying Advice** The problems with Myth: The Fallen Lords pale in comparison to the game's stunning graphics, realistic-physics engine, engaging tactical realism, and addictive network play. More than just another strategy game, Myth is a giant step forward for the real-time-wargame genre.—DANIEL MADAR

**RATING:** **★★★★** **PROS:** Outstanding tactical game play; great graphics; realistic physical background; entertaining. **CONS:** Interface is difficult to master; animation and story line seem like afterthoughts. **COMPANY:** Bungie Software (312/255-9600, www.bungie.com). **LIST PRICE:** \$49.95.

# Shadow Warrior

GOOD 3-D ACTION, CRUMMY JOKES

**E**VEN FOR TALENTED ARTISTS, sequels are never easy. For every *Godfather: Part II*, there is a swarm of second-generation imitators that pale in comparison to the original. Shadow Warrior certainly isn't terrible, but although it delivers the basic ingredients necessary for a 3-D shoot-'em-up, the final mix is less than inspiring.

Strictly speaking, Shadow Warrior isn't really a sequel. Although the game uses the same first-person engine that powers Duke Nukem 3D: Atomic Edition (see "Great Games," January 1998), Shadow Warrior's designers have built a universe that feels like a mix of *Mortal Kombat* and *Indiana Jones*. As Lo Wang, you battle heavily armed ninjas, gore-throwing ghosts, and fire-breathing guardians . . . yawn. Truth be told, the waves of nasties feel a lot more like pop-up targets than menacing, otherworldly creatures. They're not visually interesting, they're dumb as posts, and—beyond minor differences in armament—there's not much to distinguish one piece of cannon fodder from another.

Lo Wang begins his journey equipped



**A Lo Blow** Between inane wisecracks, Shadow Warrior Lo Wang embraces the Western martial arts weapon colloquially known as the submachine gun.

with a *katana* (sword) and *shuriken* (ninja throwing stars) but rapidly acquires more deadly armament, ranging from the ever-present Uzi submachine gun up through grenade and rocket launchers. (Thoughtful players may note the irony of possessing the world's deadliest ninja warrior skills and still choosing to drop enemies at 20 yards with a shotgun.) Shadow Warrior's wit emerges when you're allowed to pick up severed heads and hearts of dead monsters and use them as magical weapons; a more liberal use of this type of creativity could have resulted in a much more interesting game.

Duke Nukem fans fell in love with the deadpan running commentary that Duke

volleyed even as all hell broke loose. True, Lo Wang delivers his share of quips, but where Duke's dry repartee provided a welcome Eastwood-esque spice, Wang's is a fountain of adolescent toilet jokes and ancient double entendres delivered in a fake Asian accent. Almost all the humor in Shadow Warrior is racist, sexist, or tasteless, but it's also so banal that it's nearly impossible to be offended. As with most action games, parents should think twice before handing Shadow Warrior over to a young child, but any teenager who's seen an R-rated movie or watched *Beavis and Butt-head* has probably seen and heard worse.

**Macworld's Buying Advice** Shadow Warrior isn't a bad game, but that's the best compliment I can pay it. If you're a die-hard fan of first-person shooters, you'll find Shadow Warrior a moderately entertaining addition to your collection. Otherwise, though, you should pass. Like so many sequels, Shadow Warrior can't match the magic of the original.—CAMERON CROTTY

**RATING:** **★★★** **PROS:** Moderately entertaining; interesting premise. **CONS:** Uninspired foes and weaponry; trite (and frequently racist) humor. **COMPANY:** MacSoft (612/577-0631, www.wizworks.com/macsoft). **LIST PRICE:** \$49.99.



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# Microsoft Repents

# Office 98

## Makes Up for Past Sins

WHEN IT COMES TO SOFTWARE DESIGN, PARANOIA can be a wonderful thing. Take, for instance, Microsoft and the Mac. Microsoft's 1994 attempts at Mac programs—Word 6, Excel 5, and PowerPoint 4—were so sluggish, awkward, and *Windows-like* that for the first time, upgrading seemed like a genuinely bad idea. Sales slipped dramatically for a time. Microsoft was forced to sell a “downgrade” of Word 5.1 to Word 6.0 users. Many—including *Macworld*—refused to install the copies of Word 6 and Excel 5 they'd bought and instead continued using the older versions. After this debacle, fear crept into Microsoft's heart. No one knows the exact cause: maybe Bill Gates can't stand rejection in any market; maybe

Microsoft realized that it couldn't take \$400 million in annual Mac-software sales for granted.

Whatever the reason, Microsoft began to throw enormous muscle, money, and imagination at the next generation of Macintosh software—Office 98. The company also made a tough but critical decision: to win back the gun-shy Mac community, Mac Office would contain genuine *Macintosh* programs, even if that meant adding elegance and features that Windows Office 97 lacks.

*Macworld* tracked down a prerelease version of Office 98 to help you prepare for when it ships early this spring (800/426-9400, [www.microsoft.com](http://www.microsoft.com); pricing unavailable at press time). And if what we've seen is any indication, Microsoft's paranoia paid off. Word 98, Excel 98, PowerPoint 98, and the new Outlook Express (for e-mail) are truly *Mac* products, complete with QuickTime playback, WYSIWYG font and style-sheet menus, sophisticated Mac-in-Talk speech control, drag-and-drop

by David Pogue



installation, and an elegant design. Microsoft learned a valuable lesson from the last version of Office: truly excellent software must be hand-tailored to each operating system's strengths.

Only one vestige of the Bad Old Days remains: these programs are bigger memory hogs than ever. If you opt for graphics and Internet features, Word demands 9MB; Excel, 6MB; PowerPoint, 12MB. (A Power Mac and CD-ROM drive are also required.) But this time, you can see where every kilobyte of that RAM is going—the list of new, intelligent, time-saving, and even *witty* features is prodigious. Office 98 is still bloatware, but it's no longer grim, mediocre bloatware; some of the new stuff is so beautifully done that you may actually call people over to your screen to show them.

As this guide to the new Office will reveal, the fun just went out of resenting Microsoft.

### An Angelic Upgrade

Installing Office 98 is this simple: drag the approximately 80MB Office 98 folder from the CD onto your hard disk. Your new programs are ready to run.

You're probably wondering how installation can be that easy. What about extensions? What about installing only selected applications?

Incredible as it may sound, Office 98 requires *no extensions*. The new Word, Excel, and PowerPoint run even if you've held the shift key down at start-up. The first time you run one of them, however, a special program called First Run launches itself and puts several *shared libraries*—patches of code that can be shared by several of the Office programs—into your Extensions folder. These libraries don't use any RAM at start-up, don't add to the Mac's start-up time, and don't cause start-up conflicts. In fact, most of them are stashed in a Microsoft Library folder; the six that remain in your Extensions folder are required by other programs, such as Microsoft Works and Internet Explorer, and Adobe PageMaker.

If you move or delete any of these library files, the next time you run an Office 98 program, the First Run program launches itself and replaces them. Never again will you be told, "The application 'Word' could not be opened because 'GeekyOLEMicrosoftLib' could not be found." This feature is what Microsoft's ads mean by "self-repairing programs" (a feature not available in Office 97 for Windows).

Be aware that the drag-and-drop installation gives you all three major Office programs (Word, Excel, and PowerPoint). If you'd like only one or two, use the traditional installer also on the CD.

**Tip:** After installation, don't move the Word, Excel, or PowerPoint icons out of their original Office 98 folder or they won't run. If you'd like to move these



icons to more-useful positions on your desktop, make aliases of them instead.

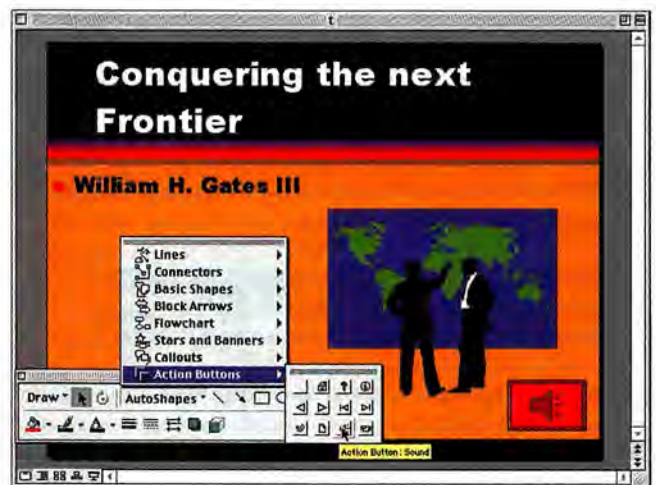
### Converting the Masses

If your colleagues use older versions of the Microsoft programs, you have three strategies for sharing. First, your friends could install Word 98 and PowerPoint 98 converters (available from Microsoft's

Web site), which allow you to open newer documents in older programs. (Be careful with *embedded* objects, such as an Excel 98 spreadsheet within a Word document; these components don't get converted.)

Second, you could save outgoing documents in the older format. In fact, you *must* use this method to give an Excel 98 document to a user with an older version of Excel, because there's no Excel translator for older versions.

Also, a new Office 98 feature lets you save and keep *all* your documents in older file formats. No



**PowerPoint Embraces Easier Graphics** PowerPoint now offers *AutoShapes*—resizable, movable graphic elements you can drop onto your slides. Some AutoShapes, such as the Action buttons shown here, can change slides, play a sound, launch a program, or go to an Internet address.

longer do you have to waste time clicking on Save As and repeatedly assuring the program that you know what you're doing. Choose Preferences from the Tools menu, click on the Save tab, and choose the older file format you prefer from the Save File As Type pop-up menu. Your documents will be saved and retained in the older file format. You'll be warned—only the first time you save—that certain high-tech Office 98 features will be lost in the translation.

### Immediate Affirmations

The greatest joy in using Office 98 programs comes in the first six seconds. That's about how long the prerelease Word, Excel, and PowerPoint each took

to launch on my 150MHz Power Mac—yes, seconds, not minutes. On a 266MHz Power Mac G3, all three launched in five seconds the first time and *three* seconds the second time.

The next surprise is the interface (see the sidebar “You’re Not in Word 6 Anymore”). The Mac OS 8 “platinum” look greets you every step of the way, right down to the shape of the dialog-box tabs, the shade of gray, and the window-shade box in the floating palettes. Such klutzy Word 6 “innovations” as pop-up-menu buttons have, mercifully, been abandoned, and the OK and Cancel buttons are finally *outside* the panels of tabbed dialog boxes, where they belong.

You’ll also notice the Office Assistant: an animated Mac Plus (Max) at the corner of your screen who dances, snores, and rearranges himself like a Rubik’s Cube as you work. This character is more than the mutant son of Bob, Microsoft’s ill-fated kiddy character for Windows; he’s a central message and help desk. Click on the character to summon the “What would you like to do?” box, where you can type plain-English phrases such as “make a Web page” to fire up Microsoft’s help screen. This beefed-up help-getting mechanism is a good thing, as Office



98 doesn’t come with a complete printed manual—just a task-based guidebook.

If this happy cartoon Assistant is wrecking the mood for the obituary you’re trying to write, by all means close its window. You’ll often get faster answers with the Contents and Index command in the Help menu anyway. However, if you become fond of the little guy,

use the installer in the Value Pack folder on your Office CD to try out the 13 additional characters. The less animated ones (Will) minimize distraction; others (Robot, Genius, Max) perform extra antics when you use the Find, Help, Save, Preferences, and Versioning commands.

**Tip:** If you decide to keep the Office Assistant around, don’t let its window overlap your document, otherwise you’ll experience a drop in scrolling speed.

**Joining the Congregation**

Office 98 offers plenty of goodies for the solo practitioner. But if your documents are regularly shared with others, you may find the new programs irresistible.

Although the last version of Office let you insert editorial comments into a document, figuring out how to actually use this feature required a hunt through the manual. Now, adding a comment in each program is as simple as a tool-bar click; annotation adds yellow highlighting in Word, a red cell corner in Excel, or a yellow sticky note in PowerPoint.

To read these notes, just hold your cursor over the highlighted area and the comment pops up in a balloon, complete with the name of the annotator. The Reviewing tool bar lets you jump directly to the next comment, even if it’s many pages away, without having to scroll and scan for notes.

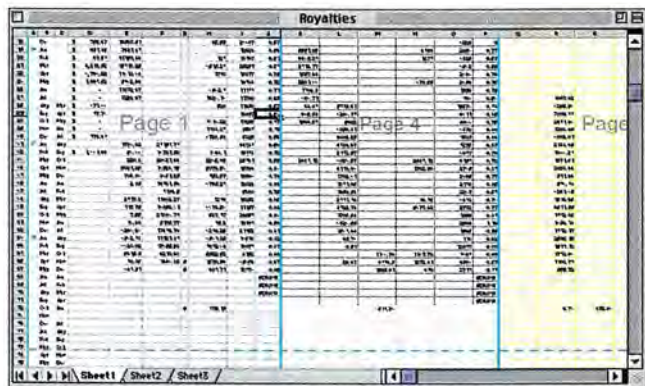
If you’re of the school that says, “A masterpiece isn’t written—it’s rewritten,” then you’ll find Word’s ingenious new Versions command to be worth 50 times its weight in disk space. This feature lets you keep all drafts of your work in a single, compact document. Internally, Word stores only the differences between each edition. As you complete each draft, you can take a “snapshot” of the document in its current state. Jumping back to a previous draft is as easy as selecting it from a list.

**Tip:** To spin off a particular version as a stand-alone file, view it on the screen and use the Save As command.

PowerPoint’s Custom Shows command is similarly useful. If you, like most slide-show users, recycle elements of your presentations in subsequent shows, now you don’t have to name and save each version separately. The Custom Shows feature lets you rearrange your elements into unlimited show variations within the original file, taking up no

Title	Royalties	Commission	Taxes	Net
7 Steps to a Better You	\$ 4,512.00	\$ 676.80	\$ 1,759.68	Royalties-Commission-Taxes
Anderson Lee and Me	\$ 456.00	\$ 68.40	\$ 177.84	\$ 209.76
Night of the Koala	\$ 78.00	\$ 11.70	\$ 30.42	\$ 35.88
Jennifer's Little Secret	\$ 1,325.00	\$ 198.75	\$ 516.75	\$ 609.50

**Enlightened Excel Formulas** Excel 98 is smart enough to know what you mean when you write a formula simply as “Royalties – Commissions – Taxes = Net.” Instead of making you define ranges, the program looks at what you’ve entered as your column and row headings. (Now you don’t even have to know what “defining ranges” means.)



**Excel Breaks with Tradition** Gone are the days of guessing which part of your spreadsheet might print. Excel 98’s Page Break Preview lets you drag thick blue lines to redefine where the edges of your printout will be. You can even edit cells in this preview.





# Sin and Redemption

Microsoft claims that in developing Office 98 it spent thousands of hours studying Mac people and programs—all in an effort to avoid the Windows-esque mishmash of Word 6, Excel 5, and PowerPoint 4. Has Microsoft righted

the wrongs of Office 4.2? Here's a report card. Features that have been fixed are in roman type; those that still need work are in *gray italics*.

## Office 4.2 sin

## Office 98: Redeemed or *still guilty?*

Mac-ignorant.	Supports and even extends Apple technologies and Mac-friendly features, such as drag and drop among programs, speech, QuickTime playback, balloon help, contextual menus, and more.
Slow as molasses.	Highly optimized; all three of our prerelease programs launched in less than five seconds on a fast Mac.
Requires 11 extensions at start-up.	Requires zero extensions at start-up.
Ugly; looks like Windows.	Mac OS 8 platinum standard, right down to the shapes of checkmarks.
Guzzles RAM.	<i>Guzzles more RAM than ever.</i>
Spelling checker chokes on Internet addresses.	Spelling checker ignores Internet addresses and already knows the names of every Fortune 1000 company on Internet addresses as well as the names of U.S. towns, common people and country names, and computer terms.
Renaming your hard disk stops Office cold.	No problem with changing disk names—but <i>now Office programs won't run if you drag their icons out of the original folder.</i>
A nightmare getting tables right.	New draw it! feature makes customizing tables easy: simply <i>draw</i> column and row lines where you want them, using an auto-straightening pencil tool and an eraser.
Hassle installing and removing programs.	Drag-and-drop installation, with no restart required; new Remove Office applet deletes all traces from your hard disk (except documents and templates).
Windows users get more software for same price.	<i>Windows users still get more, including a full-featured version of Outlook and a database program. Also for Windows only: Small Business and Professional editions with extra bundled software. Office 98's pricing was undetermined at press time.</i>
Hard to figure out how to read annotations.	Annotated material is highlighted in color. Simply rest cursor over it to see the notes in a pop-up balloon.
No multiple undo in Excel and PowerPoint.	Both programs now have a pop-up menu listing the last 16 actions; you can undo as many as desired in one step.
Excel cells and rows too limited.	You can type 32,000 characters into each cell (up from 255) and have 65,535 rows per sheet (up from 16,384).
Takes too many steps to insert AutoText (boilerplate) entries.	As you begin typing one of your preprogrammed AutoText entries, a pop-up balloon appears; press return to insert the full entry.
Wizards are disorienting.	A subway map appears in wizard dialog boxes, so you can see where you are in the process (and jump to other steps).
No fun.	Sounds and animations perk up boring work sessions; shimmering animated text gives dull memos the illusion of liveliness; talking, dancing, animated Office Assistant characters are infinitely more charming than Bill Gates.

list and an open message available simultaneously. Outlook can't get mail from America Online, as EMailer can, nor does it let you create folders for filing your read mail, as EMailer and Eudora both do.

### The Devil's in the Details

The big-ticket features in Office 98 may sell the upgrades. But what'll keep you happy long after the sale are the day-to-day features, the tiny touches that save you a few seconds here and there.

In Word, for example, the Save As dialog box proposes the first line of the document (such as "Chapter 34") instead of "Untitled" as the name of the file; a warning pops up when you open a document that may contain a macro virus (the program then offers to open the file without the macros); and the spelling-checker window shows the questionable word in bold, red, and in context.

AutoCorrect, meanwhile, has been smartened up enough to be genuinely useful. It not only corrects common misspellings as you type but also turns (c) and 1st into © and 1<sup>st</sup>, respectively; capitalizes sentences; correctly curls the apostrophe in phrases such as *the summer of '67*; corrects gaffes such as *int he mood* and *your a star*; and turns :) and :( into ☺ and ☹, respectively. (All right, *most* of the AutoCorrections are useful.)

**Tip:** If AutoCorrect makes a "correction" you don't like, press ⌘-Z to restore your original.

Excel's similar AutoCorrect feature offers to fix the 15 most common formula errors: extra spaces, mismatched quotes, transposed cell names (such as 1A), and so on. AutoComplete can finish an entry by looking at what you've typed earlier in the same column, much as Intuit's Quicken does; if you don't like its suggestion, simply type over it.

The improvements made to PowerPoint aren't as dramatic, but they're similarly oriented toward real-world users. Microsoft's goosed-up graphics tools—more clip art, more text effects, better drawing and alignment tools—are useful in all three programs, but PowerPoint benefits the most. (There are also many new text-animation and sound effects, but most are too gaudy for grown-ups.) Smallest but nicest of all: while you're writing your outline, a constantly updating miniature picture of the actual slide hovers nearby so that you don't have to keep switching between views just to see how your slide-in-progress is going to look.

### The Last Word

To atone for the dismal mistakes of Office 4.2, Microsoft says that it reviewed 5,500 Web-survey responses and dedicated 130 programmers and 25,000 hours of research to create Office 98. One

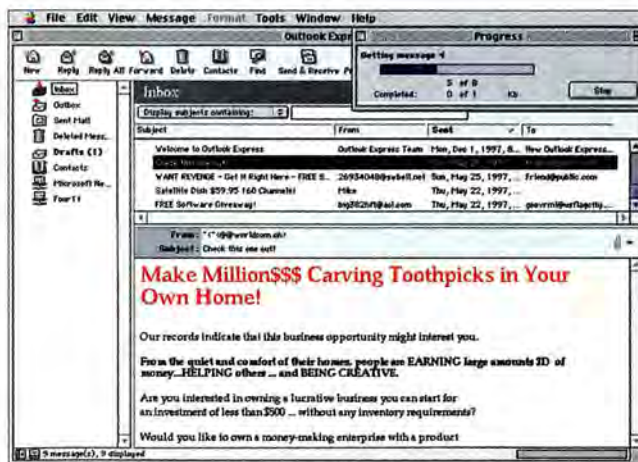


thing is clear: the company pursued every kind of Mac user with equal vigor. For the network administrator, Office 98 offers simple installation; a much-improved help system; and, as in the last version, file formats identical to those of Windows Office. For the power user, the program offers shareable spread-

sheets, rich revision tracking and commenting, reshapable text wrap around graphics, enhanced and automated graphics tools, deep ties to the Internet, and improved control over large documents.

But what if you're the kind of person who believes that a word processor is for writing, a spreadsheet is for numbers, and a presentation program is for slide shows? What if you have no intention of writing a book in Word, don't need Excel to query Oracle databases, and have no intention of turning your slide show into a Web site?

This time around, Microsoft reserved its most inspired efforts for you. Office 98's best features are the details: the tiny time-savers, the quiet helping hands, and the intelligent automation. After three years of selling us big, uninspired glop,



**Outlook Fairly Uplifting** The good news about Microsoft's new e-mail servant is that the interface is sleek, flexible, and attractive, and the program can read colorful, graphics-rich HTML mail. The bad news: Outlook Express can't compress files you've attached to your messages, and most e-mail is junk mail anyway.

Microsoft has turned Office 98 into a gift-wrapped digital apology. If the new focus on elegance, efficiency, and the Macintosh way are any indication, Microsoft really does know where we want to go today: home early. **m**

Contributing editor DAVID POGUE knows both the Mac and Microsoft very well, having authored *Macs for Dummies*, fifth edition (IDG Books Worldwide, 1997), and *The Microsloth Joke Book* (Berkley, 1997).

# WE'VE GOT 10 YEARS B 24 HOURS BEHI



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T H E M A C ' S

# Brightest STARS

PRESENTING THE *1998* EDITORS' CHOICE AWARDS

IT WAS AN EVENTFUL YEAR FOR APPLE Computer and the Macintosh: Gil Amelio stepped down, Steve Jobs stepped in, and clones were shown the door. It was also a year of change for us: *Macworld* and *MacUser* merged into a single magazine.

In the past, *MacUser* recognized the best Mac hardware and software with the Editors' Choice Awards, while *Macworld* bestowed its honors as the World Class Awards. So which would it be this time? We carefully weighed each option and consulted the greatest minds in the Macintosh market. Then, after much consideration, we flipped a coin. The Eddy Awards won.

So what does it take to be the Editors' Choice? No coin flips here: as always, we based our picks on the expert opinions of our editors and contributors. Whether we were looking at a business product, a tool for print publishers, software for multimedia and Web designers, or a development environment for a programmer, we made sure that the products we chose offered value, usefulness, and innovation.

Above all, we sought products that embody the creative spirit that defines the Macintosh.

To be eligible for Eddy consideration, the products had to have been released in the past year. (The old World Class Awards were open to all Macintosh hardware and software currently shipping.)

Not that the World Class Awards have gone away. They've been fashioned into a set of special awards recognizing the people, products, and technologies that have had the greatest impact on the Macintosh. And we've combined forces with the editors of *MacTech* magazine to give four awards to the year's best Macintosh development tools.

These are challenging times for Apple Computer and the millions of Macintosh faithful. But as you can see in these pages, hardware and software developers are still delivering the kinds of innovative products that help make the Mac a unique computing experience.

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Senior editor STEPHEN BEALE and senior associate editor JASON SNELL managed this year's awards.



John Russell

# Business Necessities



## THE BEST PRODUCTS TO GET THE JOB DONE

### PROFESSIONAL SYSTEM

**WINNER:** A dream come true for power users, the Umax SuperMac S900Base with Umax Edition Maxpowr Pro+ (\$4,090; 510/226-6886, [www.supermac.com](http://www.supermac.com)) holds its own against the fastest Windows NT workstations. Extra expansion slot and drive bays, along with Newer Technology's PowerPC 750 CPU upgrade, make this a winner for the most-demanding Macintosh users.

**RUNNERS-UP:** Apple's Macintosh PowerBook G3/233 (\$5,699; 408/996-1010, [www.apple.com](http://www.apple.com)) is the fastest laptop on the planet. Power Computing's PowerTower Pro 250 (discontinued) gives you 128MB of RAM on top of an already loaded system.

### BUSINESS PRINTER

**WINNER:** The QMS magicolor 2 CX (\$3,500; 334/633-4300, [www.qms.com](http://www.qms.com)) speeds along at 4 pages per minute in full color—16 ppm in black and white—providing unprecedented performance in an under-\$4,000 color laser printer.

**RUNNERS-UP:** Among other color laser printers, the Xerox DocuPrint C55mp (\$4,995; 203/968-3572, [www.xerox.com](http://www.xerox.com)) and Tektronix Phaser 560 (\$5,495; 503/682-7377, [www.tek.com](http://www.tek.com)) are solid choices.

### BUSINESS-PRODUCTIVITY TOOL

**WINNER:** It doesn't add much in the way of new database features, but Claris's FileMaker Pro 4.0 (\$199; 408/727-8227, [www.claris.com](http://www.claris.com)) is a giant leap forward for small businesses and home users who want an easy way to publish on the Web.

**RUNNERS-UP:** ClarisWorks Office (\$100; 408/727-8227, [www.claris.com](http://www.claris.com)) adds Web publishing features to the popular integrated productivity package. Investment Intelligence Systems Group's Wingz 2.1.1 (\$399; 913/663-4472, [www.wingz.com](http://www.wingz.com)) is a powerful spreadsheet that offers easy connection to corporate databases.

### DATA-PRESENTATION TOOL

**WINNER:** Data Description's Data Desk 6.0 Plus (\$795; 607/257-1000, [www.datadesk.com](http://www.datadesk.com)) adds even more speed to the fastest statistics program for the Mac. You also get new training aids in the form of ActiveStats and feature parity with the Windows 95/NT versions.

**RUNNERS-UP:** Benjamin/Cummings Science's ActiveStats 1.0 (\$30; 617/944-2630, [www.awl.com/bc](http://www.awl.com/bc)) is an inexpensive statistics training aid that includes a student version of Data Desk. Adrenaline Software's Numbers & Charts 1.0.2 (\$150; 418/658-9909, [www.adrenaline.ca](http://www.adrenaline.ca)) is a fast and flashy spreadsheet and charting tool based on Apple's ill-fated OpenDoc technology.

### PROJECTOR

**WINNER:** The Epson PowerLite 5000 (\$9,399; 310/782-0770, [www.epson.com](http://www.epson.com)) lives up to its name by offering excellent image and sound quality in a small, well-designed package.

**RUNNERS-UP:** Philips's Proscreen 4600 Endurance (\$7,999; 800/504-9978, [www.philips.com](http://www.philips.com)) and In Focus's LitePro 720 (\$8,499; 503/685-8888, [www.infocus.com](http://www.infocus.com)) are compact projectors that produce great images.

### COMMUNICATION HARDWARE

**WINNER:** Sonic Systems' QuickStream Pro (\$999; 408/736-1900, [www.sonic.com](http://www.sonic.com)) is a remote-access serv-

er that supports Internet protocols and AppleTalk. It offers a cost-effective way to bring telecommuting capabilities to small workgroups.

**RUNNERS-UP:** The Whistle Communications InterJet (\$1,995 to \$3,495; 650/577-7000, [www.whistle.com](http://www.whistle.com)) is an easy-to-use, toaster-size box that connects your LAN to the Internet. Big Island Communications' YoYo Pro (\$395; 650/237-0350, [www.big-island.com](http://www.big-island.com)) brings caller ID and ISDN capabilities to your Mac.

### NETWORKING SOFTWARE

**WINNER:** Neon Software's CyberGauge 2.0 (\$139 to \$695; 510/283-9771, [www.neon.com](http://www.neon.com)) is the only low-entry-cost, low-effort network-bandwidth-monitoring program for the Macintosh. It features an easy and attractive interface.

**RUNNERS-UP:** Miramar Systems' PC MacLAN 6.1 (\$161; 805/966-2432, [www.miramarsys.com](http://www.miramarsys.com)) helps bridge the platform gap by connecting PCs to Mac networks and vice versa. Vicom Technology's SoftRouter 4.0 (\$199; 415/691-9520, [www.vicomtech.com](http://www.vicomtech.com)) lets workgroups get on the Net by sharing one TCP/IP address.

### SCIENCE/ENGINEERING TOOL

**WINNER:** Wolfram Research's Mathematica 3.0 (\$1,300; 217/398-0700, [www.wolfram.com](http://www.wolfram.com)) remains top dog among math-notation programs.

**RUNNERS-UP:** Bentley Systems' MicroStation 95 (\$3,995; 610/458-5000, [www.bentley.com](http://www.bentley.com)) and Diehl Graphsoft's MiniCAD 7.0.1 (\$595; 410/290-5114, [www.diehlgraphsoft.com](http://www.diehlgraphsoft.com)) lead the way among Mac-based CAD packages.

## World Class Awards

### SOFTWARE PRODUCT OF THE YEAR

It fell short of the features originally promised for Copland, but Mac OS 8 (\$99; 408/996-1010, [www.apple.com](http://www.apple.com))—Apple's most comprehensive operating-system upgrade in years—was still a very bright spot in an otherwise difficult period for the company. With a



# Everyday Essentials



## PRODUCTS MAC USERS SHOULD'N'T DO WITHOUT

### GENERAL-PURPOSE SYSTEM

**WINNER:** The Apple Power Macintosh G3/255 Desktop (\$1,999; 408/996-1010, [www.apple.com](http://www.apple.com)) is an affordable system that leaves the latest Pentium machines in the dust.

**RUNNERS-UP:** The Power Computing PowerCenter Pro 210 (discontinued) was a faster version of our Consumer System winner. The Apple PowerBook 2400 (\$2,999; 408/996-1010, [www.apple.com](http://www.apple.com)) has a tiny keyboard, but otherwise it's a feature-packed subnotebook.

host of interface improvements—including spring-loaded folders, context-sensitive pop-up menus, and a sleek new gray-scale look—plus a multithreaded, PowerPC-native Finder, Mac OS 8 gave embattled Macintosh users something to cheer about.

And best of all, Mac OS 8 actually seemed to *improve* reliability, instead of causing major reliability problems—like some other system updates of recent years did.



Apple's solid OS upgrade

### CONSUMER SYSTEM

**WINNER:** The Power Computing PowerCenter Pro 180 (discontinued) was yet another example of a clone system that did Apple one better, giving consumers a fast and expandable system at a Kmart price.

**RUNNERS-UP:** The Motorola StarMax 5000/300 (discontinued) and the Umax SuperMac C600x/280 (\$1,995; 510/226-6886, [www.supermac.com](http://www.supermac.com)) are two other speedy yet affordable Mac OS systems.

### PERSONAL PRINTER

**WINNER:** The Epson Stylus Color 800 (\$399; 310/782-0770, [www.epson.com](http://www.epson.com)) redefined the standard for affordable ink-jet printers, producing razor-sharp text and near-photo-quality images—and fast.

**RUNNERS-UP:** The Epson Stylus Photo (\$500; 310/782-0770, [www.epson.com](http://www.epson.com)) uses six colors to produce eye-popping photo prints at a great price. The Apple Color StyleWriter 6500 (\$469; 408/996-1010, [www.apple.com](http://www.apple.com)) prints great text.

### DISPLAY

**WINNER:** The NEC MultiSync LCD2000 (\$7,999; 630/775-7900, [www.nec.com](http://www.nec.com)) costs a bundle, but it's got the most-stunning display quality of any LCD monitor we've seen.

**RUNNERS-UP:** The 17-inch Optiquequest V773 (\$510; 909/869-7976, [www.optiquequest.com](http://www.optiquequest.com)) and Sony Multiscan 220sf (\$799; 408/432-1600, [www.sony.com](http://www.sony.com)) and the 19-inch Mitsubishi Diamond Pro 91TXM (\$1,700; 714/220-2500, [www.mitsubishielectric.com/mea/](http://www.mitsubishielectric.com/mea/)) all offer excellent display quality.

### INTERNET CLIENT PROGRAM

**WINNER:** Claris EMailer 2.0 (\$49; 408/727-8227, [www.claris.com](http://www.claris.com)) offers a fast, searchable e-mail database and improved mail-filtering capabilities.

**RUNNERS-UP:** Pretty Good Privacy's PGP for Personal Privacy 5.0 (\$59; 602/944-0773, [www.pgp.com](http://www.pgp.com)) lets you seamlessly secure your e-mail privacy. Peter Li and Vincent Tan's NetFinder 1.2.1 (\$20; [www.ozemail.com.au/~pli/netfinder/](http://www.ozemail.com.au/~pli/netfinder/)) is an FTP client that lets you resume interrupted downloads.

### UTILITY

**WINNER:** Casady & Greene's Conflict Catcher 4.0.3 (\$70; 408/484-9228, [www.casadyg.com](http://www.casadyg.com)) is simply the best start-up manager you can buy. It gives you complete control over all your start-up files.

**RUNNERS-UP:** Connectix's Speed Doubler 8 (\$54; 415/571-5100, [www.connectix.com](http://www.connectix.com)) turbocharges your applications, even under Mac OS 8. Dr. Solomon's Software's Virex with Speedscan 5.8 (\$99; 617/273-7400, [www.dr Solomon.com](http://www.dr Solomon.com)) is the cream of Macintosh virus-protection software.

### INPUT DEVICE

**WINNER:** The CalComp UltraSlate (\$165 to \$340; 714/821-2000, [www.calcomp.com](http://www.calcomp.com)) offers a cordless, battery-free stylus and lets you set up hot keys in any application.

**RUNNERS-UP:** The Kensington Orbit (\$39; 415/572-2700, [www.kensington.com](http://www.kensington.com)) is an ergonomic trackball that feels like a mouse. The Wacom PL-300 (\$2,700; 360/896-9833, [www.wacom.com](http://www.wacom.com)) is a combination LCD monitor and digitizing

## HARDWARE PRODUCT OF THE YEAR

In a year when digital cameras propagated like fruit flies, the Olympus D-600L (\$1,299; 516/844-5000, [www.olympus.com](http://www.olympus.com)) stood out from the swarm: it's a 3x zoom camera with superior optics and a 1,280-by-1,024-pixel resolution. While it's not for everyone, the D-600L heralds a new era of affordable digital cameras that don't compromise on quality.



Olympus's stellar D-600L

tablet that lets you see your work right at the tip of your stylus.

#### GAME

WINNER: Bungie Software's **Myth: The Fallen Lords** (\$50; 312/563-6200, [www.bungie.com](http://www.bungie.com)) sets a new standard for 3-D realism in a computer game.

RUNNERS-UP: MacSoft's **Quake** (\$45; 612/509-7600, [www.wizworks.com/](http://www.wizworks.com/)

[macsoft/quake.htm](http://macsoft/quake.htm)) is a lightly customizable game. Red Orb's **Riven** (\$55; 415/382-4740, [www.redorb.com](http://www.redorb.com)) is the long-awaited—and beautifully realized—sequel to *Myst*.

#### GAMING HARDWARE

WINNER: CH Products' **F-16 Fighterstick** (\$120; 760/598-2518, [www.chproducts.com](http://www.chproducts.com)) puts you in the cock-

pit with solid, responsive controls; lots of buttons and switches; and easy-to-use setup software.

RUNNERS-UP: CH Products' **Pro Throttle** (\$100; 760/598-2518, [www.chproducts.com](http://www.chproducts.com)) is a small but feature-packed joystick. TechWorks' **Power3D** (\$250; 512/794-8533, [www.techworks.com](http://www.techworks.com)) is a 3-D-acceleration card that makes games really come to life.

## Dynamic Media



### THE BEST FOR MULTIMEDIA, VIDEO, AND THE WEB

#### WEB AUTHORIZING TOOL

WINNER: GoLive CyberStudio 2.01 (\$349; 650/463-1580, [www.golive.com](http://www.golive.com)) is a WYSIWYG Web-page editor that provides all the bells and whistles that Web authors need.

RUNNERS-UP: Optima System's **PageSpinner 2.0.1** (\$25; [www.algonet.se/~optima/pagespinner.html](http://www.algonet.se/~optima/pagespinner.html)) is a text-based HTML editor that walks you through the process of creating Web content. Macromedia **Flash 2** (\$199; 415/252-2000, [www.macromedia.com](http://www.macromedia.com)) lets you easily create low-bandwidth vector animations for the Web.

#### 3-D GRAPHICS PROGRAM

WINNER: ElectricImage **Broadcast 2.7.5** (\$2,495; 626/577-1627, [www.electricimage.com](http://www.electricimage.com)), from Electric

Image, brings ElectricImage Animation System features to video environments.

RUNNERS-UP: MetaCreations' **Infini-D 4.0** (\$599; 805/566-6200, [www.metacreations.com](http://www.metacreations.com)) offers powerful modeling and rendering tools for a reasonable price. Onyx Computing's **Tree Professional 4.0** (\$495; 617/876-3876, [www.onyxtree.com](http://www.onyxtree.com)) lets you create models of trees and shrubs that would do Mother Nature proud.

#### INTERNET SERVER SOFTWARE

WINNER: StarNine Technologies' **WebStar 2.1** (\$499; 510/649-4949, [www.starnine.com](http://www.starnine.com)) is the king of Mac OS Web servers. Version 2.x offers dramatic speed improvements.

RUNNERS-UP: Maxum Development's **Rumpus 1.1** (\$195; 630/830-1113, [www.maxum.com](http://www.maxum.com)) is an easy-to-use FTP server; Blue World Communications' **Lasso 2.0** (\$399; 425/646-0288, [www.blueworld.com](http://www.blueworld.com)) ties FileMaker databases to the Web.

#### MULTIMEDIA AUTHORIZING SOFTWARE

WINNER: Boasting a simplified Score window and other new features, Macromedia's **Director 6 Multimedia Studio** (\$995; 415/252-2000, [www.macromedia.com](http://www.macromedia.com)) remains the premier tool for professional multimedia development.

RUNNERS-UP: Macromedia's **Authorware 4.0.1** (\$2,999; 415/252-2000, [www.macromedia.com](http://www.macromedia.com)) is a solid upgrade to the high-end multimedia tool. Apple's **QuickTime VR Authoring Studio** (\$395; 408/996-1010, [www.apple.com](http://www.apple.com)) is a comprehensive but easy-to-use QuickTime VR authoring package.

#### DIGITAL-VIDEO HARDWARE

WINNER: Combining a PCI card and software, Radius's **MotoDV** (\$450; 408/541-6100, [www.radius.com](http://www.radius.com)) pulls video into your Mac through the speedy new FireWire interface.

RUNNERS-UP: ProMax's **FireMax** (\$595; 714/727-3977, [www.promax.com](http://www.promax.com)) is a costly but full-featured FireWire card for video pros. The Canon **Optura** (\$2,495; 516/328-5000, [www.ccsi.canon.com](http://www.ccsi.canon.com)) is a digital camcorder and digital still camera.

#### DIGITAL-VIDEO UTILITY

WINNER: Terran Interactive's **Media Cleaner Pro 2.0** (\$359; 408/278-9065, [www.terran-int.com](http://www.terran-int.com)) is a video-compression utility with Adobe Premiere export.

RUNNERS-UP: DigiEffects' **CineLook** (\$695; 415/841-9901, [www.digieffects.com](http://www.digieffects.com)) adds film grain to digital video. MetaCreations' **Studio Effects** (\$695; 805/566-6200, [www.metacreations.com](http://www.metacreations.com)) adds special-effects capabilities to Adobe After Effects.

## World Class Awards

#### TECHNOLOGY OF THE YEAR

Intel may have the lion's share of the CPU market, but thanks to the **PowerPC 750**—aka the G3—IBM Microelectronics and Motorola Semiconductor Products Sector have the fastest chip, at least for now. It's not just the megahertz rating that makes this CPU a speed demon; with a backside cache connected directly to the chip, a 266MHz PowerPC 750 outperforms even a 350MHz PowerPC 604e.

# Publishing and Design



## THE BEST STUFF FOR PUTTING IT ON PAPER

### DIGITAL CAMERA

**WINNER:** Olympus's **D-600L** (\$1,300; 516/844-5000, [www.olympusamerica.com](http://www.olympusamerica.com)) stands out from the crowd. Superior optics, 3X zoom, and 1,280-by-1,024-pixel resolution make this camera a winner.

**RUNNERS-UP:** The Kodak **DC210 Zoom Digital Camera** (\$899; 716/724-4000, [www.kodak.com](http://www.kodak.com)) offers 2X zoom and 1,024-by-768-pixel resolution in a compact body. The Sony **Digital Mavica** (\$600; 201/930-1000, [www.sony.com](http://www.sony.com)) uses a unique—if familiar—storage mechanism: a floppy disk.

### PUBLISHING TOOL

**WINNER:** QuarkXPress 4.0 (\$995; 307/772-7100, [www.quark.com](http://www.quark.com)), the first upgrade to the leading page-layout program in four years, extends its lead over Adobe PageMaker, with character styles, long-document-production features, and great drawing tools.

**RUNNERS-UP:** With **Acrobat Pro 3.01** (\$295; 408/536-6000, [www.adobe.com](http://www.adobe.com)), Adobe's portable-document technology is becoming the lingua franca of prepress operations.

### ART APPLICATION

**WINNER:** With its revised interface, automation functions, and special-effects layers, Adobe **Photoshop 4.0.1** (\$895; 408/536-6000, [www.adobe.com](http://www.adobe.com)) retains its commanding lead.

**RUNNERS-UP:** MetaCreations' **Painter 5** (\$299; 805/566-6200, [www.metacreations.com](http://www.metacreations.com)) adds a host of new features to the popular natural-media painting program. Adobe **Illustrator 7.0.1** (\$249; 408/536-6000, [www.adobe.com](http://www.adobe.com)) offers a new interface that will be familiar to Photoshop users.

### SCANNER

**WINNER:** Great scans and great software are a winning combination for the Epson **Expression 636 Professional** (\$1,599; 310/782-0770, [www.epson.com](http://www.epson.com)), a fast 600-dpi flatbed scanner.

**RUNNERS-UP:** The Umax **Astra 600S** (\$180; 510/651-4000, [www.umax.com](http://www.umax.com)) offers good image quality for an affordable price, while the Umax **PowerLook II** (\$1,600; 510/651-4000, [www.umax.com](http://www.umax.com)) is a good choice for designers who want to reduce their reliance on service bureaus.

### AUDIO SOFTWARE

**WINNER:** Mark of the Unicorn's **Free-Style 2.0** (\$195; 617/576-2760, [www.motu.com](http://www.motu.com)) is a MIDI sequencer that lets musicians play at their own pace.

**RUNNERS-UP:** Steinberg North America's **Cubase VST 3.5.2** (\$399; 818/993-4161, [www.us.steinberg.net](http://www.us.steinberg.net)) is the first sequencer to accept audio-effects plug-ins. BIAS's **Peak 1.63** (\$499; 415/331-2446, [www.bias-inc.com](http://www.bias-inc.com)) is a powerful audio editor.

### GRAPHICS PLUG-IN

**WINNER:** Altamira Group's **Genuine Fractals** (\$159; 818/556-6099, [www.altamiragroup.com](http://www.altamiragroup.com)) compresses high-quality images into incredibly tiny files.

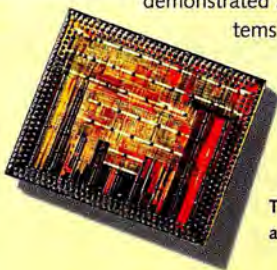
**RUNNERS-UP:** Alien Skin Software's **Eye Candy 3.0** (\$199; 919/832-4124, [www.alienskin.com](http://www.alienskin.com)) is a wide-ranging collection of Photoshop plug-ins that lets you add special effects to your images. Extensis **PhotoTools 2.0** (\$130; 503/274-2020 ext. 135, [www.extensis.com](http://www.extensis.com)) is a production-oriented Photoshop plug-in collection.

### PUBLISHING UTILITY

**WINNER:** Extensis **Preflight Pro 1.0** (\$400; 503/274-2020 ext. 135, [www.extensis.com](http://www.extensis.com)) gives service bureaus a powerful but easy-to-use tool for catching errors in QuarkXPress files—before they become costly output problems.

**RUNNERS-UP:** DiamondSoft's **Font Reserve 1.0** (\$100; 415/381-3303, [www.fontreserve.com](http://www.fontreserve.com)) makes sense of your fonts by storing them in a database. Extensis **QX-Tools 2.0** (\$100; 503/274-2020 ext. 135, [www.extensis.com](http://www.extensis.com)) is a handy set of utilities no QuarkXPress user should be without.

Apple offers 750-based systems running at 233MHz and 266MHz; before losing their Mac OS licenses last summer, Power Computing and Motorola Computer Group had demonstrated 750-based systems that ran even faster.



The PowerPC 750, aka the G3

## CARY LU TECHNOLOGY LEADERSHIP AWARD

This new award, named in honor of the late *Macworld* contributing editor Cary Lu, recognizes significant technologies that found their way into Macintosh products. The first Cary Lu Technology Leadership Award goes to the Epson **Stylus Photo** (\$500; 310/782-0770, [www.epson.com](http://www.epson.com)), an inkjet printer that produces stunning photographic prints by adding a light cyan and light magenta to the conventional CMYK process colors. Thanks to the Stylus Photo, six-color printing technology is no longer limited to high-end digital presses and large-format printers.



Epson's impressive Stylus Photo

# Programmer's Toolkit



## MACWORLD AND MacTech PICK TOP DEVELOPER TOOLS

### DEVELOPMENT ENVIRONMENT

**WINNER:** With **CodeWarrior Professional Release 2** (\$449; 512/873-4797, [www.metrowerks.com](http://www.metrowerks.com)), Metrowerks provides a single environment from which Macintosh programmers can create applications for the Mac OS, Windows 95, Windows NT, and

other platforms. Whether you write in C, C++, Object Pascal, or Java, CodeWarrior provides a home.

**RUNNERS-UP:** Bare Bones Software's **BBEdit 4.5.1** (\$119; 617/778-3100, [www.barebones.com](http://www.barebones.com)) remains the tool of choice for developers who hand-code their HTML. Staz Software's **FutureBASIC II** (\$230; 601/255-7085, [www.stazsoftware.com](http://www.stazsoftware.com)) is the clear leader among BASIC programming tools for the Mac.

### DEVELOPER TOOL

**WINNER:** Uni Software Plus's **Voodoo 1.8** (\$230; 43-7236-3338-82, [www.unisoft.co.at](http://www.unisoft.co.at)) solves an important problem—keeping track of multiple file versions—in an elegant and powerful way. It is remarkably stable and offers solid integration with CodeWarrior.

**RUNNERS-UP:** MindVision Software's **Installer Vise 4.6.1** (\$695; 402/477-3269, [www.mindvision.com](http://www.mindvision.com)) is an excellent software-installer creator for the Mac. Onyx Technology's **Spotlight DR2** (\$200; 941/795-7801, [www.onyx-tech.com](http://www.onyx-tech.com)) is a solid stand-alone debugging utility.

### RAPID-DEVELOPMENT TOOL

**WINNER:** Strong cross-platform features make ACI US's **4th Dimension 6** (\$299; 408/252-4444, [www.acius.com](http://www.acius.com))

the best choice for rapid development of custom database applications.

**RUNNERS-UP:** Digitool's **MCL 4.1** (\$675; 617/441-5000, [www.digitool.com](http://www.digitool.com)) is a rich development tool based on the current industry standard Common Lisp programming language. Water's Edge Software's **Tools Plus 3.3** (\$150 to \$200; 416/219-5628, [www.interlog.com/~wateredg/](http://www.interlog.com/~wateredg/)) speeds application development in Metrowerks' CodeWarrior and Symantec Think C/C++ or Think Pascal compilers.

### TOOL FOR NEW TECHNOLOGIES

**WINNER:** Metrowerks' **CodeWarrior Latitude** (\$399; 512/873-4700, [www.metrowerks.com](http://www.metrowerks.com)) leads developers to the next generation of operating systems by helping them move their Mac OS code to the Rhapsody Yellow Box.

**RUNNERS-UP:** AAA+ Software F&E's **Joy** (\$795 to \$4,995; 43-1-533-6665-0, [www.aaa-plus.com](http://www.aaa-plus.com)) is really a pair of Rhapsody development tools: Joy Explorer is an excellent learning aid, while Joy Developer lets you quickly create Rhapsody applications. Symantec's **Visual Café for Macintosh 1.0.2** (\$300; 408/253-9600, [www.symantec.com](http://www.symantec.com)) offers a rich set of Java development tools. **m**

## World Class Awards

### IMPACT AWARDS

One you know, the other you probably don't. But Apple interim CEO **Steve Jobs** and former Power Computing marketing manager **Mike Rosenfelt** both made a big difference in the Mac market last year.

Steve Jobs took Apple's reins in July and quickly made his mark on the company he cofounded. He reworked the board of directors, forged a controversial deal with Microsoft, and gave a new sense of direction to what had been a rudderless enterprise. But he also killed Apple's Mac OS-licensing program, and by cutting out the clone vendors, he cut off a prime source of



Steve Jobs

innovation. Whether you agree or disagree with his moves, he has clearly had an impact. While *Macworld* believes it is too soon to say whether Jobs will ultimately be good for Apple, we can't deny his impact.

Mike Rosenfelt never made the cover of *Time* or *Newsweek*, but the guerrilla marketing techniques he brought to Power Computing helped reenergize the Macintosh community in a manner we haven't witnessed since a pirate flag flew above Apple's Cupertino HQ many years ago.

He was the man behind the bullhorn at Power Computing's



Mike Rosenfelt

Macworld Expo pep rallies and the brains behind such memorable stunts as bungie-jumping platforms and a fleet of Mac-promoting humvees. At a time when Apple

seemed never to have its act together, Rosenfelt and Power Computing inspired us all to fight back for the Mac.

### LIFETIME ACHIEVEMENT AWARD

**Richard Zulch** is one of the unsung heroes in Macintosh history. He's the cofounder of Dantz Development, the company that gave us Retrospect, but his contributions to the Mac go far beyond backup-utility software.

Zulch played a key behind-the-

scenes role in developing nearly every major storage driver for the Macintosh. You may take it for granted that your Mac works with hard drives from companies other than Apple; it was Zulch who helped make it happen. Zulch was also a driving force behind HFS+, the new file system introduced with Mac OS 8.1 (see *News*, this issue). None of his work had a direct financial benefit for Dantz; instead, he gave freely of his time so that Macintosh users could have a better



Richard Zulch

computing experience. His has truly been a lifetime of great achievement on behalf of the Macintosh.

# Digital Mavica®

Imagine That. On a Floppy.™



**SHOOT!**

10x optical zoom lens • Up to 500 shots per battery charge\* • 5 exposure settings • 4 in-camera special effects



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Standard 3.5" floppy disk • No wires, cables or drivers • Up to 40 images per floppy • Universal JPEG file format

Database Files



Spreadsheets

**PROJECTED 1998**

1998	\$5630	\$5630	\$5630
1997	\$4778	\$4778	\$4778
1996	\$4129	\$4129	\$4129
1995	\$3736	\$3736	\$3736
1994	\$3369	\$3369	\$3369
1993	\$2488	\$2488	\$2488
1992	\$1957	\$1957	\$1957

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**SHOW!**

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## A PARENT'S WISH

"A computer my kids will **learn** from and I can put to **work**."



**C600** The SuperMac C600 line from UMAX is perfect for your educational computing needs. Choose from a range of quality machines that all deliver high-end performance at a very low cost. With the C600, you can do easy projects such as calendars, newsletters, term papers, greeting cards, and more. All this from UMAX, a company committed to providing the best in customer service and support for Mac OS systems. The SuperMac C600. It's perfect for the office or home.

### C600vPC/240\*

Now you get Windows and Mac capabilities on one powerful machine!

- 240MHz 603e PowerPC Processor
- 3.3GB IDE hard drive
- 24x CD-ROM Drive
- 32MB RAM, 256K L2 Cache
- Stereo Multimedia External Speakers
- 10Base-T Ethernet
- Connectix Virtual PC (DOS edition) and other software
- Expandable Mini-Tower Case

Other models and specifications available.  
\*Monitor not included.

For more information on where to purchase the C600, call 1-888-625-UMAX or visit us at <http://www.umax.com>.



PowerPC



High-Upgradeability

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Computer Corporation

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Circle 99 on reader service card

BY BROOKE C. WHEELER

You're running out of patience—not to mention space. You've been spending too much time in data-transfer limbo, waiting to move your huge graphics, sound, or video files from external storage. And you're outgrowing your existing storage capacity; maybe you've almost filled your current hard disk. It's time for more space—and more speed.

So what are your options? Portability isn't the main issue for your archiving and access needs, and portable removable-media drives have limitations such as slower data transfer and degradable media. Another high-capacity SCSI-2 Fast drive (the kind most Macs have as their internal drives) won't give you the faster transfer rate you need for huge files. And a low-end RAID will keep bulky files at your fingertips at high speed—but also at a high price. If you want high-capacity storage that's less costly than RAID and faster than your current SCSI hard drive, your best choice is a drive with the speedy kick of Ultra SCSI.

Ultra SCSI delivers where it matters; it's not enough to buy a faster hard drive—more important is the efficiency of your drive's input/output. Ultra SCSI can deliver up to double the data-transfer speeds of SCSI-2 and quadruple that of your old SCSI-1 devices: 40-MBps maximum throughput for Ultra Wide

# Store More Faster

Macworld Lab Finds the  
**Speediest** 9GB Hard Drive



SCSI, 20 MBps for Ultra Narrow SCSI, 20 MBps for SCSI-2 Fast Wide, 10 MBps for SCSI-2 Fast and SCSI-2 Wide, and 5 MBps for SCSI-1.

It's critical to remember that to achieve the maximum drive performance, both the drive and the SCSI circuitry must support the same speed. Thus, to get the 40-MBps performance of an Ultra Wide SCSI drive, you must use the drive with an Ultra Wide SCSI port or card. No Macs have such a port, although Umax Computer's SuperMac S900/250 systems include an Ultra Wide SCSI card. Such cards cost about \$500 when purchased separately and \$200 to \$400 when purchased with a drive.

Remember that if you use, for example, a SCSI-2 Fast drive on an Ultra Wide SCSI port, you'll be limited to SCSI-2 Fast's 10-MBps transfer rate. You can connect an Ultra Narrow SCSI drive to an internal SCSI-2 Fast connector and an Ultra Wide SCSI drive to an internal SCSI-2 Wide connector (which some SCSI cards have), but you'll need an adapter to connect to an external SCSI-1 port or to connect a Wide drive to a non-Wide connector or a non-Wide drive to a Wide connector. Ultra Wide SCSI cards come with both Ultra Wide and Ultra internal connectors, but if you use both internal connectors, you won't be able to use the external connector.

Remember, too, that most Macs use an internal SCSI-2 Fast connector and an external SCSI-1 port. And keep in mind

that Ultra SCSI cards are PCI-based, so they won't work in NuBus-based Macs.

You can find internal drives at many computer stores and in some catalogs. If you have the open drive bays in your Mac, we recommend internal drives, which take less space and cost less than external models. However, note that some case designs may cause drives to overheat. On the other hand, external drives run the risk of being damaged when they are moved or bumped.

### The Ultra Difference

To assess the options, Macworld Lab tested eleven 9GB Ultra Wide SCSI external hard drives that can deliver data-transfer rates up to 40 MBps. We tested each drive both with and without an Ultra Wide SCSI PCI adapter card recommended by the manufacturer or included with the drive on request. With an Ultra Wide SCSI adapter card installed, opening and saving a 20MB Adobe Photoshop file was an average of 30 percent faster and copying files to and from the drives was an average of 34 percent faster.

For example, it took us 21.7 seconds to open a 20MB Photoshop file stored on the MacProducts USA ([www.blol.com](http://www.blol.com)) Magic Ultrastar 2XP drive without the adapter card, but installing the card cut that time by 41 percent, to 12.8 seconds. Saving a 20MB Photoshop file to the Q9000W drive from APS Technologies ([www.apstech.com](http://www.apstech.com)) took 15.3 seconds without the card, but the card cut the wait

by more than 21 percent, down to 12.0 seconds. Copying files to the Jems Data Unlimited ([www.jemsdata.com](http://www.jemsdata.com)) 9000C drive took an average of 7.2 seconds without the card and 5.2 seconds with—a speed gain of more than 28 percent.

Four of the drives we tested—the Jems drive, the MicroNet Technology ([www.micronet.com](http://www.micronet.com)) Premier Wide 9100 drive, and both MacProducts drives—are available bundled with (or recommended for use with) an Atto Technology ExpressPCI card (\$345 street price; 716/691-1999, [www.attotech.com](http://www.attotech.com)). The other seven drives come with the Adaptec PowerDomain 2940UW card (\$349 list price; 408/945-8600, [www.adaptec.com](http://www.adaptec.com)).

Both cards are essentially the same in SCSI acceleration, so either should suit your purposes just fine. Which card was installed with which drive didn't affect our results; the Atto and Adaptec cards were scattered up and down the performance scale, but the Adaptec card costs less, which may tip the balance toward that card.

### Beyond Ultra SCSI

The performance of the drives we tested is also determined by other factors, including which drive mechanism is used, how fast the mechanism spins (its rpm), and how large a cache the drive has.

All the drives we tested have a 512K cache, except the APS Q9000W and the La Cie ([www.lacie.com](http://www.lacie.com)) D2, which have 1MB each. The larger cache turned out to

## 9GB Ultra SCSI Hard Drives Compared

Company	Product	Mouse Rating	List Price (no Ultra Wide SCSI card)	List Price (with Ultra Wide SCSI card)	Phone	Mechanism
APS Technologies	Q9000W	★★★½	\$1,000	\$1,200	816/483-1600	Quantum XP39100W
	ST9000W	★★★	\$1,250	\$1,450		Seagate ST19171W
	<b>EDITORS' CHOICE</b> ST9100W	★★★★½	\$1,100	\$1,300		Seagate ST19101W
D.C. World Connections	WCST19101W	★★★	\$1,170	\$1,600	612/921-9778	Seagate ST19101W
Direct Source	DSC19101W	★★★½	\$1,119	\$1,319	612/884-0527	Seagate ST19101W
Jems Data Unlimited	9000C	★★★	\$2,075	\$2,450	508/749-3660	Seagate ST19171W
La Cie	D2	★★★½	\$900	\$1,130	503/844-4500	Quantum XP39100W
MacProducts USA	Magic Cheetah ST19101W	★★★½	\$1,330	\$1,679	512/485-4600	Seagate ST19101W
	Magic Ultrastar 2XP	★★½	\$950	\$1,299		IBM DCHS09W
MicroNet Technology	Premier Wide 9100	★★★	\$1,795	\$2,294	714/453-6100	Seagate ST19101W
ProDirect	<b>EDITORS' CHOICE</b> PDS19101W	★★★★½	\$1,099	\$1,299	612/941-1805	Seagate ST19101W



greatly boost those drives' scores on our Claris FileMaker Pro tests—most notably for the La Cie D2—where searching through and sorting a database benefits from the extra cache because much of the same data is being reexamined.

This bumped up the final scores for those two drives, but misleadingly so if your primary work is not in database management. The APS Q9000W and the La Cie D2 actually consistently had average or below-average scores on all the other tests.

This is due in part to the slower spin rate (7,200 rpm) of the two drives. Five of the drives we tested—the APS Q9000W and ST9000W, the Jems 9000C, the La Cie D2, and the MacProducts Magic Ultrastar 2XP—run at 7,200 rpm. The faster the spin rate, the faster the drive head can access data on the disk, which translates into faster performance.

Two of the slowest performers (the APS Q9000W and the La Cie D2) also share the same mechanism: the Quantum XP39100W. The slowest performer overall (MacProducts' Magic Ultrastar 2XP) has the only IBM mechanism of the bunch, the DCHS09W.

The strongest-performing combination was a Seagate ST19101W mechanism running at 10,000 rpm. This is the mechanism in six of the drives we tested (including the two that tied for Editors' Choice): APS Technologies' ST9100W, the ProDirect (www.pdisales.com) PDS19101W, MacProducts' Magic Cheetah ST19101W,

the Direct Source (www.pdisales.com) DSC9101W, the D.C. World Connections (www.deworldconnections.com) WCST19101W, and MicroNet's Premier Wide 9100.

In general, rpm and a quality mechanism are better determiners of overall performance than cache size. But the cache still plays a vital role in speeding up certain types of execution, as is evidenced by the two 1MB-cache drives that topped out the FileMaker results.

### Buying Big: A Better Bargain

For the extra money you're investing in Ultra SCSI, it makes sense to buy a drive with enough capacity to last. Besides, piling multiple smaller-capacity Ultra SCSI drives onto one chain may be risky: Its faster speeds make Ultra SCSI more sensitive to electronic disturbance, which is more likely on longer SCSI chains. While two 4.3GB drives might cost a little less than one 9GB drive, the difference is not worthwhile for most people and the gap is closing every month.

Also, the cost per megabyte of hard drives has gradually fallen, giving you a better bargain—and more reason to buy a higher-capacity drive. Consider that in late 1996, a 4GB drive would have cost you 32 cents per megabyte and a 9GB drive would have run you an average of 33 cents per megabyte. In mid-1997, prices for drives with capacities from 4GB to 9GB averaged around 23 cents per megabyte.

Prices are still falling. The 9GB drives we tested in late 1997 cost an average of 13 cents per megabyte; factoring in the additional cost of the adapter card, they still cost only 17 cents per megabyte.

### The Cost of Ultra

For the extra speed benefits of Ultra SCSI, you'll pay from 2 cents to 5 cents more per megabyte for these 9GB drives: that's \$185 to \$460 extra. The drives from APS and ProDirect cost 2 cents more per megabyte for the Ultra SCSI benefit, and the drives from Direct Source and La Cie, as well as MacProducts' Magic Ultrastar 2XP, cost 3 cents more. Less of a bargain, the Jems drive (the most expensive drive) and the MacProducts Magic Cheetah ST19101W cost 4 cents more per megabyte. The second-most-expensive drive, the MicroNet Premier Wide 9100, costs a whopping 5 cents more per megabyte.

Is it worth it? You pay an average of

17 percent more for a 32 percent boost in speed. For example, if you buy an APS ST9100W, for 2 cents more per megabyte (which comes to \$185 for the drive), you can save an average of 5 seconds every time you open or save a 20MB Photoshop file on the drive. When you add it up long-term, the time saved is worth that extra money.

However, some drives—such as those from Jems and MicroNet—don't necessarily justify their higher cost with better performance. For the same 5-second Photoshop savings, you'll need to spend 4 cents more per megabyte (\$370 total) for the Jems drive and 5 cents more (\$460 total) for the MicroNet drive. Plus, those two drives had only average or below-average scores on the majority of the tests.

### The Right Setup

Your drive should include a complete set of support materials, including a formatting utility, an updated driver, cables, and manuals for both software and hardware. All the drives reviewed here include the necessary cables plus a five-year warranty. And all have the same capacity after formatting: 8.4GB.

**Older Drives** Because of Ultra SCSI's sensitivity to electronic disturbance, it's better to keep your SCSI-2 and SCSI-1 devices (hard drives, scanners, and removable drives) hooked up to the Mac's regular SCSI-2 port—especially trickier devices such as scanners that tend to have termination problems.

**Drive Utilities** Every drive comes with a disk-formatting utility. We found that the most straightforward and simplest-to-use utility was FWB's Hard Disk Toolkit Personal Edition 2.06, which comes with the ProDirect PDS19101W. The two utilities that were more of a hassle to use were MicroNet's DiskWorks 3.2.5 and La Cie's Silverlining 5.8.1.

The drives from Direct Source, Jems, MacProducts, and D.C. World Connections come with CharisMac Engineering Anubis 2.56, and the APS drives come with APS PowerTools 4.1; these were comparable and reasonably easy to use. We don't recommend switching utilities, because we found slight discrepancies in test results when different utilities were used. It's best to use the utility recommended (and included) by the manufacturer.

**Documentation** A few of the drives we tested, notably the APS drives and the La Cie D2, come with excellent docu-

#### Comments

Great price; one of the slowest performers in most tests; built-in, active termination.

Mediocre performance for a higher price, but with built-in, active termination.

Excellent performance; reasonable price; built-in, active termination; good documentation.

Average speed for above-average price and clunker of a case.

Average performance; average price; no hardware manual.

Mediocre speed at a hefty price; no hardware manual.

Budget price; mediocre performance; good documentation; built-in, active termination.

A little pricey; decent performance; no drive-setup documentation.

Decent price but weakest performer; no documentation.

Too pricey for average performance; bulky, blocky case.

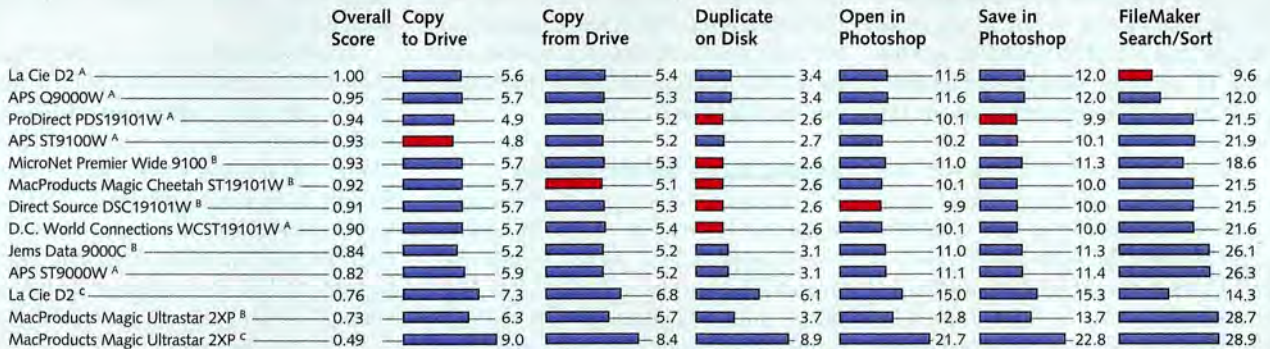
Excellent performance; reasonable price; easiest formatting utility.



## Which Ultra Wide SCSI Drives Deliver the Most?

Although both Ultra Wide SCSI cards used in our testing helped the drives deliver much better performance than with the Mac's standard SCSI-2 connectors, the drives did not always take advantage of the card. The lesson: One 9GB drive is not necessarily the same as the next 9GB drive. Also note that having a larger cache (as the La Cie D2 and the APS Q9000W do) speeds up database operations but not necessarily file opens and saves or file copies.

■ Best result in test. Drives are listed in order of performance, best (an index score of 1.00) to worst. All times are in seconds. Shorter bars are better.



<sup>A</sup> Using Adaptec card <sup>B</sup> Using Atto card <sup>C</sup> Using standard SCSI-2 connector

### Behind Our Tests

To test access speed, Macworld Lab performed two finds and two sorts of a 9,054-record Claris FileMaker database. For an indication of data throughput, we opened and saved a 20MB file in Adobe Photoshop. To determine general performance, we duplicated two files totaling 34.7MB in the Finder and copied

the files to and from each drive. All drives were tested with an Ultra Wide SCSI adapter card. Tests were conducted on a Power Macintosh 7300/200 with 32MB of RAM and Mac OS 8. —Macworld Lab testing supervised by Gil Loyola

### EDITORS' CHOICE

★★★★½ **APS ST9100W** This drive offers the best performance—by a small margin—with a Seagate ST19101W mechanism running at 10,000 rpm, plus built-in, active termination and excellent documentation. All in all, it's an excellent buy. **Company:** APS Technologies (816/483-1600, www.apstech.com). **List price:** \$1,100; with Adaptec PowerDomain 2940UW card, \$1,300.

★★★★½ **ProDirect PDS19101W** This drive is an outstanding value in terms of price/performance, thanks in part to its Seagate ST19101W mechanism running at 10,000 rpm. The drive also comes with an easy-to-use formatting utility, and it's all at a great price. **Company:** ProDirect (612/941-1805, www.pdsales.com). **List price:** \$1,099; with Adaptec PowerDomain 2940UW, \$1,299.

#### REAL PRODUCTS REAL RATINGS

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mentation. But some drives, such as those from D.C. World Connections and Direct Source, have only decent software documentation but none for the hardware. And some, such as MacProducts' Magic Ultrastar 2XP, have little or no documentation at all.

**Easy Termination** A SCSI chain is divided into segments, each of which requires a terminator at each end to maintain an unbroken electrical path; termination tells a signal that it's reached the end of its path.

Four of the drives we tested, the three APS drives and the La Cie D2, have built-in, active switchable termination. Active termination, which means that the drive is actively assessing where it is on a SCSI chain and determining which signals are meant for it, is better for longer SCSI chains. Built-in, switchable termination means that you simply flip a switch to activate termination.

The rest of the drives require external termination, meaning that you need to plug a terminator block into a connector on the outside of the drive. Both kinds of termination have pros and cons; while built-in switchable is a no-brainer, some people prefer the visual confirmation of a terminator block plugged into the out-

side of the drive. Either way, you want active termination. Active terminator blocks are available for drives that require external termination, although they are much more expensive (\$40, versus \$15 for passive terminators).

### Macworld's Buying Advice

We had a tie for the best price/performance: the APS ST9100W and the ProDirect PDS19101W. Both use a Seagate ST19101W mechanism and run at 10,000 rpm—a recipe for success, especially when coupled with their equally low price tags. The price of each drive is \$200 less than the average. The APS drive's built-in, active termination and excellent documentation make it slightly better than the ProDirect drive, but either drive is an excellent buy.

With today's files growing larger, it's only natural that storage should be getting bigger and faster. And thanks to Ultra SCSI, there's now a middle ground between your current, slower storage and a high-priced RAID. Ultra SCSI is an excellent solution for anyone working in content creation today. ■

Associate editor BROOKE C. WHEELER covers 3-D graphics, digital video, multimedia, and storage.

This 12"x 17" image scans at 300 dpi in just 50 seconds and previews in just 12 seconds.

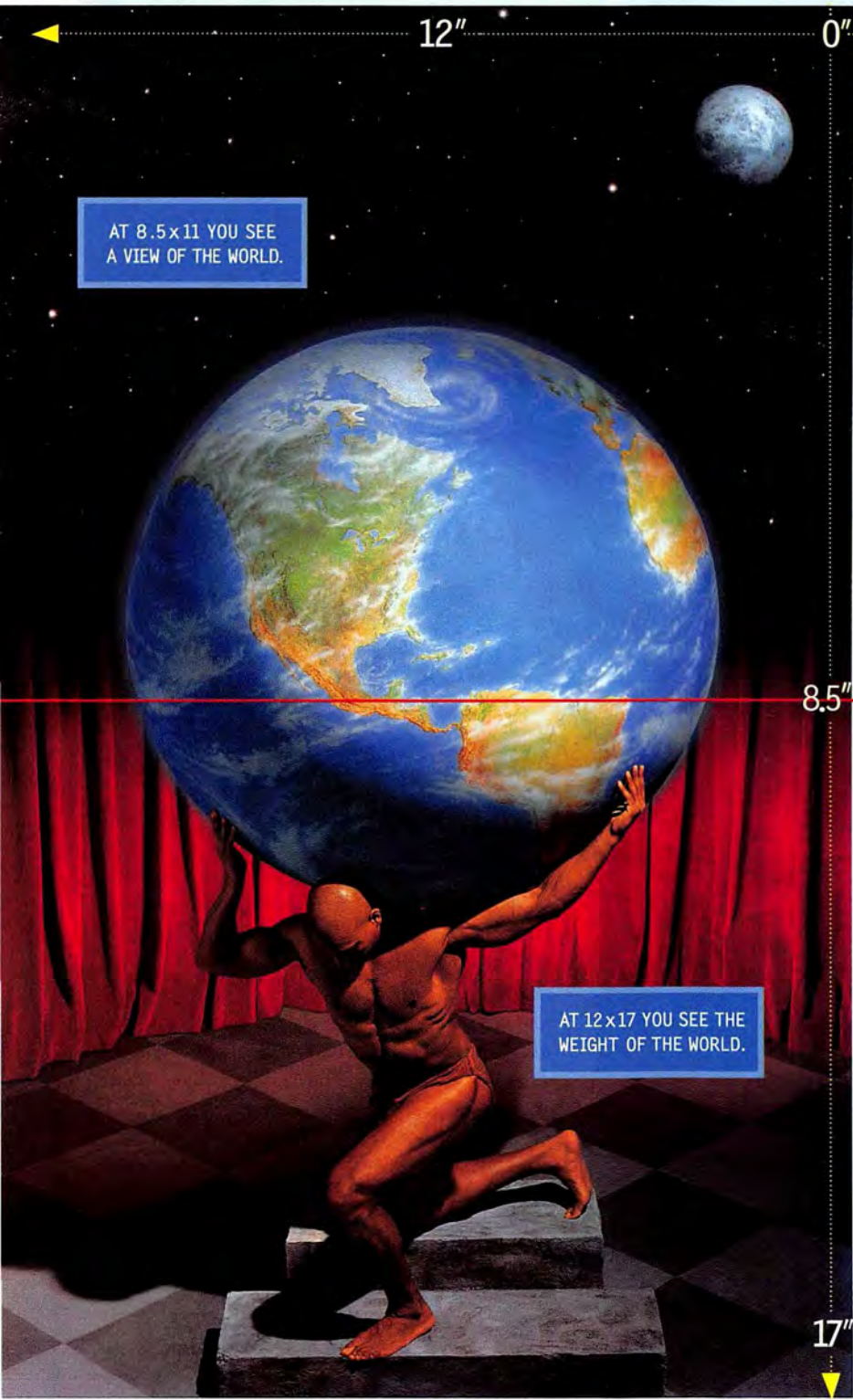


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Circle 201 on reader service card

BY JEFF PITTELKAU

How's this for a disaster? You arrive at a business presentation, sales call, or product demo to find that your PowerBook loaded with the presentation won't connect to your client's PC monitor—or your LCD projection pad is unusable because the overhead projector is being used in another meeting. Here's your solution: Avoid all these troubles, and bring your own self-contained multimedia projector.

Multimedia LCD projectors include their own light source; speakers; and inputs for Macs, PCs, and VCRs. Most weigh under 20 pounds, so you get mobile-presentation insurance without breaking your back. And with prices under \$10,000, you may be able to invest in a couple of projectors for the whole office.

To help you pick the best of these portable wonders, Macworld Lab examined 11 multimedia projectors, putting them through their paces in a conference-room environment. We judged the projectors on brightness, image quality, color saturation, sound quality, and ease of use.

We connected each projector to a Power Mac 7300/200 and a PowerBook 3400 (without its special video adapter, which is easy to lose), noting how easy

# Prime-Time Projectors

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or difficult it was to make all of the connections and how well (or whether) everything worked.

The color test images we used on the desktop and laptop computers included a simple, fully saturated graphic image; a chart; and a photograph of a person. We also projected a videotape to evaluate each projector's NTSC video-display quality. And finally, we played a music CD to evaluate each projector's built-in, amplified speakers.

### Better Technology, Easier to Use

Today's multimedia LCD projectors have more-advanced capabilities, performance, and portability than those of years past. All the projectors we tested support Apple's new PowerBook resolution of 800 by 600 pixels (the SVGA standard on PCs) as well as the desktop Mac resolution of 832 by 624 pixels (although most projectors achieve the latter by compressing the image).

### Seeing Is Believing

**LCD Modules** An LCD projector produces color images by passing light through a combination of LCD modules (liquid crystal sandwiched between two pieces of glass) and color filters. Projectors with a single LCD module use a trio of subpixels (as a CRT monitor does) carefully aligned to red, green, and blue filters bonded onto the LCD module, to make each complete pixel. This leads to a loss of light, due to the mask pattern that separates each pixel into smaller red, green, and blue subpixels.

Projectors with three LCD modules are brighter and produce more-saturated

color. Each module has its own single-color filter, and the modules are arranged with a combination of mirrors and prisms to align the light as it passes through each module. The pixels are full-size, and there's minimal mask material to block light passing through the LCD modules.

CTX Opto's \$4,495 EZ Pro 550 and \$5,495 EZ Pro 580 ([www.ctxopto.com](http://www.ctxopto.com)) and Lightware's \$3,995 MVP800 ([www.lightware.com](http://www.lightware.com)) were the only projectors still using single LCD modules—and projected the dimmest images. The rest of the projectors use triple LCD modules, and the brightest images of the bunch came from Proxima's \$8,999 Desktop Projector 5900 ([www.proxima.com](http://www.proxima.com)), NEC Technologies' \$8,495 MultiSync MT810 LCD Projector ([www.nec.com](http://www.nec.com)), and Epson America's \$8,499 PowerLite 5000 ([www.epson.com](http://www.epson.com)). Still, all were bright enough to project acceptable-quality images in a partially lit conference room when placed six feet from a white screen.

**Light Source** The projector's light source also influences image quality and color. All the projectors we tested displayed excellent color images, except one: the EZ Pro 550 with its tungsten-halogen light source produced slightly dingy, yellowish images compared with those produced by the rest of the projectors, all of which feature a metal-halide arc lamp.

Metal-halide arc lamps produce a cleaner, whiter image and last much longer—from 500 to 8,000 hours, according to manufacturers. (A metal-halide lamp's life expectancy depends on how the lamp is designed.) But they're expensive to replace: a new arc lamp will set you back

\$300 to \$500. Fortunately, for most users metal-halide lamps will last for years.

**Projecting Video** If you plan primarily to project videotapes playing from a VCR, consider the EZ Pro 580, the Lightware MVP800, or the \$5,995 Vivitek Voyager AV200 ([www.vivitek.com](http://www.vivitek.com)); all three produced the cleanest images when displaying videotape. The Voyager AV200 also has a TV tuner, so you can put it in the company break room when it's not traveling and gather around to watch press conferences or the big game. The \$8,795 Ask LCD Impression A4 ([www.ask.no](http://www.ask.no)) and the \$7,495 Philips Electronics 4600 Endurance ([www.philipslcd.com](http://www.philipslcd.com)) fared the worst: both displayed video that was noisy and blurry. The other six projectors had acceptable-quality video display.

### Do You Hear What I Hear?

Initially, we didn't expect much sound quality, since these small projectors have no room for the large speakers necessary for good bass response. But some of the projectors impressed us with their ability to fill a room with reasonably clear audio.

In Focus Systems' \$8,499 LitePro 720 ([www.infocus.com](http://www.infocus.com)) and the Philips 4600 Endurance had good volume and were loud enough to fill a conference room or classroom with sound. The Desktop Projector 5900 and the \$6,995 Sharp Electronics XG-NV1U ([www.sharp-usa.com](http://www.sharp-usa.com)) were reasonably loud, enough for a smaller conference room. The remaining seven projectors either couldn't get loud enough or the sound distorted too much when the volume was turned way up, and so are best used for small meetings.

If you want true high-fidelity audio

## Getting the Big Picture

Company	Product	Mouse Rating	List Price	Phone	Weight (in pounds)	Dimensions (l × w × h, in inches)	Warranty (in years)	Carrying Case Included	Display Technology
Ask LCD	Impression A4	★★★	\$8,795	212/896-8888	11.00	14.7 × 9.8 × 5.4	2	●	triple LCD
CTX Opto	EZ Pro 550	★★★	\$4,495	408/541-6060	9.25	6.4 × 12.5 × 10.2	2	●	single LCD
	EZ Pro 580	★★★½	\$5,495	408/541-6060	9.25	6.4 × 12.5 × 10.2	2	●	single LCD
Epson America	PowerLite 5000	★★★½	\$8,499	310/782-0770	14.10	9.7 × 15.0 × 6.3	1	○	triple LCD
In Focus Systems	LitePro 720	★★★★	\$8,499	503/685-8888	12.00	15.3 × 11.7 × 6.6	1	○	triple LCD
Lightware	MVP800	★★★½	\$3,995	503/641-7873	9.45	12.5 × 10.2 × 6.4	1	●	single LCD
NEC Technologies	MultiSync MT810 LCD Projector	★★★½	\$8,495	508/264-8000	15.60	12.6 × 15.6 × 5.7	2	○	triple LCD
Philips Electronics	4600 Endurance	★★★★	\$7,495	770/821-2400	17.50	13.0 × 6.5 × 13.0	2	○	triple LCD
Proxima	Desktop Projector 5900	★★★½	\$8,999	619/457-5500	14.00	15.6 × 10.8 × 6.5	1	○	triple LCD
Sharp Electronics	<b>EDITORS' CHOICE</b> XG-NV1U	★★★★	\$6,995	201/529-8200	16.50	15.3 × 10.4 × 4.7	3	○	triple LCD
Vivitek	Voyager AV200	★★★½	\$5,995	503/533-8444	14.00	9.0 × 6.5 × 13.5	1	○	triple LCD

● = yes; ○ = no.

with any of these projectors, we recommend external, amplified speakers such as Cambridge Soundworks' \$100 PCWorks (617/332-5936, www.hifi.com).

### Sweating through Setup

When you give a presentation, your audience always notices how competent you appear when setting up—and no audience likes to be kept waiting while you fiddle around with a mess of cables and adapters.

The MultiSync MT810 is one of the easiest projectors to set up, thanks to its unique, single MultiCable and dual input connectors; you simply reverse the cable depending on whether you're connecting to a Mac or a PC. The NEC MultiCable also works with the PowerBook 3400's VGA-style connector without needing a Mac adapter—leaving you one less thing to tote around.

The LitePro 720 comes with reversible Mac-and-PC cables and the handy CableWizard, a connection hub with a dial you turn to expose appropriate Mac or PC connectors. It's easy to figure out and works with desktop Macs and PCs, but it's not compatible with the PowerBook's VGA-style connector. To use the LitePro 720 with a PowerBook 3400 or 2400 you need to use the special VGA-to-Mac video adapter (included with the PowerBooks) in conjunction with the CableWizard. You don't need the adapter with any of the other PowerBook models that have video-out capability, because they use a special cable that terminates to a Mac-style video connector.

Similarly, we found Apple's VGA-to-Mac adapter necessary with the EZ Pro 550 and 580 and Lightware's



**A Matched Set** The In Focus LitePro 720 is the only projector in our roundup with the same button configuration for both on-projector and remote controls.

MVP800. All the other projectors worked when directly connected to the PowerBook 3400 using supplied PC VGA cabling.

Two projectors had unnecessarily cumbersome cabling schemes. The Impression A4 included a hydralike tangle of breakout cables that mate its proprietary projector connectors to computer, video, and audio sources—and subsequently create cable clutter around the projector. The Lightware MVP800 requires separate adapters (included) for Mac video, Mac ADB, and sound input—more small extras to carry around.

### Taking Control

Controlling a multimedia LCD projector in a real conference-room setting brings to light many small—and important—differences.

We found the best on-projector controls on the Sharp XG-NV1U and the LitePro 720. Their brightly backlit buttons are easy to identify in complete darkness,

and control easy-to-use on-screen menus.

The LitePro 720, Philips 4600 Endurance, and Sharp XG-NV1U have the best remote controls. In Focus is the only vendor whose remote buttons match those on the projector, so you don't have to learn two sets of control buttons for one machine. The small, sleekly styled remote from Philips was the most comfortable to use—and it's backlit.

The most disappointing remotes are those included with the EZ Pro 550 and the Voyager AV200. Neither features backlighting, both have different button configurations than the projector, and they are the only two remotes that can't control the Mac's mouse.

### Macworld's Buying Advice

We have three projectors to recommend: one is our Editors' Choice and the other two get special mention for distinctive reasons. Sharp's XG-NV1U won hands-down overall for its great image quality, small size, good sound, easy-to-use controls, and great remote with laser pointer. NEC's MultiSync MT810 is also a stable performer that's the easiest to set up, even with Apple's new PowerBooks; you'll carry fewer cables with this model and have the least amount of setup hassle. Vivitek's Voyager AV200 also deserves mention because of its good image quality and built-in TV tuner.

These days, you need to go one step further to impress your audience and keep its attention—without stressing yourself out in the process. Today's lightweight multimedia LCD projectors let you impress with great image quality and easy setup, at reasonable prices. **m**

Macworld Lab director JEFF PITTELKAU covers display technology.

### EDITORS' CHOICE

★★★★ Sharp XG-NV1U The best all-around combination of image and sound quality, compact size, easy setup, and ease of use. Elegant remote includes laser pointer. **Company:** Sharp Electronics (201/529-8200, www.sharp-usa.com). **List Price:** \$6,995.

#### REAL PRODUCTS REAL RATINGS

**Reviews you can trust** Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

Maximum Mac Resolution (h × v, in pixels)	Mouse Control on Remote	Lamp Type	Lamp Life (in hours)	Extra Lamp Included	Replacement Lamp Cost
1,152 × 870	●	metal-halide	2,500	○	\$499
832 × 624	○	tungsten-halogen	70	3	\$49
simulated 832 × 624	○	metal-halide	1,000	○	\$295
1,024 × 768	●	metal-halide	2,000	○	\$400
1,024 × 768	●	metal-halide	2,000	○	\$495
1,024 × 768	●	metal-halide	500	1	\$299
1,024 × 768	●	metal-halide	2,000	○	\$350
1,280 × 1,024	●	metal-halide	8,000	○	\$450
832 × 624	●	metal-halide	2,000	○	\$399
832 × 624	●	metal-halide	2,000	○	\$318
832 × 624	optional (\$145)	metal-halide	2,000	○	\$345

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# Secrets

## Placing It in the Right Context

CONTEXTUAL MENUS MAKE ROUTINE TASKS FASTER AND MORE CONVENIENT

by Ted Landau

**Y**ou're missing out on one of OS 8's best features if you're not using Mac OS 8's contextual menus. Try this: in the Finder, point the cursor to the desktop background. Hold down the control key, and a tiny picture of a menu appears next to the cursor arrow. Now hold down the mouse button, and a contextual menu pops up that includes most of the options found on the Finder's View menu plus a Change Desktop Background option (a shortcut for opening the Desktop Pictures control panel).

The items listed on contextual menus vary according to the context. For example, Change Desktop Background appears only when you control-click on the desktop background. When you access the contextual menu for a folder or file icon, you'll see a selection of items (such as Open and Get Info).

With contextual menus, finding an alias's original file just got easier. Prior to Mac OS 8, to locate the original file for an alias, you opened the alias's Get Info window and clicked on the Find Original button. With OS 8, the contextual menu includes a Show Original command.

### Stalled at the Starting Gate?

Contextual menus are easy to use, but for them to work, you need (surprise!) the Contextual Menu extension to be installed. The extension is installed as part



of the Mac OS 8 Easy Install, but it is not installed if you use the Core System Software Custom Install. And because the extension is not listed anywhere in the Custom Install window, there is no way to individually add it; you must use either the Easy Install or the "full" System Software Custom Install.

To use contextual-menu plug-ins (we'll talk more in a moment about what these are), you must install the SOMobjects for Mac OS extension in your

Extensions folder. SOMobjects is included as part of OpenDoc and many third-party contextual-menu plug-ins.

If you display any Finder icons as buttons (by selecting As Buttons from the View menu), remember to click on the name of the icon, not on the button icon itself, to access its contextual menu. Clicking on the button icon launches the item.

*continues*

## Internet Address Detectors

Contextual menus save you time by eliminating back-and-forth trips between an icon and the menu bar. But the best thing about contextual menus is that they can be extended.

If you spend time on the Internet, your first contextual-menu plug-in should be Apple's Internet Address Detectors (IAD). It's free from Apple's



FinderPop Control-click on an open window, and you'll get a contextual menu similar to this one. FinderPop is a freeware contextual-menu extension.

Web site ([http://applescript.apple.com/data\\_detectors/add.03.html](http://applescript.apple.com/data_detectors/add.03.html)). Once it's installed, open a text document that includes URLs for Web sites, FTP sites, or e-mail addresses. Highlight the text that includes one or more of these URLs (the highlighting is essential). Control-click, and you'll see a list of all the URLs in the selected text. Each URL has a submenu of contextually appropriate options—such as viewing a Web URL from the browser of your choice.

If the IAD software cannot find the browser you selected—for example, if it looks for Netscape Navigator 3.0 and you're using Navigator 4.0—you will get an error message. The solution is simple: from the Open dialog box that appears with the error message, open the appropriate folder and select Navigator 4.0 or the version you're using. The next time IAD looks for Navigator, it will automatically select the correct version.

IAD menus include links to software (such as Cyberdog) you may not have installed. To eliminate unneeded links, open the Apple Data Detectors control panel. The control panel includes a list of "actions" for each application (such as "Open in Cyberdog" and "Send mail with Cyberdog"). Next to each action is a check box. Uncheck every action that contains the word *Cyberdog*, and the items will be banished from the IAD menus.

The Data Detectors control panel is designed to accommodate more than just IADs. Internet Address Detectors is only the first example of a new Apple technology called Apple Data Detectors; expect additional detectors in the future.

## Third Parties Join the Party

Shareware authors are leading the way in the development of contextual-menu add-ons. My two favorites are CMTools and FinderPop. True, some of their features do overlap with what other utilities can achieve, but once you get hooked (as I have) on contextual menus, the other alternatives suddenly become less desirable.

**CMTools** Generally, when you create an alias for a file, you move it to a different location. Selecting the new location means opening several nested folders until you find the one you want. CMTools lets you automatically create the alias and route it to the desired folder.

**FinderPop** FinderPop is a control panel rather than a contextual-menu plug-in, but it too adds items to contextual menus.

- My favorite FinderPop item is Desktop. It's a hierarchical submenu of all files and folders on your mounted volumes—except for those items on the desktop itself. To open any item in the list, simply select it. A tip: select Show Items on Desktop from FinderPop's More Settings window. This adds the (otherwise omitted) files and folders on the

desktop to the top level of the submenu.

- Make any file an item on your contextual menus by placing the file (or its alias) in the FinderPop Items folder. I used this folder to add StuffIt Expander and DropStuff. Now I simply control-click on the file and select the appropriate StuffIt application from the contextual menu. It's done.

- If you prefer to access contextual menus by just pressing and holding down the mouse button, without needing to press the control key, FinderPop can accommodate you. Simply use the Auto CMM Popup option. You can even set how long the hold delay will last before the contextual menu appears.

**Yet More Plug-ins** There are several Web sites dedicated to keeping up with the latest in contextual-menu news and software. For a library of freeware and shareware contextual-menu utilities, try CM Central (<http://www.interdesign.ca/cmcentral/>). For frequently updated news on contextual menus, surf over to Control-Click (<http://www.venweb.com/controlclick/>).

## Target Practice

Apple's varied success with Mac OS features reminds me of a game of darts. Some (such as QuickTime) hit the bull's-eye. Others (such as publish and subscribe) never stick to the board at all. My prediction: contextual menus are headed for the dead center. **m**

Contributing editor TED LANDAU offers more tips at MacFixIt ([www.macfixit.com](http://www.macfixit.com)). He is also the author of *Sad Macs, Bombs, and Other Disasters*, third edition (Peachpit Press, 1997).

## Contextual Menus in Applications

CONTEXTUAL MENUS TYPICALLY WORK ONLY IN APPLICATIONS THAT ARE "CONTEXTUAL menu-aware." Unfortunately, little besides the Finder supports contextual menus. So how is it that Internet Address Detectors' contextual menus work almost everywhere? Here's how: the IAD software uses an extension, called Contextual Menu Enabler, that adds this capability to otherwise "nonaware" applications.

Apple says Contextual Menu Enabler is only a stopgap solution. As most applications are rewritten to be contextual menu-aware, the Enabler will not be needed. In fact, the Enabler already deactivates itself in "aware" applications.

In the meantime, a problem can occur if you are using a nonaware application that already uses control-click for some application-specific function. For example, in QuarkXPress, FreeHand 7, and FileMaker Pro 3 (it is fixed in FileMaker Pro 4), with Contextual Menu Enabler installed, a control-click brings up a contextual menu rather than executing the application-specific command. Fortunately, there is an easy workaround: control-double-click (or control-option-click) bypasses the contextual menus and accesses the application's built-in functions. Or a shareware control panel called Internet Address Data Detector (IADD) Picker disables the Internet Address Detector feature for any application you select.

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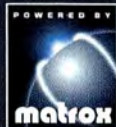
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## Tips, Tricks, and Shortcuts

by Lon Poole

Chances are the Back button on your browser gets a pretty good workout when you surf the Web. But if you use Netscape Communicator or Navigator 4.0, you can move back and forward more expeditiously than with earlier versions. Instead of baby-stepping backward or forward a page at a time, you can jump between entire Web sites by option-clicking the Back and Forward buttons.

Stefan Anthony, of Yellow Springs, Ohio, discovered that the option key similarly adds functionality to the Back and Forward commands in Navigator 4's contextual menus. For example, if you hold down the option key while popping up a contextual menu (hold down the mouse button with the pointer placed anywhere in an open Navigator window), the menu's usual Back and Forward commands are replaced with Back One Site and Forward One Site. If you use Mac OS 8, control-clicking pops up a slightly different contextual menu; when you control-option-click that menu, its Back and Forward commands also become Back One Site and Forward One Site.

If you don't see Back One Website or Forward One Website, remember you need to visit at least two sites in the current browser window for the commands to be available, as is the case with the usual Back and Forward commands.

### Mac & Mic

**Q.** What is the difference between a PlainTalk microphone and the other kinds of microphones that are available for the Mac? Why can't I use a PlainTalk mic with my PowerBook 1400cs,

even though it has a PowerPC processor and 16-bit sound? Do I have to shut down my PowerBook or my PowerCenter 132 before I can plug in or unplug microphones and speakers?

JENNIFER THACKABERRY  
Boulder, Colorado

**A.** The PlainTalk microphone draws power for its built-in preamplifier through the tip connector of its extralong plug. It works only with Macs whose microphone jack has a matching power



connector for this plug. The PowerBook 5300 and 3400 have this type of plug, but the PowerBook 1400 and 2400 don't. So if you plug a PlainTalk microphone into a PowerBook 1400, the mic won't get power and won't work.

An unpowered microphone, such as the old round Apple microphone that came with the PowerBook 100 series, won't work with any PowerPC Mac—portable or desktop. These computers all require line-level sound input with a 3.5mm-diameter stereo or mono plug. (Line level is the signal strength com-

monly output by CD players, tape decks, VCRs, and other consumer audio equipment.) If you want to use an unpowered mic, you'll need to boost its output to line level with a preamplifier, such as the \$20 NE Mic adapter from Griffin Technology (615/255-0990, [www.nashville.net/~griffin/mic\\_main.html](http://www.nashville.net/~griffin/mic_main.html)).

The PlainTalk microphone also differs from many other microphones in that it's unidirectional, meaning it picks up sound only directly in front of it. (This benefits PlainTalk's speech-recognition capabilities.)

You don't have to shut down your computer to connect anything to or disconnect it from the sound in/out jacks—or the modem, printer, or Ethernet ports, for that matter. You *do* need to shut down your computer before changing ADB and SCSI connections (unless you have a hot-swap SCSI adapter), to avoid damaging your computer circuitry.

### Desktop Picture Restoration

**Q.** After reading "The Picture-Perfect Desktop" (*Secrets*, December 1997), I tried out some new pictures and backgrounds on my desktop. The first few pictures worked fine, but then something went awry. Now when I try to open the Desktop Pictures control panel, an error message tells me I can't open it, because it may be in use by another application. Turning off all my extensions didn't work. How can I get my machine to let me change the desktop pictures again?

GREG KNUTZEN  
Burlington, Washington

*continues*

**A** The Desktop Pictures Prefs file has probably become corrupted. Move it out of the Preferences folder (in the System Folder), and restart your computer. This forces the Desktop Pictures control panel to ignore its old preferences file and create a new one.

### CFM-68K Confusion, Mysterious Extensions

**Q** In December's *Quick Tips* you wrote that CFM-68K 4.0 allows 68K Macs to run Cyberdog and other programs. But the Cyberdog Installer told me that Cyberdog was only for PowerPC computers. I'm confused; which programs will CFM-68K let me run on a 680X0 computer?

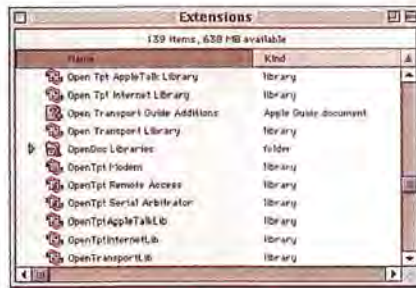
Also, since installing Mac OS 8 I've noticed that my System Folder is crammed full of files with cryptic names such as OpenTptAppleTalkLib. I'm afraid to toss any, for fear I may trash an important file, but I hate the clutter in my Extensions folder. I'd like to know what purpose each file serves, but the Extensions Manager provides only a vague description for most of these files. How can I find out what I can and cannot trash?

MAT EBERHARDT  
Hickory, North Carolina

**A** In answer to your first question, Cyberdog does not require a PowerPC processor; it runs on a 68030 processor or better. On a 680X0 computer with system software older than Mac OS 8 (the CFM-68K functionality is built into the Mac OS 8 System file), Cyberdog requires the CFM-68K Runtime Enabler system extension version 4.0. This extension provides the system software's Code Fragment Manager services for computers with 680X0 processors. These services enable 680X0 programs to share libraries of code fragments, just like PowerPC programs, making it easier to develop software that runs on PowerPC as well as 680X0 computers.

Other software that requires the CFM-68K extension (or Mac OS 8) includes America Online 3.0, Internet Explorer 3.0, Apple Telecom Software 3.0 and later, OpenDoc, and LaserWriter extension 8.4.2 and later.

Some installers, notably the one that comes with Mac OS 7.6, won't let you install Cyberdog on a non-PowerPC computer because when these installers



Extraneous Extensions? You may hate to see them clogging your Extensions folder, but don't trash Open Transport extensions if you have Mac OS 7.6 or later or a computer with PCI expansion slots—these extensions provide Open Transport networking capabilities.

were released, the CFM-68K extension contained a crash-causing bug. This bug is now fixed in CFM-68K Runtime Enabler 4.0, which Apple released separately several months after Mac OS 7.6 and subsequently included with Mac OS 7.6.1 and built into OS 8.

Old installers may let you install old versions of the CFM-68K extension with System 7.5.5 and earlier on 680X0 computers. But a system crash may occur if you use Cyberdog or other software with an old CFM-68K extension.

Concerning your second question, all files whose names begin with *Open Transport*, *Open Tpt*, or *OpenTpt* provide Open Transport networking capabilities. Do not remove these files if you have Mac OS 7.6 or later or if you have a computer with PCI expansion slots. If you have System 7.5.5 or earlier, you can make these files invisible by switching from Open Transport to Classic Networking by using the Network Selector program (in the Apple Extras folder).

You can get descriptions of other System Folder files from Dan Frakes's InformINIT shareware program or his Mac Pruning Pages Web site (<http://cafe.AmbrosiaSW.com/DEF/>); however, neither had been updated for Mac OS 8 at press time. You'll find technical descriptions of Mac OS 8 extensions and control panels in the Mac OS 8 Technical Note (<http://gemma.apple.com/dev/technotes/tn/tn1102.html>).

### QuickTime Shortcuts

**TIP** Want to hear a QuickTime MIDI soundtrack backward, or view a QuickTime movie backward?

Press  $\text{⌘}$ -left arrow while the QuickTime-movie window is active.

ALEXANDRA WERNER  
Edmonds, Washington

Also, you can press  $\text{⌘}$ -right arrow to play forward, right arrow to step forward, left arrow to step backward, up arrow or down arrow to raise or lower the sound level, and shift-up arrow to raise the sound level beyond its normal maximum. Pressing return or spacebar alternately starts and pauses play forward.

All these shortcuts work with QuickTime sounds and movies you play in a Web browser, using Apple's free QuickTime browser plugin, and with music and movies you play from a CD or hard disk. A cool place to try out these tricks is the Mouse Jam site (<http://members.aol.com/mousejam/index.html>), where you can make music by playing short music clips along with a rhythm track. (You cannot use these shortcuts on Web pages that play music but do not display the QuickTime controller.)

When playing a QuickTime movie with Apple's MoviePlayer, you can select (or deselect) the part of the movie that's playing by holding down the shift key while playing or stepping forward or backward. You can then use the Cut, Copy, and Paste commands on the selected areas and edit the movie.—L.P.

### Blinking "?"

**TIP** One day my Performa 6500/275 refused to start up, displaying only a blinking question mark. A repair technician told me I would have to reinitialize the hard disk, but I couldn't afford to lose the information on it. I managed to restore the disk without losing any data and also learned that reinitializing the hard disk would not have eliminated the problem anyway.

Apparently the problem began or was aggravated when I upgraded to Mac OS 8 and the installer updated the driver software on my hard disk, providing the potential for a crash. The crash happened weeks later when I routinely turned on the computer.

The solution has several steps: First you need to download Drive Setup 1.3.1 from Apple's Software Library ([www.info.apple.com](http://www.info.apple.com)) or order it on disk from Apple Customer Relations (800/776-2333). You also need to download the 1.2GB Firmware Utility *continues*

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1.1 and Apple's Disk Copy application (version 6.1 or later) from Apple's Software Library.

Use Disk Copy to make floppy disks for the Drive Setup 1.3.1 and Firmware Utility 1.1 disk-image files. Then start up from the Disk Tools floppy that came with your system-software-installation kit or Mac OS-installation CD-ROM. Follow the instructions that come with Drive Setup 1.3.1 and Firmware Utility 1.1 to update your hard disk.

These steps alone, however, did not restore my hard disk. I restarted my system using Norton Utilities and ran Disk Doctor to repair the corrupted hard-disk directory.

BETTY ETZLER  
Roanoke, Virginia

*There are actually many causes for the blinking question mark on start-up. Drive Setup 1.3.1 fixes a problem caused by updating an IDE hard disk with Drive Setup 1.3 or the Mac OS 7.6.1 or OS 8 installers. (You can prevent the Mac OS 8 installer from updating the driver by clicking on the Options button at the bottom of the Install Mac OS 8 window and then turning off the Update Apple Hard Disk Drivers option.)*

*Apple says this problem affects the Performa and Power Mac 5400, 5500, 6400, and 6500 series. By omission, Apple implies that the problem does not affect PowerBooks with IDE drives, but it's not clear why it wouldn't. The problem may also affect the IDE hard disks of Mac clones, since Drive Setup 1.3 reportedly works on them. The bottom line is that every time you let the Mac OS 7.6.1 or 8.0 installer update the driver on a computer with an IDE hard drive, you should use Drive Setup 1.3.1 to update the driver again.*

*The 1.2GB Firmware Utility 1.1 fixes a different problem that supposedly affects only some 1.2GB IDE drives in Performa 5260 and 6360 computers, and then only intermittently. The utility should have no effect on other computers.*

*Disk-repair utilities, such as Symantec's Norton Disk Doctor and Apple's free Disk First Aid, can sometimes fix disk problems that prevent the Mac from finding or mounting the start-up disk. To troubleshoot the many other causes of a persistent blinking question mark at start-up, I recommend Ted Landau's book Sad Macs, Bombs, and Other Disasters, third edition (Peachpit Press, 1997), and Landau's MacFixIt Web site (<http://macfixit.pair.com>).—L.P.*

## More Cross-Platform Names

**TIP** I was reading *Quick Tips* in your December 1997 issue and came upon C. S. Chow's question about maintaining long file names when transferring files between a Mac and a Windows 95 or NT machine. I regularly use PKZip, from PKWare (414/354-8699, [www.pkware.com](http://www.pkware.com)), with Windows 95 or NT to zip all the files I want to transfer to my Mac. Once they're on my Mac, I simply unzip them with Aladdin Systems' free StuffIt Expander (408/761-6200, [www.aladdinsys.com](http://www.aladdinsys.com)). The long file names are preserved without any truncation or random generation of cryptic names.

Inversely, I use the Mac shareware ZipIt to zip all the files I need to transport. When I unzip them on a Wintel machine, the file names are preserved.

SCOTT GIRVAN  
Victoria, British Columbia, Canada

## Repeating Field Import/Export

**TIP** I recently needed to import data into a repeating field in Claris FileMaker Pro 3.0. After experimenting a little, I found a way to get the job done.

The key is that FileMaker uses the character whose ASCII code is 29 to separate values in a repeating field when exporting or importing. Knowing this, you can use Microsoft Excel or a comparable application to prepare data for importing into FileMaker. A simple formula links all the values for a repeating field, separating the values with ASCII code 29, as in the following example:

=value1 & Char(29) & value2 & Char(29) & value3

In this formula, **value1**, **value2**, and **value3** are either three values to be imported into one repeating field or references to cells containing the three values. You can extend this formula to include more values for the repeating field. The result is a single spreadsheet cell that contains all the values for a repeating field, with ASCII code 29 between consecutive values.

You can then save the spreadsheet as a text file and import it into FileMaker. In FileMaker's Import dialog box, you see only the first value for the destination repeating field, but the repeating

field will have all the values when FileMaker finishes importing.

In a similar manner, you can take values exported from repeating fields and segregate them into columns in a spreadsheet. Simply use a word processor to replace every instance of ASCII code 29 with a tab.

JOHN DORMAN  
Holland, Michigan

## Dead Clock Battery, Dead Screen

After reading about replacing the computer's clock battery in December's *Quick Tips*, several readers, including Keith Schmude of Wilmington, Delaware, wrote to tell users that a dead clock battery may leave you with a dead screen at start-up if you have a Power Mac 6100, similar Performa, or Quadra or Centris 660AV or 840AV. When the clock battery dies, there is no video-out, so nothing will register on your screen. Save yourself a nasty surprise by replacing the clock battery when the clock starts acting flaky.

## Correction

Due to a misplaced comma, December's *Quick Tips* incorrectly states that the File Sharing control panel is not needed in Mac OS 8. Actually, you can't share files without this new control panel. It replaces the File Sharing Monitor control panel and the Sharing Setup control panel, which are normally removed by the Installer program when you upgrade to Mac OS 8. **m**

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Mac OS 8 Bible* (IDG Books Worldwide, 1997).

Shareware mentioned in *Quick Tips* is available from Macworld Online ([www.macworld.com](http://www.macworld.com)) or America Online (keyword Macworld; use keyword Apple for Apple software).

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## Powerful Teamwork: AppleScript and QuarkXPress

The Lazy Way to Working Harder

by David Blatner

Sometimes it pays to be lazy. That urge to goof off forces us to work smarter, finding techniques that cut corners but not quality and that cut time from our workdays instead of our weekends. One of the best examples of working lazy is letting your computer do your job for you, especially when it comes to performing mind-numbing, often-repeated tasks. After all, these are the kinds of chores computers excel at.

One of my favorite ways to automate tasks in QuarkXPress is to script them by using Apple events. Apple events provide a way for one program to control another behind the scenes, like a puppeteer pulling the strings of a marionette. In other words, you can write and execute a script in one program, and that script can manipulate any other program that supports Apple events. XPress is one of the best examples of a scriptable program, because there are so many "strings" you can pull and so many cool things you can do with it.

For example, pull the right string, and XPress creates a new document. Pull a different string, and XPress places guides at specific locations on your page. Pull another one, and XPress automatically builds a catalog based on information in a Claris FileMaker Pro database. The sky's the limit when scripting XPress.

In this article, I take a look at how to write a few small scripts that make QuarkXPress perform tricks that are either a pain—or just plain impossible—to do manually.

### Macros versus Scripts

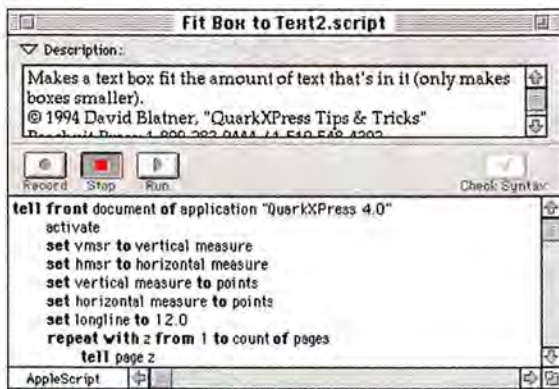
People often get confused between scripting and building macros. Here are three differences: First, where macros automate particular tasks that you can also perform manually (select that menu item, click on that button, type such and such, and so on), scripts let you sneak in the back door of the program and control it from behind the scenes. Scripts often let you do things you couldn't pull off with the program's regular interface. Second, scripts have flow control, such as conditional branching and looping. Third, scripts let you retrieve information from the program. (For example,

you can say, "Find out how many pages there are in the document, and then put that number in a text box on page 1.")

In general, while macros are great, you can do much more with scripting. I have scripts for changing the horizontal scale of every em dash in a document to 75 percent; for changing every instance of 1/2 to a proper ½; for copying guides between documents; for importing and exporting text from multiple text boxes at a time; for . . . well, you get the idea. If I find myself pounding my head against my computer monitor, I think, "There's got to be a script that will do this faster."

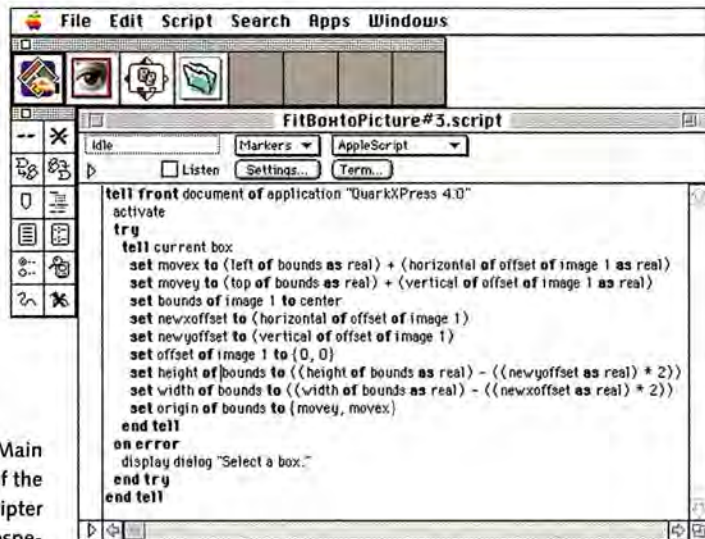
*continues*





### Simple and Complex Scripters

Apple's free Script Editor (left) and the \$199 Scripter (right), from Main Event Software (202/298-9595, [www.mainevent.com](http://www.mainevent.com)), are two of the most convenient programs in which to write and run scripts. Scripter gives you much (much!) more functionality than Script Editor, especially when it comes to debugging and writing complex scripts.



### Tools of the Trade

While there are several ways to write scripts, I prefer the computer language AppleScript. Fortunately, writing in AppleScript isn't like programming in C++ or some other complex language. Apple based AppleScript on natural language, so while you still need to learn some special words and syntax, you can write phrases in your script that sound pretty close to English, such as **set the color of text box 1 to "Cyan"**.

The easiest way to get started creating these scripts is to try out Apple's free Script Editor program (it usually sits in a folder called Apple Extras on your startup disk). When you're ready for more-advanced scripting, there are commercial programs that offer more features (see "Simple and Complex Scripters").

### Talking to Objects

AppleScript is built on the idea that scripts talk to objects in the program you want to automate. You should always begin by defining whom the script is talking to. For example, the first line of an XPress script is usually **tell application "QuarkXPress™"**.

(The program's name must appear between quotation marks and must exactly match your copy of XPress so that Script Editor knows what program you're referring to. An easy way to ensure this is to copy the file name from your version of XPress and paste it into your script.)

Once it has XPress's attention, your script can talk to *objects* within XPress:

specific documents, pages, text boxes, picture boxes, words in a story, and so on. Each object has properties that describe it. For instance, one of the properties of a picture box is its *color*. Another property is its *rotation*. AppleScript lets you easily create objects and change the properties of objects on your pages.

To figure out what the proper names of objects and properties are, you need to view XPress's AppleScript dictionary. Each of the various scripters has in-software methods for doing this (in Script Editor, select Open Dictionary from the File menu).

If you're going to script QuarkXPress, you should also check a document called For Advanced Scripting (it usually gets installed in your QuarkXPress folder and is on the original install disks). Find this file, open it in XPress, and print it out. You'll need a big stapler to fasten all the pages together, but it's really worth having it printed, because you'll refer to it constantly when scripting. Without the information in the document and the dictionaries, it's impossible to know that a line in XPress is actually called a *line box* or that vertical and horizontal guides have a property called *unmoveable*, which locks them in place (a good example of something you can do via a script that you cannot do manually in the program).

One of the most frustrating things about scripting is that you have to precisely define which objects to manipulate. If you're trying to set the color of the fourth word in a paragraph, you may

need to specify that it is **word 4 of paragraph 1 of story 1 of text box 1 of current page of front document**.

### Start Stealing Scripts

Does the whole thing sound daunting? Do you feel the urge to run out to get a book on scripting? Don't. Ultimately, the best—and easiest—way to learn scripting is to steal other people's scripts. The Internet is a good place to hunt (surf over to [www.applescript.apple.com](http://www.applescript.apple.com) or [www.xpressobar.com/script.html](http://www.xpressobar.com/script.html) to load up on information about scripting and scripting resources).

The trick is to find a script that does a procedure similar to the one you want to do; open the script, and see how it works. Often, you can just adapt a script for your own uses (however, some scripts are copyrighted, so you may need to get permission). Sometimes you will be able to find an even better way to script a procedure after playing with someone else's script for a bit.

If purloined scripts aren't meeting your needs, you might turn to books. I recommend *Danny Goodman's AppleScript Handbook* (Random House, 1995)—which unfortunately is out of print, so you'll have to find a copy in a used-book store. I also discuss scripting XPress in more detail in my book *The QuarkXPress Book* (Peachpit Press, 1994 and 1998).

One more way to get a leg up in scripting XPress is to use the \$149 ScriptMasterXT, from Street Logic Software (619/654-3333, <http://pacific-coast.com/StreetLogic/>). ScriptMasterXT is an

## Three Cool Scripts

Since the best way to learn scripting is by looking at other people's work, I have created three little scripts that you can peruse and adapt to your own uses. Note that these scripts don't necessarily offer the most efficient way to perform the tasks (see if you can find better ways yourself). You can save yourself some typing by downloading the scripts from [www.macworld.com/more/](http://www.macworld.com/more/). Just be sure to change the name of the program to match your version of XPress exactly.

### 1 Add a Graphic

For those who need to add their company's logo to every document they create, the script above automates adding a graphic.

```
script to add logo
Description...
Record Stop Run Check Syntax
tell application "QuarkXPress™"
  activate
  tell front document
    make new picture box at beginning of current page
    set bounds of picture box 1 to ("100 pt", "150 pt", "200 pt", "250 pt")
    set color of picture box 1 to "None"
    set runaround of picture box 1 to none runaround
    tell picture box 1
      set image 1 to alias "MyHardDrive:Graphics:CompanyLogo.eps"
      set the bounds of image 1 to proportional fit
    end tell
  end tell
end tell
```

```
new select next script
Description...
Record Stop Run Check Syntax
tell application "QuarkXPress™"
  activate
  tell front document
    try
      set current box to generic box after current box
    on error
      try
        set current box to first generic box
      on error
        display dialog "No items on page."
      end try
    end try
  end tell
end tell
```

```
script to size box to picture
Description...
Record Stop Run
tell front document of application "QuarkXPress™"
  activate
  try
    tell current box
      set movex to (left of bounds as real) + (horizontal of offset of image 1 as real)
      set movey to (top of bounds as real) + (vertical of offset of image 1 as real)
      set bounds of image 1 to center
      set newxoffset to (horizontal of offset of image 1)
      set newyoffset to (vertical of offset of image 1)
      set offset of image 1 to {0, 0}
      set height of bounds to ((height of bounds as real) - ((newyoffset as real) * 2))
      set width of bounds to ((width of bounds as real) - ((newxoffset as real) * 2))
      set origin of bounds to {movey, movex}
    end tell
  on error
    display dialog "Select a box."
  end try
end tell
```

### 2 Select the Next Box

People keep asking me for a keystroke that selects a box behind or in front of the one currently selected on the page. There isn't one, but the quick script above lets you do just that. Note that it makes the most sense to run this kind of script via a keystroke; I use CE Software's QuickKeys to trigger this script.

**3 Let the Box Fit the Picture** The script above sets the size of a picture box to be exactly the same size as your picture (you can't do that in QuarkXPress without an XTension). This is a more advanced script, but it works!

XTension to QuarkXPress that makes the program recordable. That is, you can draw a box in XPress and then see what the proper AppleScript command is to draw that box—it effectively converts real actions into scripts.

### Your First Script

Let's dive in and build a script to control QuarkXPress. Once you have QuarkXPress and the Script Editor running, type the following into a new Script Editor document:

```
tell application "QuarkXPress@"
  activate
  tell front document
    set the width of every line box whose width is "1 pt" to ".5 pt"
  end tell
end tell
```

OK, let's look at what this does. The first line tells AppleScript which program to control: QuarkXPress. The second line, **activate**, tells XPress to become active; that is, it becomes the frontmost application

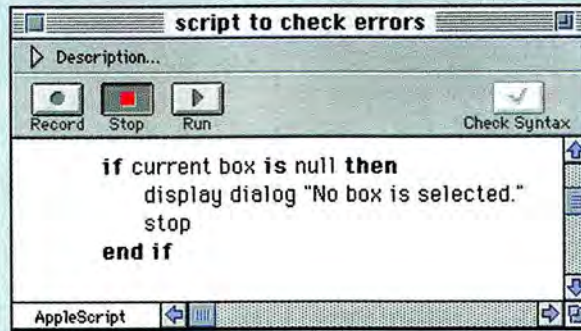
(note that this line is optional; you can run scripts while XPress is hidden—although it must be running). Next, the script specifies which document AppleScript is talking to.

Now we get to the meat of the script: the **set** command, which lets you change the properties of an object. In this case, the object is any line whose width is currently 1 point. The **~** character at the end of the fourth line tells Script Editor to read the next line as part of the same com-

*continues*

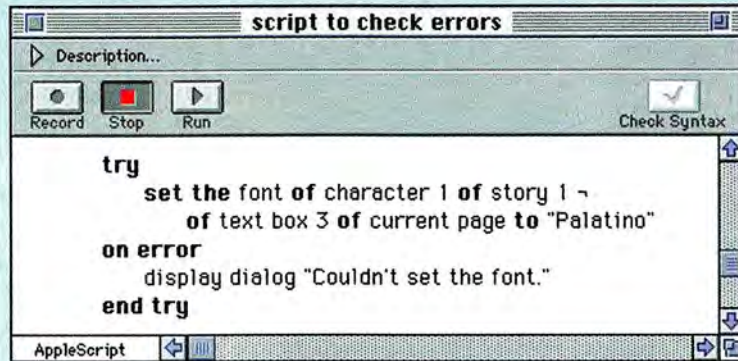
## Checking for Errors

Most scripts require a setup—that is, QuarkXPress has to be in a certain state for the script to work. Some scripts won't run unless a box is selected; others require a document to be open or a word to be highlighted. If the condition isn't met, you'll get an error message when you try to run the script. AppleScript has several methods for dealing with errors. Here are two common error tests to add to your scripts.



### If Command

One easy addition to a script is the **if** command. For a script that requires a box to be selected, you could add the above snippet somewhere near the beginning of your script.



### Try Command

If an error does occur between the **try** and the **on error** commands, the commands after **on error** will be executed; otherwise, the script will just skip them.

mand, as though there were no new line (to get the ~ character, press option-L).

Finally, anytime you start talking to an object (or a program), you have to let it know when you've finished talking to it. You do that with an **end tell** statement. (Note that there are two **tell** statements, so there have to be two **end tell** statements.)

Now, was that so hard? After writing the script in Script Editor, just click on the Check Syntax button (or press enter). If you made any typos, you may get an error at this point. Otherwise, Script Editor will format your script and you'll be

able to click on the Run button to execute the script. Of course, you must have a document open in XPress and there must be at least one line in the document that is 1 point thick, or you'll get an error (see "Checking for Errors"). Now you can save your script as a compiled script from the Kind pop-up menu or in the Save As dialog box.

### Self-Running Scripts

You can always run AppleScripts from within the Script Editor, but it's a little

annoying to have to open it up when you want to run a script. Fortunately, you can execute your scripts in other ways.

- You can save the script as an application. (Select Save As from the File menu, and choose Application from the Kind pop-up menu; make sure you turn *on* the Never Show Startup Screen option and turn *off* the Stay Open option. When you double-click on the script application, the script runs all by itself. Put an alias of the application on your Apple menu for easy access.)

- You can save the script in a compiled format (choose Compiled from the Kind pop-up menu) and run it by using OSA-compliant software (meaning the program can pull Apple event "strings"). For instance, the freeware system extension OSA Menu lets you put compiled scripts on a menu on the menu bar. Simply choosing a script from the menu automatically runs it. Similarly, CE Software's QuicKeys lets you run AppleScript scripts.

- AppleScript add-on programs such as Digital Technology's \$299 FaceSpan (801/226-2984, [www.facespan.com](http://www.facespan.com)) let you build your own user interface for scripts, with pop-up menus, text-entry fields, radio buttons, and more. These FaceSpan files act as applications; you can even build floating palettes that sit on top of the program you're scripting.

### Scripting XPress 4

All of the scripts you see in this article will work with either QuarkXPress version 3.32 or version 4. However, at the time of this writing, Quark had still not enhanced QuarkXPress's scripting functions to include most of the new features in version 4. For instance, there is no scripting control of Bézier curves, character styles, text to box, and so on. Of course, there's little doubt that Quark will correct this omission in the not-too-distant future, but in the meantime, you will simply have to limit yourself to scripting the familiar features of version 3.32.

### Automated Futures

There's no doubt that scripting is programming; it can be confusing and difficult at first. And yet, AppleScript is truly programming for the rest of us and it offers very powerful tools for very little effort. You should take the time to learn a little scripting today so you can let the computer do the grunt work. You'll gain much more time to be lazy in the future. **m**

DAVID BLATNER is the founder of moo.com consulting and the author of *The QuarkXPress 4 Book* (Peachpit Press, 1998) and *The Joy of Pi* (Walker and Company, 1997). You can reach him at [david@moo.com](mailto:david@moo.com).

### Bookmarks

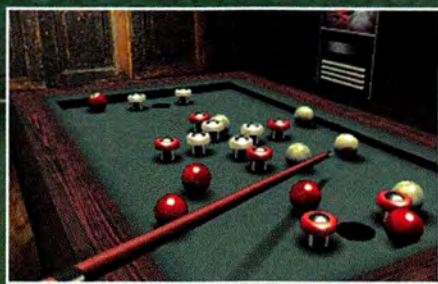
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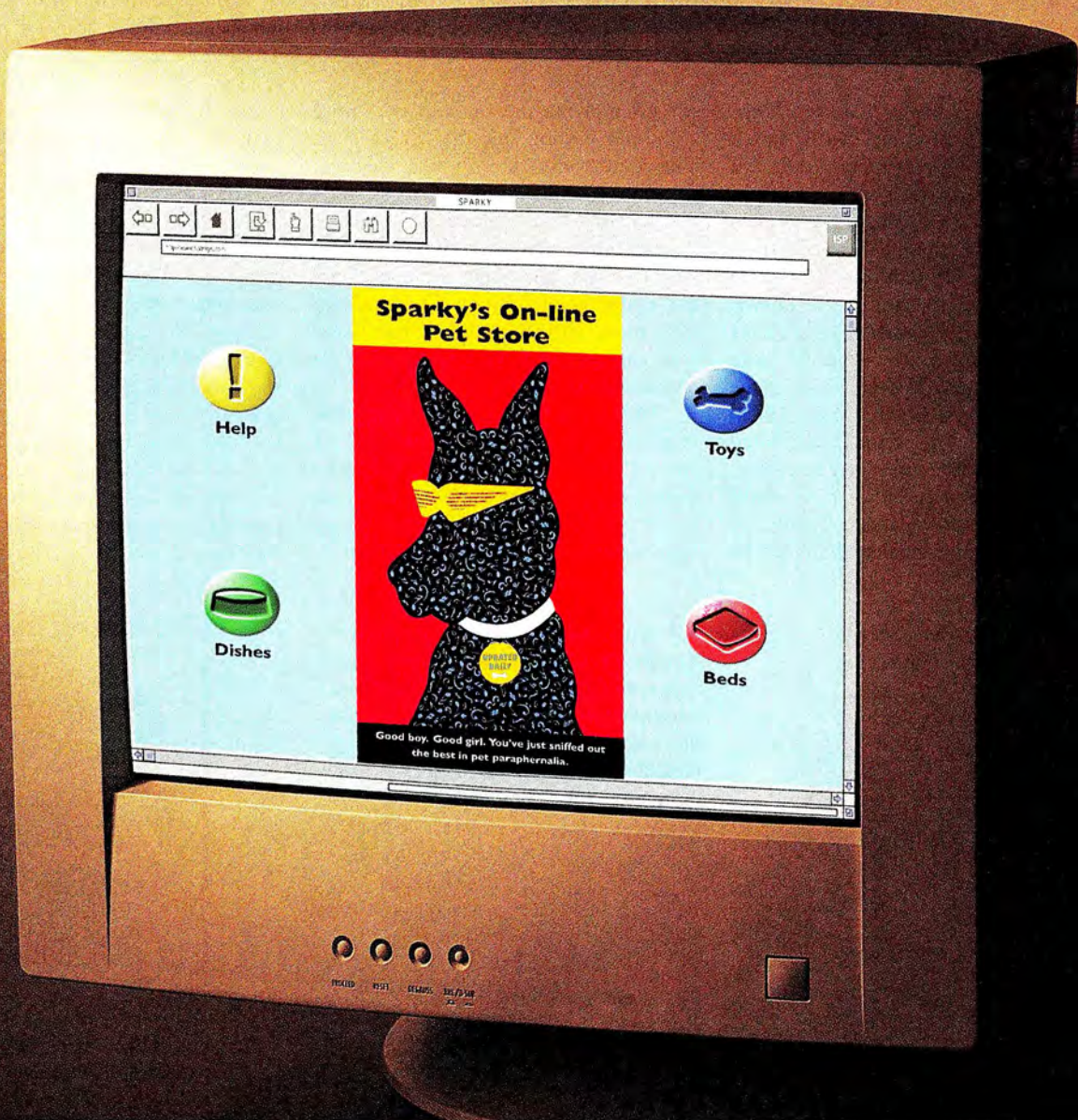


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## Harnessing the Power of Photoshop's Distort Filters

How You Apply Them Makes All the Difference

by Cathy Abes

**M**any of Adobe Photoshop's Distort filters will generate different effects depending on whether you apply them to a selection, to an entire object, or to an entire layer. Digital illustrator David Peters has spent many hours experimenting with these filters to produce a wide range of interesting effects for his offbeat photo-collages. For example, he's found that applying a distortion filter to a selection rather than to the entire layer tends to produce weird effects, especially along the selection's edge; therefore he

advises applying the filter to the entire layer and cutting out the object later. The result will look more like what you see in the Preview window.

Whereas some filters, such as the Pixelate filters, affect the entire canvas, the Distort filters affect only the object, not the entire blank canvas. Consequently, with most distortion filters, the larger your canvas, the more control you have over the effect.

A filter can also produce radically different results depending on *how* it's applied. Try reapplying it to the same image, applying it to an image to which you previously applied a different filter, or applying it to only a part of the image.

If you don't like the initial effect you get from a filter, keep experimenting with it; eventually you may get the results you're after.

This experiment with distortion filters began with a scanned photo of a painting of a clown head. Peters first tried the Pinch filter and then Twirl, but eventually decided that several applications of Pinch alone would produce the effect he wanted.

To create the swirling sky effect, Peters used a combination of Polar Coordinates and Twirl. He used Wave to create the winding road and the curving soda bottle. **m**

DAVID PETERS is a digital photo-collage illustrator whose clients have included *Air & Space/Smithsonian*, MetroLink, and *Home PC*. He also teaches digital illustration at Otis College of Art and Design in Los Angeles.

Senior associate editor CATHY ABES covers graphics for *Macworld* and is the author of *Photoshop FX* (Ventana Press, 1994).

**1** The original scanned photo of the clown-head painting.



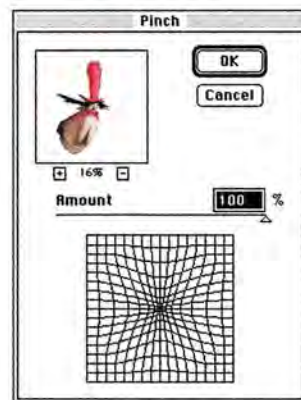
**2** A filter applied to a layer can have a different effect than one applied to a selected object; the object's shape can also influence the effect. For best results, apply the Distort filters to a layer; otherwise you can get unwanted artifacts around the edges.



Twirl applied to a selection containing just the head caused ghosting around the hair and the hat.



There's no ghosting when applying Twirl to the entire layer.



The Preview window shows the potential effect of the filter application. Photoshop's previews default to 100 percent (typically showing just part of your image). It's helpful to preview a reduced image. Click on the minus sign until the whole image appears.



**3** To create an elongated shape, Peters applied the Pinch filter at 100 percent to the entire layer rather than just the head (left). Next he applied Pinch again at 100 percent, which made the face pucker while stretching the outer areas (right).



**4** Before applying Pinch a third time, Peters tried for an even more exaggerated effect by making a horizontal elliptical selection of just the face (top). Applying Pinch at 100 percent to the selected area produced too much of a distortion (bottom), so Peters went back to the previous version.



**5** The irregular 40-pixel feathered selection of the sky was taken from one of Peters's own photos.



**6** The sky selection took on a U shape after Peters applied Polar Coordinates using the Rectangular to Polar setting.



**7** Reapplying Polar Coordinates, this time with the Polar to Rectangle setting, created an inverted crescent. Applying Polar Coordinates to a copy of the crescent with the Rectangular to Polar setting resulted in a wider version of the U-shaped sky. Finally, Peters applied Twirl to both shapes at a  $-869$ -degree angle to create a vortex spiral.

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## Liven Up Your Site with Chats and Conferences

It May Be Easier—and Cheaper—Than You Think to Create a Virtual Community

by Jim Heid

**T**he Web is the ultimate two-way street. It allows for interaction and the exchange of ideas—not only between site publishers and their visitors but between visitors as well. If your Web site is a one-way affair, you might be missing out on one of the Web's most valuable advantages over other media: having a community.

By setting up a conferencing area or a chat room for your Web site, you can tear down those one-way signs and turn your site into more than just an electronic brochure or soapbox. A company Web site can provide online technical-support forums where customers can get their questions answered by technicians and knowledgeable customers. A school's site can have a place where parents can interact with teachers and with each other. A corporate intranet site can provide an area where employees can ask questions, post announcements, and swap their favorite *Dilbert* stories.

If you'd like to build some virtual meeting rooms for your own Web site, keep reading for the blueprints. Along the way, I'll provide some advice to help you decide what features and products you might need and I'll pass along some tips on customizing your virtual meeting rooms. And here's the best part: it might not cost you a cent. Several commercial Web sites offer free conferencing and chatting engines you can tap into from your own site.

### Two-Way Advantages

Whether you've developed a World Wide Web site to market your world-class widgets or an intranet Web site for your department or company, there are a few good reasons to consider adding conferencing or chatting features.

**Encourage repeat visits.** Conferencing and chats can be strong catalysts

for repeat traffic to a Web site because they help build an online community, a place where people of similar interests get together—a place where everybody knows your e-mail address.

**Learn about your visitors.** By monitoring the discussions in a conference or chat area, you can find out what your site's visitors are most interested in. Knowing this can help you tailor your site's content.

**Get free content.** Conferencing and chat areas are an ideal source of fresh content for a Web site. Discussion topics that draw heated opinions and thoughtful insights or archives of lively real-time chats are superb additions to any Web site. And the best part is, your visitors create them for you.

### Conferencing? Chatting? Or Both?

Conferencing and chatting sound like similar activities, but they're quite different. One of your first steps toward build-

ing a meeting place involves determining which is best for your site—or whether both might be appropriate.

Conferencing areas are like bulletin boards: people can post messages that others can read and reply to at their convenience. A chat room, on the other hand, is a virtual watercooler, a place where people can meet in real time to exchange gossip, pleasantries—you name it. Because it allows for real-time interaction, a chat room can be a lively place—or it can be stone boring. Like any get-together, it all depends on who's doing the chatting.

As any America Online addict can tell you, chat rooms are also ideal venues for special events such as celebrity appearances. You'll have a tough time booking Liz Taylor for your chat room, but you might be able to schedule a chat with someone of importance to your site's visitors: the school superintendent,

*continues*



## Digital Decorating: 4 Ways to Customize Your Meeting Place

Commercial conferencing and chat server software provides customizing features that enable you to tailor the appearance of your meeting place. Take advantage of these fea-

tures to give your conferencing and chat areas the same look and feel as the rest of your Web site. The following examples show a few simple customization tasks you

might perform with Lundeen & Associates' Web Crossing conferencing system. These same basic concepts and techniques apply to other conferencing packages.

### 1 Add a Greeting and Custom Graphics

One of your first steps should be to fine-tune your conferencing area's opening screen by adding your own greeting and including a custom graphic.

The gateway to Web Crossing customization is its Control Panel screen. To reach it, log in as the sysop of your conferencing area and then click on the Control Panel button that appears. The options on the Control Panel screen enable you to customize Web Crossing as well as back up the conference database and view usage statistics.

HTML for page banner

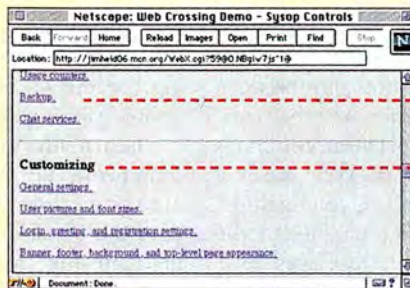
```
</center></a></br>
```

HTML for greeting message

```
<br>
<a href="http://www.acmesystems.com/">Go to Acme Systems Home Page</a>
```

HTML for page footer

```
Welcome to the Acme Systems discussion area, where you can ask our
engineers questions and exchange ideas with other Acme Systems
customers. <br><br>
For an introduction to this discussion area, click on the "Guided Tour
link below. Or just dive in!
```



It's essential to back up your conferences daily.

Customize your conference area's basic appearance.

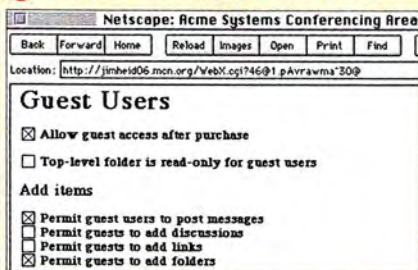


Page banner

Greeting message

Page footer

### 3 Control Guest and User Access



To encourage visitors to register, you may want to restrict guest access so that guests can browse your discussions but not participate. In Web Crossing's Control Panel screen, click on the Guest Users link and then check and uncheck options as desired.

### 4 Link to Your Conferences

Once you've created a conferencing area, modify your home page and your site's navigation bar or banner to include a link to the conferencing area.

But don't stop there. An excellent way to draw visitors into a discussion is to include links to specific discussions in relevant places throughout your site. For example, say you've created a travel site that has a corresponding discussion area. At the end of each travel destination page, you might include a link that says something like, "Have you been to Bali? Post your experiences here."

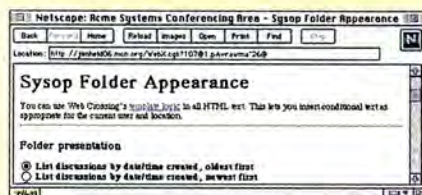
This direct-linking approach snags readers when they're most engaged by a given topic. And by eliminating the need for them to navigate their way to a specific discussion, it increases the odds that they'll participate.

Creating links to a specific discussion isn't exactly straightforward. The problem is, when you create a new discussion topic, Web Crossing and most other conferencing products assign the topics URLs that aren't exactly finger-friendly. (For example, the URL for a specific Web Crossing topic might read <http://www.yoursite.com/WebX713@91.rfxF3>.)

When you want to create a link to a specific discussion topic, follow this procedure: Create your discussion topic and then navigate to it, using your Web browser. Select the topic's URL in the browser's Location bar, and then choose Copy. Now switch to your favorite HTML editor and paste the URL at the appropriate location. The result will be a link that takes visitors directly to the conference discussion that relates to the topic.

## 2 Customize the Interface

Web Crossing's Control Panel screen also enables you to customize many aspects of Web Crossing's interface.



To customize the way discussion topics are displayed, choose the Folder Appearance option.



To customize the icons and buttons that Web Crossing displays, choose the Custom Buttons and Icons option. **TIP:** If the dimensions of your new buttons differ from those of Web Crossing's default buttons, be sure to enter those new dimensions. That way Web Crossing will display them correctly.



Sometimes just a bit of customization is enough. The New York Times' Forums area uses custom buttons and discussion icons.

the company president, the engineer who designed your widgets.

So conferencing areas allow for a rich give-and-take that people can participate in any time they want to, while chat rooms enable real-time interaction. They complement one another nicely—and that's probably why many sites and commercial online services offer both.

You can, too. There are a couple of routes you can take to add conferencing and chatting to your site; one is a toll road and one isn't.

### Commercial Options

The toll road involves buying commercial conferencing software and running it yourself, either on a Web server located on your premises or on an Internet service provider's server. I'm partial to two commercial packages: the \$995 Web Crossing, from Lundeen & Associates (510/521-5855, [www.lundeen.com](http://www.lundeen.com)), and WebBoard (\$59.95 to \$349, depending on features), from O'Reilly & Associates (707/829-0515, <http://webboard.ora.com>). For an overview of the kinds of features you'll find in these and other conferencing-software packages, see "Talkin' Features: What You Get with Conferencing Software."

Web Crossing is the only major-league conferencing software available for the Mac OS. Web Crossing runs along with your existing Web-server software (for example, Quarterdeck's WebStar). Versions are also available for Windows NT and Unix-based servers.

WebBoard is available for Windows NT and 95 only; you might consider it if you run Windows-based servers or if you contract with a service provider that does. WebBoard contains internal server software that eliminates the need to run a separate Web-server package to dish out your conferences. WebBoard is also compatible with all major Windows Web-server packages.

Getting either server software up and running is straightforward. After installing it and starting it up, you can fine-tune its settings by logging in, using your Web browser (see "Digital Decorating: 4 Ways to Customize Your Meeting Place"). This browser-based administration means that you can configure your server from anywhere in the world (or, on an intranet, from anywhere on the network). This ability is particularly useful if your conferencing

server is running on an Internet service provider's computer.

Web Crossing as well as WebBoard also provide real-time-chat features that work with any Java-capable browser. In the base version of Web Crossing, only 5 users can chat simultaneously; a license for up to 100 simultaneous users costs \$495; and a 250-user license is \$895. With WebBoard you are able to have an unlimited number of users.

### Free or Nearly Free Options

For a small Web site—say, your own personal paean to poodles—you probably can't justify buying a commercial conferencing or chat server. That doesn't mean that your site is stuck on a one-way street. Several sites offer free or nearly free chat or conferencing services you can tap into from your Web site.

Probably the most popular free chat service is EarthWeb's ChatPlanet ([www.chatplanet.com](http://www.chatplanet.com)), which uses a Java-based chat applet that works in version 3.0 or later of Netscape Navigator or Microsoft Internet Explorer. Creating your own ChatPlanet chat room takes just a few steps: Simply read the licensing agreement, and complete an on-screen form, entering information about your site and its chat room. You'll receive an e-mail containing some HTML code that you paste into the page where you want your chat room to appear. So that chatters can find you, EarthWeb lists your chat room in the ChatPlanet directory.

What's in it for EarthWeb? Revenue, silly. The free ChatPlanet chat rooms contain banners from EarthWeb advertisers. And EarthWeb hopes you like its chat technology so much that you'll sign up for one of the company's commercial chat services. For about \$50 per year, you can have a private chat room—one that isn't linked to the ChatPlanet directory.

*continues*

### Bookmarks

**Web Crossing**  
Mac Web-server software  
[www.lundeen.com](http://www.lundeen.com)

**WebBoard**  
Windows Web-server software  
<http://webboard.ora.com>

**Macworld's conferences**  
[www.macworld.com/more/](http://www.macworld.com/more/)

**Register your conferencing area at Forum One**  
[www.forumone.com](http://www.forumone.com)

### SITES USING WEB CROSSING

**New York Times**  
<http://forums.nytimes.com/comment/>

**CNN**  
<http://cnn.com/community/>

**Excite**  
<http://boards.excite.com>

For about \$300 per year, you can have an advertising-free chat room containing your own custom graphics, such as a company logo. And for a flat \$5,000, you get EarthWeb Moderator, a Java-based chat server that you can run on your own Web server to create as many chat rooms as you like. It's pricey, but it's industrial-strength chat software that can handle thousands of rooms and chaters simultaneously.

TalkCity ([www.talkcity.com](http://www.talkcity.com)) offers a similar free chat-room service. And Tripod ([www.tripod.com](http://www.tripod.com)), the spunky, twenty-something-oriented lifestyle site, offers free personal chat rooms to its premium-class members. Premium membership costs \$36 per year and includes other amenities, including 12MB of Web-server space and—yeah!—a 20 percent discount on Tripod apparel.

As for free conferencing services, my research turned up just one, and a funky one at that. LinKo ([www.linko.com/efree/efree.htm](http://www.linko.com/efree/efree.htm)), a South Korea-based site, offers free conferencing areas, Web-page-hit counters, and guest books.

As with the free chat services, setting up a LinKo-based conferencing system is a matter of filling out an on-screen form and adding a few lines of HTML to a particular page on your site. Like the rooms in free chat services, LinKo's conference boards have banner advertisements in them. But LinKo's are in Korean—guaranteed to lend an international flavor to your site.

LinKo's conferencing features can't compare with those of Web Crossing or WebBoard. There's no search capability, for example, nor is there support for user registration or multiple discussion topics. But you can't beat the price.

### How to Be a Good Moderator

Whether you take the free or fee route to creating a Web community, be sure you know what you're in for. Setting up a conference or chat area is only the first step—you also need to invest some time in keeping the conversations flowing.

That's the job of the *moderator*. In a conferencing area the moderator keeps discussions active by seeding them with questions or comments. In a chat room the moderator serves as a greeter and a bouncer, encouraging visitors who just dropped in to participate and warning unruly guests to shape up or log off.

If you've set up a conferencing area

## Talkin' Features: What You Get with Conferencing Software

**All conferencing software provides a similar array of features that help you organize conference discussions and help participants join in.**

### Registration

Visitors can give themselves user names and passwords and can specify their e-mail addresses. The conferencing software tracks registered users and shows only those messages that have been added since the last time they showed up. Registration also enables you to compile a database of discussion participants—handy for marketing and research purposes. All conferencing software enables unregistered visitors to log in as guests. You can provide various levels of guest access—for instance, you can allow guests to browse conferences but require that they register in order to post messages.

### Public and private discussions

You can specify that any guest or registered user may participate in a public discussion but that private discussions are restricted to those users you select. Mix and match both types of discussions, if you want. For example, you might create public discussions for your customers and private ones for your employees—or even for specific departments or work teams.

### Read-only discussions

You can set up discussions in which anyone can read messages but only a certain person can post them. You might use a read-only conference to provide a daily news announcement or to post policy information.

### Moderated discussions

Here's a handy feature for keeping a conference focused on its topic and for keeping out undesirable postings or posters: You can configure a conference so that incoming messages have to be screened and approved by a moderator before they become available to everyone.

### Search features

Conferencing products provide search features that enable visitors to locate postings by typing words or names of participants.

### HTML support

Most conferencing software enables visitors to include HTML tags in their postings so that they can create their own formatting or include links to other sites. Most also enable you to control which HTML tags you will allow in postings, so you can, for example, allow visitors to format their text but not include links to other sites.

### Usage statistics

Enter the administration mode that conferencing products provide, and you can view statistics showing which discussions are attracting the most visitors. You can use this data to determine which topics your visitors are interested in and fine-tune your discussions accordingly.

as a way for customers or employees to obtain technical help or ask questions, it's important to be responsive. Check for new postings frequently, and reply to them promptly. Ignoring a conferencing area is a surefire way to kill the conversation.

Is it all worth it? Judging by the number of big-name Web sites that provide

conferencing and chat services, yes. People love to share their opinions, and conferencing and chat areas give them a soapbox where they can do so. ■

JIM HEID is the conference chair for the Web Design '98 conference ([www.thunderlizard.com](http://www.thunderlizard.com)) and the author of *HTML & Web Publishing Secrets* (IDG Books Worldwide, 1997).





The documents "CriticalFile.doc" and "JobOnTheLine.xls" could not be opened because the programs that created them **Word 97** and **Excel 97** could not be found. Sorry...

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# The Animator's Guide to Good GIFs

Making the Most of Motion on the Web

by Barbara Assadi and Arne Hurty

**T**hese days, nearly every home page and ad banner is a living, breathing, moving creature, thanks to GIF animation. Luckily, you don't need a degree in computer science to create animations for your own site—a few basic facts and some fundamental truths about a nifty little format called GIF89 will suffice.

## What Is GIF89?

GIF89 is a file format designed for the Web that lets you create files containing multiple GIF images. Today's browsers display these images one after another, creating the illusion of movement. The GIF89 format also includes playback information, such as timing and looping.

GIF89 animations don't require plug-ins. The browser simply downloads

the GIF89 file from the server once; if the animation repeats, the browser reloads the images from the cache. This means you only have to contend with the bandwidth issue once per page view.

## Animation Basics

GIF animations work much like traditional flip-book and cel animations, both of which rapidly display a series of slightly different images. The more images, the smoother the animation.

In a flip book, each image is a separate page with a complete image; in cel animation, each image consists of layers of clear acetate (cels). The bottommost cel contains a static background; upper layers hold moving objects. To make a ball bounce, for example, an animator can place a series of cels, one at a time, on top of a fixed background—say, a fence. The ball appears at a new spot in

each cel. Since the fence shows through the clear acetate, the ball appears to bounce along in front of the fence.

You can create GIF animations that work like flip or cel animations using a number of programs. Our favorite is Yves Piguet's GifBuilder shareware. (You'll find it on *Macworld's* Web site, [www.macdownload.com](http://www.macdownload.com).)

A "good old" format that's been around for a long time, GIF89 continues to be the most popular form of motion on the Web. And for good reason—it's very easy to use. While you should be able to start animating quite quickly, to get the most out of your GIF89 animations, check out "Five Fundamental Truths about GIF89 Animation." [m](#)

BARBARA ASSADI and ARNE HURTY, principals of AssadiHurty, create marketing materials for technology companies.

## Simple Steps for Simple GIFs

It's easy to create your own animations using Adobe Photoshop and Yves Piguet's GifBuilder; just follow the basics below. (For a more in-depth tutorial on GifBuilder, see "Animate Your Web Site," *Media*, September 1996.)



**1** Start by creating a background image in Photoshop.



**2** Select all (⌘-A), copy the image to the Clipboard (⌘-C), and paste it into the Frames window of an open GifBuilder file.

Frames						
1 frame	Length: 2.00 s	Size: 240x63	Loop: forever			
Name	Size	Position	Dtsp.	Delay	Transp.	
Frame 1	240x63	(0; 0)	N	200	-	



**3** Back in Photoshop, make yourself a new layer in the same file as the background. Create the object you'd like to have move over the background.

**4** In the Edit menu, choose Copy Merged, then paste into GifBuilder's Frame window to make frame 2 of the animation.

**5** Return to Photoshop and make the object's layer active, then move the object to a new location for frame 3.

**6** Repeat steps 4 and 5 until you have all the frames you need for the motion you want.

**7** In GifBuilder select Frame Optimization from the Options menu and save your file.



You can preview optimized frames by scrolling through the list in the Frames window with the down-arrow cursor.

## Five Fundamental Truths about GIF89 Animation

GIF animations are easy to create, but to make the most of them you need to consider a few truths that are not self-evident. (Take a peek at [www.macworld.com/more/](http://www.macworld.com/more/) to see the following examples in action.)

### 1 Big file sizes are bandwidth bugaboos.

The most important thing to remember is that big files clog the pipeline. While there are a number of ways to drive up file sizes, the flip side of that is there are also several ways to keep files small. Try these file-containment tips.

- **Use the smallest color palette possible for the job.** GIF89 is an uncompressed format, which means files can grow to enormous proportions if you use too many colors.

- **Don't dither.** Dithered colors look smoother than solids, but they create texture in the image, which drives file sizes way up. You can uncheck Dithering in GifBuilder's Options menu, but to be really safe, you



2 bits  
(16 colors)  
1.5K file



6 bits  
(64 colors)  
2.5K file



8 bits  
(256 colors)  
4K file

**Decreasing Bit Depth** Try converting individual cels to 6-, 5-, 4-, and even 3-bit color to see what happens to the file sizes and image quality as the bit depth goes down.



**Blurred Vision** The top series has four frames, one for each step of the eye's movement. In the bottom set, a single blurred frame takes the place of two frames from the top set. Blurring gives the feel of smooth motion in fewer frames.

should stay away from dithering in Photoshop as well.

- **Reduce the number of frames.** There are several tricks you can perform to simulate a lot of motion with just a few frames. For example, placing a blurred frame between two static frames gives the appearance of many frames (see "Blurred Vision"). You can extend this trick by using speed and motion lines the way cartoonists do (see "A Winning Streak").

- **Omit needless frames.** Examine your finished animation frame by frame. Try removing any frames that seem unnecessary. You may be able to achieve the same effect in fewer steps.

- **Less is more.** An animated GIF redraws only the pixels that change. Thus, if you animate a

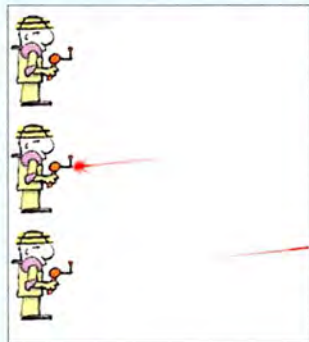
big object, more of each frame gets redrawn and you increase file size. Compare two animations, one of a life-size quarter, the other of a dime. You will see that the dime cel file is smaller than the quarter cel file—a savings you get in every frame.

### 2 Web surfers can get seasick.

Motion attracts attention, but it can also distract visitors who are trying to read—use it sparingly. A small flashing click-here icon might get just as much attention (and be less irritating) than a large blinking banner. Try setting your animation to loop just a few times, particularly if you want people to settle in and read your content carefully.

### 3 Some "unexpected" problems can be avoided.

Use the same color palette in all stages of creating your animation. If the colors in the "static" background change, even slightly, from frame to frame, GifBuilder sees that variation as animation and redraws that portion of the frame. Unintentional color changes often occur when you convert files to index color. If you create your animation frames in RGB format in Photoshop, pick the frame that has the most colors, then convert it to index color using various options. Try the Adaptive palette and experiment with different bit depths to see



**A Winning Streak** Blending the laser blasts' color—from strong red to light red in the first blast, and light to strong red in the second—creates the impression of a pulse moving smoothly across the screen, in just two frames.

how few colors you can use while still preserving the image quality. Then select Previous as the palette choice when converting the other frames to the animation.

### 4 Automated optimization is an animator's friend.

A number of programs offer automation features. Take advantage of them when you can.

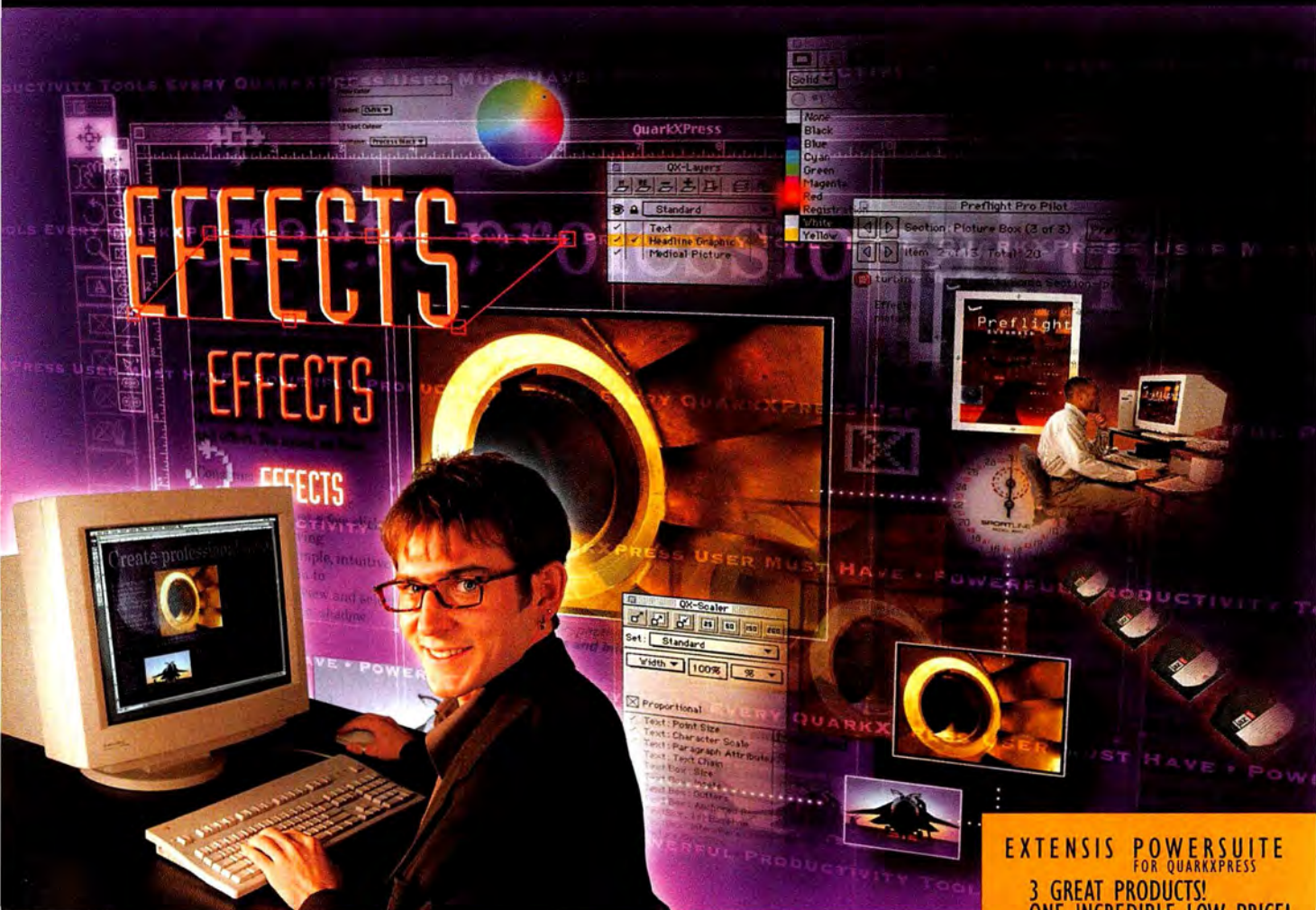
- **Use GIF Wizard ([www.gifwizard.com](http://www.gifwizard.com)).** This is a great online utility that automatically redoes GIF animation in multiple-bit depths, using multiple palettes. Surprisingly fast, GIF Wizard works with files right off your hard drive. (You must pay a membership fee based on the number of scans and the time of day you perform them.)

- **Crop your frames.** GifBuilder's Frame Optimization feature dramatically reduces file sizes by automatically cropping the frames in your animation. Frame Optimization examines each frame for changes in color and pixel position and then crops the frame down to a rectangle just large enough to house the portions of the image that need to be redrawn. You should also examine your optimized animation frame by frame; you might find places to crop it in even closer than Frame Optimization does.

### 5 You can't assume that colors will be consistent across platforms.

If it's important that the colors in your animation be consistent across platforms, use browser-safe colors. GifBuilder's 6x6x6 palette, for example, is safe for both Mac and PC browsers; it contains only those colors that show up correctly on both platforms. In most cases browser-safe colors also keep file sizes smaller.

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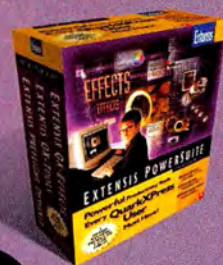
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## Make Mine MIDI

Who's Afraid of Musical Instrument Digital Interface?

by Christopher Breen

**M**IDI (Musical Instrument Digital Interface) has long been deemed useful only to musicians and therefore has been largely ignored by those involved in multimedia and the Web. Yes, MIDI is a wonderful tool for musically inclined souls, but it also has its uses in other areas of multimedia—for adding musical soundtracks to Web sites, presentations, and shareware games, as well as for controlling and synchronizing MIDI-aware devices such as samplers and lighting controllers. There's no need to be mystified by MIDI—especially once you know the advantages of using it (low cost and space savings, for instance) and how to employ it in your own projects.

### Why Use MIDI?

The first reason to choose MIDI is that it provides a trim alternative to digital audio. For example, a 1-minute, stereo, 16-bit, 44.1kHz audio file devours approximately 10.6MB of hard-disk space, whereas a 1-minute MIDI file might consume as little as 7K. If you're throwing together an expansive CD-ROM or DVD project, you may have storage to burn and so opt for huge digital-audio files, but those who depend on the Internet—Webmasters and authors of tuneful shareware products, for example—don't have this luxury. For Net folks, file size is crucial, and MIDI can provide a load of musical information without gobbling up bandwidth.

The second reason to opt for MIDI is that MIDI files are not CPU-intensive. In order to play a multitude of digital-audio tracks concurrently, your Mac

requires a PowerPC processor. On the other hand, you can easily record and play *sequences* (MIDI songs) containing dozens of MIDI tracks on 680X0 Macs.

Third, MIDI won't break your budget. You can purchase a MIDI setup for around \$500. The Roland PC-180 is a perfectly capable 49-key MIDI controller keyboard and costs around \$240. The Yamaha MU10 synthesizer module costs about the same. (For the full set of equipment, see "Making Connections: A Typical Macintosh MIDI Setup.")

Finally, MIDI files are readily available on the Internet and in clip-media collections, so you can use MIDI even if you're not able to play a note. Warning: You can find numerous copyrighted MIDI files on the Web, but most have not been cleared for commercial use and therefore shouldn't be used in public

*continues*

### Making Connections: A Typical Macintosh MIDI Setup



Your Computer  
of Choice

#### MIDI Interface

Your MIDI setup requires a go-between to translate MIDI data to and from the Macintosh. That go-between is the MIDI interface. Connection to a MIDI interface is made via one or both of the Mac's serial ports. Some synthesizers and MIDI tone modules carry a serial-port connector and therefore don't require a separate MIDI interface.

#### MIDI Sound Module

You can add a number of MIDI devices to your system either by daisy-chaining the devices via MIDI Thru ports or by adding them to a multiport MIDI interface. These devices can include additional synthesizers, drum machines, samplers, and effects units.

#### MIDI Keyboard Controller

Typically, MIDI controllers come in the form of keyboards, although there are also drum, guitar, bass, wind, MIDI mixing-board, and yes, even accordion controllers. Some controllers carry synthesizer chips of their own; others are mute, existing only to transmit and receive MIDI data.

broadcast. To find legal, fully licensed, commercial sequences, check the advertisements in the back of music magazines such as *Electronic Musician* and *Keyboard*.

### MIDI Defined

Before you start using MIDI, it's a good idea to understand the basics. MIDI is a language used to tell MIDI-aware machinery (such as synthesizers and drum machines) and programs what to do—it's the musical equivalent of PostScript. For example, when you press middle C on your MIDI keyboard, the keyboard sends the MIDI synthesizer a message along the lines of "I'm playing note C3 at medium volume." Naturally, MIDI would be terribly limited if this were all the information contained in a MIDI message. But MIDI's vocabulary is broader than simple "play this note, this loud" commands. Given the proper machinery, MIDI lets you perform feats such as remotely operating the transport controls of a tape recorder or the faders on a lighting controller.

In many cases you'll want to use MIDI files that can be played on a variety of synthesizers and computer platforms. For this reason, it's a good idea to use General MIDI (GM)-compatible products. GM is a subset of the MIDI standard that helps make sure that your MIDI files sound the same, more or less, no matter what GM-compatible synthe-

sizer a user plays them on. That's partly because GM creates a standardized location for instrument sounds on synthesizers—for instance, on all GM-compatible synthesizers, the banjo sound is at instrument location 106 and the cello sound is at location 43. To visualize this, imagine walking into a room full of GM-compatible synthesizers, pushing the combination of the 4 and 3 buttons on each synthesizer, and hearing the cello sound come out of each one.

GM also requires that GM-compatible instruments carry a standardized bank of 128 sounds and be capable of playing at least 24 notes at the same time. How similar the instruments sound depends on the audio quality of the synthesizers.

To record and edit MIDI data, you need a program called a *sequencer*—a cross between a MIDI tape recorder and a musical word processor. Just as a standard is necessary so that graphics files created by one application can be read by another, so too MIDI sequencers require a pan-sequencer standard, called the Standard MIDI File (SMF) format. By using SMF, you ensure that your files can be played on other sequencers and platforms. (See our review of two new MIDI sequencers in this issue.)

### MIDI and the Mac

Unlike PCs, Macs have sound capabilities built in. For playing MIDI, that

means using Apple's QuickTime Musical Instruments extension—a limited solution. To begin with, this extension doesn't provide all 128 instruments of the GM sound set but rather a subset of just 58 sounds and 1 drum kit. More important, the quality of those 58 sounds leaves much to be desired.

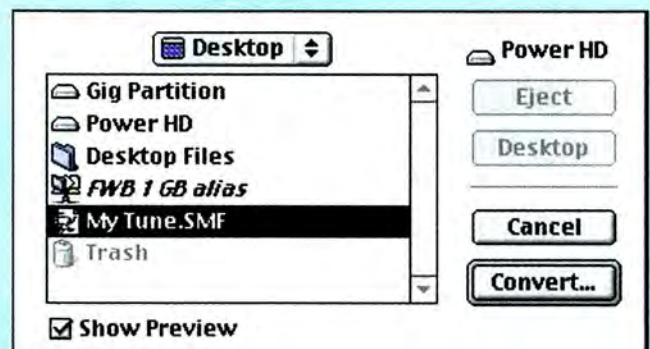
Thankfully, QuickTime 2.5 provides a way to skirt QuickTime Musical Instruments. The QuickTime Settings control panel lets you route MIDI information through another MIDI device—an external synthesizer or a higher-quality software-based synthesizer such as InVision Interactive's CyberSound Studio (\$99; 650/812-7380), for example.

### Uses for MIDI

**The Web** Adding MIDI to your Web site can be accomplished through the auspices of QuickTime (see "Make Your Site Sing," December 1997) or with the help of Beatnik, a free plug-in from Headspace (650/696-9400). In addition to Beatnik's providing a better 32-voice software synthesizer than QuickTime, one of its more attractive features is groovoids—49 short sound samples contained within the plug-in. These sounds range from simple beeps and clicks to a trumpet fanfare you might hear at the Kentucky Derby. With a line or two of HTML code, you can brighten up your site by triggering a groovoid when a user performs a specific action, such as

## MIDI-to-QuickTime Conversion

Since version 2.0, QuickTime has included a MIDI track. Having this track makes it easier to embed MIDI files in a Web page or presentation. But how do you convert a Standard MIDI File into a QuickTime movie so you can put it on your Web page? Just follow these steps, and all will be revealed. (To learn how to create a Web page that plays a MIDI file automatically, see "Make Your Site Sing," December 1997. You can find it in the *Macworld* archives at [www.macworld.com](http://www.macworld.com).)



**1** Choose Open from Movie Player's File menu (Movie Player is part of QuickTime), and select a MIDI file saved in SMF format. Click on the Convert button, and save.



Your Standard MIDI File now opens as a QuickTime movie containing no video information.

opening a page or passing over a link. Because groovoids are part of the Beatnik plug-in, they play immediately—there's no waiting for the sound to download.

To exploit Beatnik's full potential, check out Headspace's Beatnik Editor. With this editor you can import MIDI sequences and save them in Beatnik's Rich Music Format (RMF). One of the editor's most intriguing features is the ability to save an RMF file as a stand-alone document. Such a document contains your performance, instrument, and copyright information as well as a run-time engine that plays the RMF file's songs, using Beatnik's instrument sounds—no additional software is required. Although RMF files are far larger than their SMF counterparts—554K for a 31K 4-minute SMF I converted to RMF—they're small enough to post on a Web site or enclose in an e-mail message.

**Multimedia** While MIDI is a language used to tell MIDI-aware machinery and programs what to do, most users think only of synthesizers and sequencers in this regard. Yet MIDI can control *any* MIDI-compatible machine. In addition to exotic devices such as MIDI-controllable lighting consoles, this includes samplers, hardware devices that record and play digital-audio snippets.

Here's one way MIDI and a sampler can help you synchronize sound effects in a video project: Using a MIDI inter-

face capable of syncing to SMPTE (a synchronization standard) time code, it's possible to synchronize a sequence to a video source. Simply stripe the video with time code; route the time code to the MIDI interface's SMPTE input, using a standard audio cable; and fire up a time-code-friendly sequencing program—all professional sequencing applications support SMPTE synchronization. On the sampler, map each sound effect to a different key on the MIDI keyboard—gently chirping birds on C2, for example. Now put the sequencer into Record mode, start the video, and trigger each sound effect at the proper time by playing the corresponding key on the MIDI controller. When you've finished recording the sequence, tighten up any loose timing from within your sequencer by shifting the notes that represent the beginning of each sound effect.

**Game Design** Gaming is an area where having small file sizes can be crucial. Shareware-game authors hoping to tempt users to download their latest digital diversion should think twice before saddling potential customers with megabyte upon megabyte of digitized garage-band sound.

Typically, shareware games include digital-audio files that are looped together to create a soundtrack. Unfortunately, to create a diverse soundtrack, you need

numerous different loops, which eat up space on the disk very quickly. A mere couple of extra megabytes of data can make the difference between a file's being downloaded and its being passed by. A slender MIDI soundtrack helps reduce file size.

For a highly entertaining example of MIDI in a shareware game, have a look at Harry the Handsome Executive, from Ambrosia Software ([www.ambrosiasw.com](http://www.ambrosiasw.com)).

### Coda

Granted, unless you're a musician, MIDI is not the be-all and end-all of your work. But now you can see that MIDI is not just for musicians and that it's a worthwhile addition to any multimedia designer's professional bag of tricks. The next time you're looking for that little extra something to separate your project from the pack, consider MIDI. **m**

*Macworld* contributing editor and musician CHRISTOPHER BREEN uses MIDI extensively in his production studio and in live performance.

### Bookmarks

Headspace  
Beatnik  
[www.headspace.com](http://www.headspace.com)

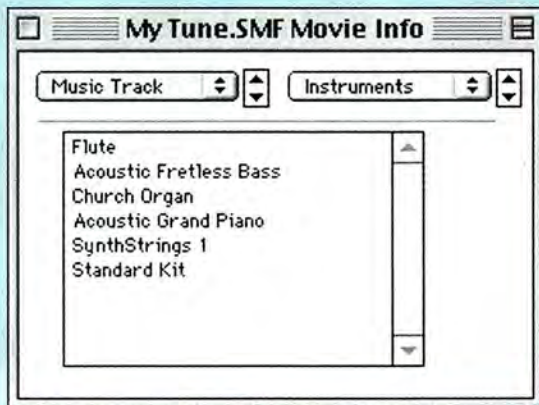
InVision Interactive  
CyberSound Studio  
[www.cybersound.com](http://www.cybersound.com)

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[www.prs.net/midi.html](http://www.prs.net/midi.html)

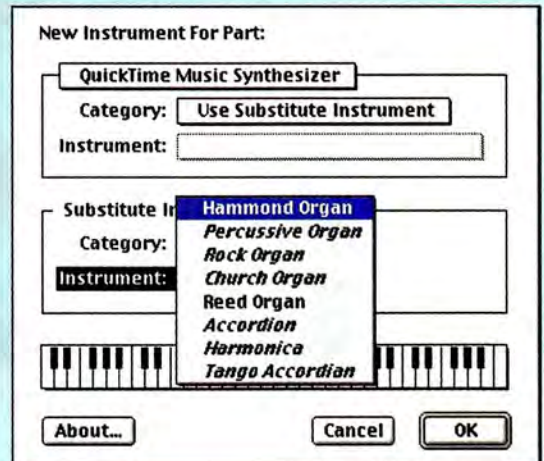
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MIDI equipment  
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**2** Perhaps you don't care for the instrument sounds contained in your MIDI file. Fine—change them. To do so from within Movie Player 2.5 or later, be sure the Authoring Extras plug-in resides in the same folder as Movie Player. Now choose Get Info from Movie Player's Movie menu and select Music Track from the left-hand pull-down menu and Instruments from the right-hand pull-down menu.



**3** Double-click on an individual instrument name to open an instrument-selection window, and choose a new instrument from the Instruments pull-down menu.



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G3 Systems			PowerMac Series-60ns			Starmax & Pm 4400			Power Base Series			PowerMac 6100...			Mac Ilci, si, se, Ilcx...		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
128MB	128664SD	\$605	128MB	128664	\$720	64MB	64764EDO3.3V	\$135	64MB	64764EDO5V	\$135	32MB	32632	\$70	16MB	1601	\$115
64MB	64764SD	\$295	64MB	64764	\$135	32MB	32764EDO3.3V	\$80	32MB	32764EDO5V	\$80	16MB	16732	\$35	8MB	8888	\$42
32MB	32764SD	\$105	32MB	32764	\$70	16MB	16764EDO3.3V	\$45	16MB	16764EDO5V	\$43	8MB	8032	\$25	4MB	4000	\$18
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Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
128MB	PB3400-128G3	\$585	128MB	PB3400-128	\$529	64MB	PB2400-64	\$382	48MB	PB2300-48	\$288	36MB	PBDUO-36	\$245	32MB	PB190-32	\$155
64MB	PB3400-64G3	\$240	96MB	PB3400-96	\$499	32MB	PB2400-32	\$186	36MB	PB2300-36	\$245	28MB	PBDUO-28	\$239	16MB	PB190-16	\$116
32MB	PB3400-32G3	\$130	64MB	PB3400-64	\$270	16MB	PB2400-16	\$90	20MB	PB2300-20	\$160	20MB	PBDUO-20	\$128	12MB	PB190-12	\$70
16MB	PB3400-16G3	\$70	32MB	PB3400-32	\$130	8MB	PB2400-8	\$40	16MB	PB2300-16	\$115	14MB	PBDUO-14	\$115	8MB	PB190-8	\$65
			24MB	PB3400-24	\$115							12MB	PBDUO-12	\$109			

POWERBOOK 5300			POWERBOOK 1400			POWERBOOK 500			POWERBOOK 150		
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16MB	PB5300-16	\$104	8MB	PB1400-8	\$60	8MB	PB500-8	\$72	8MB	PB150-8	\$70
8MB	PB5300-8	\$65				4MB	PB500-4	\$62	4MB	PB150-4	\$45

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UCJ 700L-233	604E 233MHz	\$1945
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Canon

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- 50ppm black/1ppm Color
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- 6.0GB hard disk drive
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- 100MB Zip drive
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Power Mac G3 Mini-tower –  
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- 33.6 Modem

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Power Mac G3 Desktop/233MHz 32MB RAM/  
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5400 RPM Internal

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Quantum	Quantum Stratus drives carry a 3 Year Warranty				
Description	Model	Access	RPM	Internal	External
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3.2GB Stratus	QM33240STS	10ms	5400	\$259	\$309
4.3GB Stratus	QM34320STS	10ms	5400	\$299	\$349
4.5GB Viking	QM34550VKS	8ms	7200	\$499	\$549
4.5GB Atlas II	QM34550ALS	8ms	7200	\$499	\$549
6.4GB Stratus	QM36480STS	10ms	5400	\$399	\$449
9.1GB Atlas II	QM39100ALS	8ms	7200	\$779	\$829
UltraWide SCSI-3					
4.5GB Viking	QM34550VKS	8ms	7200	\$479	\$559
4.5GB Atlas II	QM34550AL	8ms	7200	\$519	\$599
9.1GB Atlas II	QM39100AL	8ms	7200	\$799	\$879
IDE Drives					
1.6GB Stratus	QM31620STA	10ms	4500	\$155	----
2.1GB Stratus	QM32160STA	10ms	4500	\$169	----
3.2GB Stratus	QM33240STA	10ms	4500	\$199	----
4.3GB Stratus	QM34320STA	10ms	4500	\$229	----
6.4GB Stratus	QM36480STA	10ms	4500	\$299	----

**Seagate**

Seagate drives carry a 5 Year Warranty

Ultra SCSI-3	Model	Access	RPM	Internal	External
4.5GB Barracuda 4XL	ST34572N	8.5ms	7200	\$579	\$629
4.5GB Cheetah	ST34501N	8ms	10000	\$679	\$729
9.1GB Barracuda 9	ST119171N	8ms	7200	\$949	\$999
9.1GB Cheetah	ST119101N	8ms	10000	\$1099	\$1149
UltraWide SCSI-3					
4.5GB Barracuda 4XL	ST24572W	8.5ms	7200	\$629	\$709
4.5GB Cheetah	ST34501W	8ms	10000	\$699	\$779
9.1GB Barracuda 9	ST119171W	8ms	7200	\$999	\$1079
9.1GB Cheetah	ST119101W	8ms	10000	\$1149	\$1229
Fast SCSI-2					
23GB Elite 23	ST423451N	8ms	5400	\$1849	\$1949
Fast&Wide SCSI-2					
23GB Elite 23	ST423451W	8ms	5400	\$1889	\$1989

**IBM**

**2.1GB UltraStar ES** 09J1034 8.5ms 5400 \$189 \$239

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ClubMac drives are preformatted and thoroughly tested. ClubMac drives include a 30-Day Money Back Guarantee, Charismic Anubis Formatting Utility software, user's guide, brackets (wide drives include internal ribbon cable), 25/50-pin SCSI cable and power cord for external drives (wide drives include 68/68 pin SCSI cable).

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12-24GB

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- SyQuest EZ Flyer 230MB 3.5" \$149
- SyQuest SyJet 1.5GB 3.5" \$299
- Nomai 750MB 3.5" \$285

**SYQUEST MEDIA**

Media	Qty 1	Qty 10	Qty 20
44MB	\$38ea	\$375ea	\$37ea
88MB	\$38ea	\$375ea	\$37ea
200MB	\$59ea	\$58ea	\$57ea
270MB	\$43ea	\$42ea	\$41ea
EZ230MB	\$27ea	\$265ea	\$26ea
1.5GB SyJet	\$79ea	\$75ea	\$72ea

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3600KB/sec data transfer  
90ms avg access time  
Caddy-less design

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**2.0GB 2.0 JAZ \$649.95**

Includes One Free Cartridge with Jaz Tools



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Zip Drive w/one cartridge	\$139.95
Zip Bundle - drive, 11 Disks, Case, 2 Caddy's	\$279.95
Zip Drive Internal - all PowerMacs	\$159
Zip Drive Internal - all PowerComp/Umux	\$139

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Format	Part#	Qty 1-2	Qty 3-6	Qty 7-9	Qty 10+
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PC	1040 1009	\$19.95	\$16.95	\$14.95	\$12.95

**1GB JAZ MEDIA**

Format	Part#	Qty 1-2	Qty 3-5	Qty 6+
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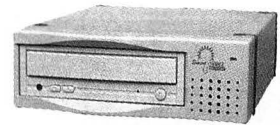
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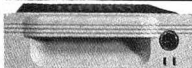
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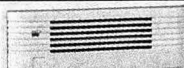
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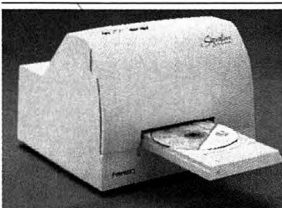
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Apple Performa 450, 460, 466, 467, 475, 476	4	36	256k/512k	34/68			20	39				99			109			
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Apple Performa 630, 630CD, 636	4	36					20	39				59			109			
Apple Performa 631CD, 636CD, 640CD	8	52					20	39				59			109			
Apple Performa 635CD	5	36					20	39				59			109			
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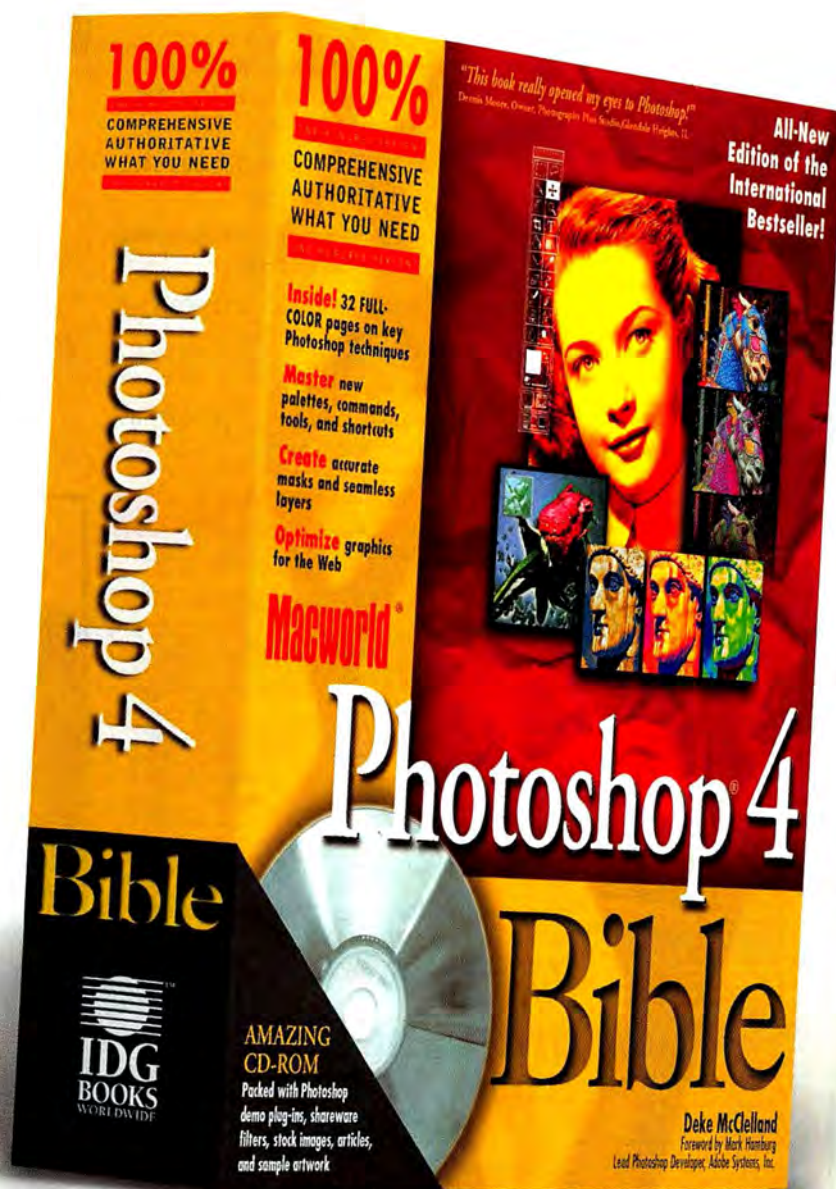
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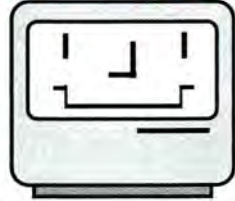
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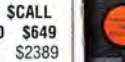


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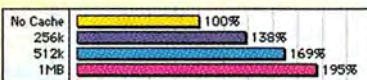
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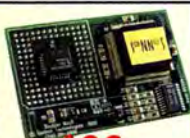
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undergrads couldn't use with Macs today," Updegrove says.

Since Updegrove won't provide any plausible explanation for his crusade, let me offer one: Updegrove realized that in an all-Windows world he could be the most important man on campus. Furthermore, if the Gartner Group's cost studies are correct, Yale will have to double its funding and staffing of Updegrove's department just to keep those Windows machines running. As Kiran Wagle wrote to the school paper, people like Updegrove "depend on the preponderance of Windows. If the Mac OS held 90 percent of the market, people like Daniel would be on the dole queue."

### One-Man Crusades

Updegrove, by the way, claims his letter was misinterpreted. "It is not, and never has been, the University's intent to become an 'all-any-operating-system campus,'" he wrote me.

I must admit I sprayed my Sprite when I read that. Not his intent!? Then why did he write The Letter? Why did his Web site give such Borg-like instructions

to faculty as: "Departments should develop a Windows migration plan before June 2000"? And above all, why won't he change his official mind about freshmen bringing Macs?

Misinterpretation or not, the migration is underway, and it's not pretty. "We've had a lot of trouble supplying computers to students," says a Yale computer store staffer. "HP won the bid to supply Windows machines to students, but they arrived late and with no software on them; several were DOA. So we spent several Saturdays installing memory and software. We had a bunch of unhappy students, and a couple still don't have their computers. There's now a two-week wait for service."

I don't mean to dump on Updegrove. Well, not *just* on him, anyway. After all, similar phaseouts are underway at Stanford and Brown. But the Yale case illustrates perfectly how Mac phaseouts go, whether on campus or at corporations. They are always orchestrated by a single person in a position of power who's willing to steamroller any opposition.

Unfortunately, such personal agendas come at a tremendous cost. Creative people lose their favorite tool. Apple gets

terrible press. And because Windows machines cost far more to support than Macs, the result is higher costs for the companies and universities.

Worse, Apple either can't or won't fight back, even for crown jewels like colleges. "We're not going to respond publicly, and we're not going to make huge donations," says Apple's education spokesman, John Santoro. "But we are going to do two things: build better products than the competition and show some black ink." I don't know; when the nut is as hard to crack as Updegrove, I doubt the build-it-and-they-will-come ploy will work.

Fortunately, enlightenment still prevails at most schools. "It is not in the interests of a leading institution to dictate computing platform," says Jose-Marie Griffiths, Updegrove's equivalent at the University of Michigan. "To limit choice of selection limits opportunity and, ultimately, limits achievement."

I hope Daniel Updegrove visits the University of Michigan someday. He might learn something. **m**

DAVID POGUE ([www.pogue.com](http://www.pogue.com)) is the editor of *The Microslath Joke Book* (Berkeley, 1997).

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## Low Blows in Higher Education

YALE TEACHES US HOW MAC PHASEOUTS GO

**J**UNE 1997 WAS A TOUGH time to be a Mac fan. That's when my alma mater, Yale, sent a strange letter to every incoming freshman. "Dear Incoming Student," it said. "You are strongly encouraged to select a Windows PC, which was the choice of over 75 percent of first-year student computer owners in 1996-97. Owing to uncertainties about availability of software for Apple operating systems, the University cannot guarantee support for Macintoshes beyond June 2000."

To comprehend the enormity of that letter, you have to know what things were like at Yale *before*. In 1985, the university began selling Macs at a huge discount to students like me. (This was, you understand, back when Apple's market share was *zero* and there were only *four* software titles available.) Within a year, the *Yale Daily News* had switched to an all-Mac system, and by the late 1980s, every dorm room was wired for LocalTalk. In 1995, 75 percent of Yale students were Mac nuts.

So what changed overnight? As far as the national media were concerned, there was only one possible explanation: Apple had sunk so far, so fast that it had lost even its longtime stronghold, the educational market. "Bring money and clean sheets—but not Apple Macintoshes," *Business Week* gleefully paraphrased.

On campus, the Yale letter provoked an immediate, violent, and baffled response. Alumni, students, and faculty bombarded the *Yale Daily News* with letters to the editor. Who had sent that letter, and why? Where did those crazy "75 percent Windows" numbers come from? Since when does the university dictate what kind of computer its students use, anyway? How can Yale "guarantee" software availability for *any* computer beyond the year 2000? Why does Yale think that today's 14,000 Mac programs will disappear by 2000—especially when Microsoft

itself has promised to write Mac programs at least until 2003?

### The Updegrove Phenomenon

Slowly, the answers came. Who wrote the letter? Daniel Updegrove, director of information technology services, who had arrived at Yale only a year earlier.

Which of Yale's students, professors, or graduate schools had he consulted? None. In fact, Updegrove's letter so misrepresented the university and its faculty that the grad schools tried to distance themselves. "I wish to assure you that the School of Medicine is taking a different

percent of 1996 freshmen came to school with Windows? When pressed, Updegrove conceded that his numbers were estimates. Of the 1996 freshmen who responded to a voluntary survey (less than half the class responded), 68 percent said they were running Windows, a figure Updegrove rounded up to 75 percent.

All right: so we have a scary letter to freshmen, based on fudged numbers, that doesn't accurately represent the university's position. Updegrove's reward was a hurricane of angry calls and e-mail from students, professors, the graduate schools, and alumni. Yet Updegrove's position has not changed.

All of which makes the biggest question loom even larger: *Why, Dan, why?*

### Intel Getting Inside

Donna Ladd, writing for the online edition of the *Mac Home Journal*, offered one possible answer. She noticed a strange coincidence: the same week Updegrove mailed his letter to freshmen, he also applied for a highly competitive grant from Intel, which planned to give 25 colleges \$90 million worth of free stuff. The grant application clearly stated that "a strong preference will be given to proposals that stress the use of Windows NT."

Yale and Intel swear up and down that Updegrove's anti-Mac initiative wasn't a ploy to kiss up to Intel, which insists that it wants to buy its way into high-end research labs and grad schools, not undergrads' desks.

OK, I'll bite. So let's say visions of free toys *were* dancing in Updegrove's head. Then what did drive him to write that letter? Does Yale have special mainframe software that only Windows front-end software can access? Nope. "I am not aware of any client-server systems that



position," announced its dean. (Updegrove later tried to mollify the med-school staff at a special meeting. However, as Assistant Professor Mark Shlomchik, Ph.D., puts it, "Updegrove didn't seem to get basic ideas, such as his office is here to serve the computing needs and preferences of students and faculty, not dictate to us our platform." The meeting ended abruptly when the 60 faculty members simply walked out on Updegrove.)

But what about that statistic repeated in every article on the Yale flap—that 75

*continues on page 185*



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