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APRIL 2000

Macworld

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The Canon
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Photo Printer

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Unlike our competitors, this is not the first device we've made for photographers.

Introducing our latest innovation for photographers: The BJC-8200 Color Bubble Jet™ Photo Printer with 1200 x 1200 dpi resolution. Combining Canon's exclusive MicroFine Droplet Technology™ with a 1,536-nozzle printhead, the BJC-8200 gives you the freedom to print professional-quality 8" x 10" prints at your leisure. In approximately three minutes.* And using Canon Photo Paper Pro in concert with our six-color ink system, you'll get rich, glossy output that rivals the results of photo labs. In other words, we've just brought the darkroom to your desktop.

The perfect solution for any photography enthusiast, the BJC-8200 is compatible with both Mac® and PC computers. But most important, it's the only photo printer from a company that knows a thing or two about photography. For more information, visit our Web site at www.BJC8200.com or call 1-800-OK-CANON.

Canon KNOW HOW™

1200 x 1200 Resolution

The BJC-8200's razor-sharp 1200 x 1200 dpi resolution is nearly 40% higher than ink jet printers with 1440 x 720 dpi.

Ultimate Value

With the Canon Think Tank System,™ you'll save money for years to come by replacing ink tanks individually, instead of wasting the entire cartridge.

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What Canon engineers have to say about the CanoScan® FB 1200S scanner:

Technically speaking, the CanoScan FB 1200S owes its ultra-high resolution to an advance in scanning technology called VAROS™ (Variable Refraction Optical System). With VAROS, the FB 1200S achieves true optical 1200 x 1200 dpi resolution in a compact, desktop size and at a breakthrough price.

The technology involves two passes. On the first pass, the FB 1200S captures data at 600 dpi. On the second pass, VAROS refracts the optical path by half a pixel. Next, a synthesis of both passes is made, resulting in brilliant tones, real 36-bit color depth, and sharp, vivid, real 1200 x 1200 dpi scans.

To capture subtle differences in tone gradation, the FB 1200S has a high 3.3 density range. And a dual-platform SCSI interface card is included for the quick transfer of large files. To interface with Canon, call 1-800-OK-CANON or log on at www.canoscan.com.

The CanoScan FB 1200S Color Flatbed Scanner

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Stunning Resolution

Canon's exclusive VAROS technology delivers true optical 1200 x 1200 dpi resolution.

Dynamic Color

The CanoScan FB 1200S achieves real 36-bit color depth for a superior dynamic range of 3.3.

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> *...the best flatbed scanner I've used.**
>
> ~ Jim Seymour, PC Magazine 9/21/99

One Touch Convenience

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Performance Software

ScanGear,™ Adobe® Photoshop® 5.0 LE and Textbridge® are all included free of charge for Mac® and PC.**

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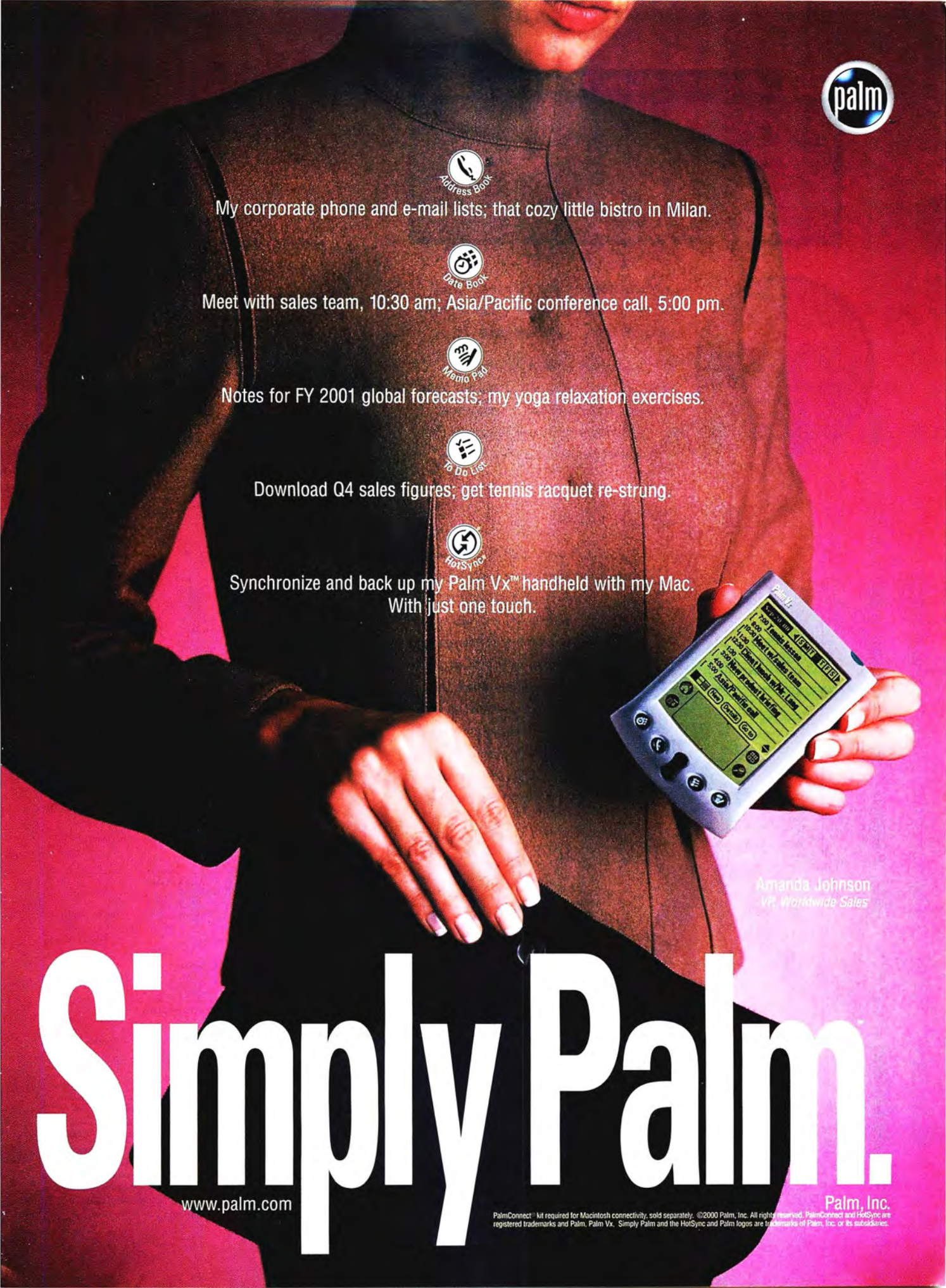
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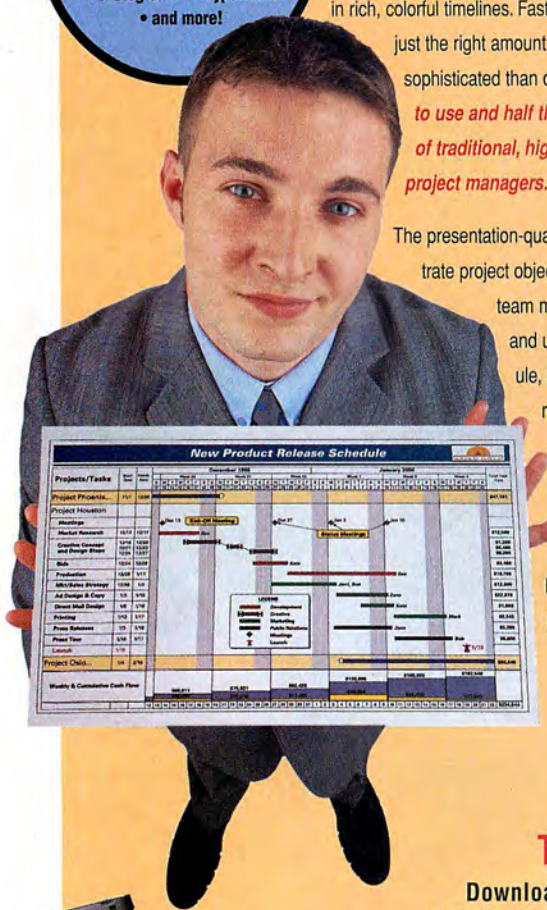

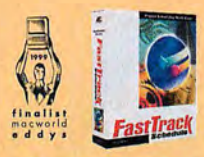

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Web Programmers • ***St. Louis*** • We need tricked-out, back-end web programmers — ones who can write straight HTML and Java code, and who have professional experience with JavaScript, ASP, SQL and Visual basic. Flash experts please report immediately as well.

Senior Software Engineer • ***Baltimore*** • Join this exciting start-up e-commerce company, which is quickly becoming one of the nation's most respected travel companies. This position requires full life cycle experience from requirements definition through product release. You will need to have in depth knowledge of Java, SQL, CORBA and RMI as well as knowledge of object-oriented analysis and design and programming techniques, internet application development on the server side, RDB experience with JDBC, ODBC, Oracle and Access.

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Web Developers • ***San Francisco*** • We have several positions open for candidates experienced in HTML handcoding, CGI, NT info servers, SQL Data Base, Active Server Pages, and JavaScript.

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Macintosh/Windows Help Desk • ***Providence*** • RI company is looking for MAC/PC gurus. Candidates must have extensive knowledge of networking, operating systems, cross-platform connectivity, hardware and software upgrades and troubleshooting.

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APRIL 2000

Letters

Digital Video for All?

THE NEW IMACS LOOK GREAT ("The iMac Is Back," January 2000)! It's about time Apple created a Mac that retails for under $1,000. My problem is that the iMac DV has what looks like some great digital-video–editing software—iMovie. I already own a blue-and-white G3 and would love to use iMovie, but Apple won't sell it separately. I understand that it's made for Macs with FireWire, so why won't it work with all of them? What a waste! And don't tell me to buy Final Cut Pro. If I had that much money, I'd buy a new iMac. Come on, Apple, wake up and smell the coffee. People want digital-video–editing software that costs less than a new computer. Give us a break and make iMovie available to all Mac users.

SANDRA HALL
Merrimack, New Hampshire

I BECAME VERY DISCOURAGED AFTER reading about the new generation of iMacs. Let me see if I have this straight: I just spent almost $1,500 upgrading to a new iMac because of its new features—DVD and digital-video editing. Now I learn that the DVD audio loses sync with the video and I'm unable to run a professional video-editing program on my new machine. I feel duped.

JOHN SEYMOUR
Knoxville, Tennessee

But I Like the Mouse

YOUR MAGAZINE, LIKE MANY others, has criticized the Apple mouse and keyboard. True, most people need to adjust to the mouse, but all it takes is a different way of holding it. The mouse is great for kids; it fits their hands perfectly.

DAVE CUTLER

And after all, the iMac is a consumer item intended to be easy for children to use. Personally, I think the keyboard is better than others; it has a crisper response and takes up less space. I've learned to use the mouse, too. While I think you should let readers know that the keyboard and mouse are different, that doesn't mean you should criticize them so strongly.

S. LIU
San Francisco, California

Designer Bloodlust

THE DEBATE OVER WHICH IS BETter, QuarkXPress or Adobe InDesign ("QuarkXPress versus InDesign: The Great Debate," January 2000) ignored a crucial product feature—customer support. Adobe's excellent customer service beats Quark's Machiavellian customer relations hands down. Now that Adobe offers an up-to-date page-design program, Quark is roadkill. After enduring ten years of abuse from Quark, I look forward to the company's demise. *Macworld*, please report Quark's death throes in detail. I will savor them.

PATRICK ERTEL
Yellow Springs, Ohio

I JUST USED ADOBE INDESIGN FOR a 71-page, camera-ready scientific document. Based on my experience, I believe the glowing praise of InDesign in your January 2000 issue is unwarranted.

One only has to look at the topics on Adobe's own user forum to see what's going on here. One forum, titled "Unbelievably Bad Performance," cites numerous instances of molasses-like speed. I have a 400MHz G3 with 128MB of RAM assigned to InDesign. My article had 15 small photographs, but mostly comprised text set in a single PostScript type family. Small changes that caused linked text to reflow made my hard drive churn for 30 to 60 seconds, during which I couldn't do anything else.

I also found it impossible to print to an Apple PostScript Level 2 printer with the supplied printer driver. Random substitution of individual characters was rampant. I had to export to PDF format and print from Acrobat Reader. Over 70 user-forum postings complained about printing problems, such as lack of support for any non-PostScript device—including all Epson ink-jets commonly used for proofing.

Since this is a young program, I'll overlook that I desperately needed a table editor as well as indexing and table-of-contents capabilities. But features such as vertical text justification can be had in inexpensive, stable, and quick software such as Ready,Set,Go. On the plus side,

continues

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BEST of SHOW
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InDesign's Multi-line Composer does set gorgeous type.

It seems to me that Adobe let fly with nothing more than a quirky beta version. My advice to readers is to hang on to their money and let this software age for a while.

RON GRAHAM
Salem, Oregon

We recommend that you try Adobe FrameMaker (800/833-6687, www.adobe.com) for scientific or very long documents.—Ed.

Don't Slam the Rugged iBook

ANDREW GORE'S REVIEW OF THE iBook (*Reviews*, January 2000) was pretty rough on this new product, although rightly so in terms of the iBook needing at least 64MB of RAM and more ease-of-use features, including a separate numeric keypad. However, if you have a child who has bad handwriting, the iBook could be a very useful tool. It's rugged, the function keys are easily programmable, the keyboard is quiet, and the inexpensive wireless option allows students to print to a remote printer or connect to the Internet while in a classroom. Computers and typing are generally seen as disruptive in a classroom. Too often, they are relegated to separate computer labs as if they were not relevant to a student's primary studies. Please be aware that the iBook is targeted at educational users. It has one-of-a-kind features that may change the way things are done in a classroom.

DAVID WERLING
Little Rock, Arkansas

AOL Doesn't Play Well with Others

WE BOUGHT ONE OF THE FIRST available AirPort setups for the iBook. We installed the AirPort but couldn't get it to connect with America Online (AOL), so we took it back to the store. After eight days of effort and repeated conversations with Apple, the people at the store informed us that the AirPort is incompatible with AOL—despite the fact that Apple installed AOL on the iBook.

How could Apple put out a communication product incompatible with the largest portal in the country? We bought our first Macintosh in 1984. We were hoping that Apple was on the way to recovery. We are so sad.

JOHN AND BETSY ROBINSON
Oakland, California

Unfortunately, America Online does not adhere to the industry-standard PPP connection method. Therefore, it's not compatible with the AirPort.—Ed.

Infrared Secrets Not So Hot

YOUR ARTICLE "JOIN THE INFRARed Revival" (*Secrets*, January 2000) was very timely, as it hit my desk within days of the arrival of my new PowerBook G3. Unfortunately, almost all the information in the article was out-of-date, as I soon discovered while attempting to share files with a bronze PowerBook and HotSync with my Palm V. It seems that the latest PowerBooks, whether they ship with OS 8.6 or OS 9, use only the IrDA protocol, not the IRTalk option recommended in the article. No Apple IR File Exchange exists either.

A trip to Palm Computing's Web site revealed that Palm, too, was ahead of Mr. Schorr. The latest Palm Desktop software, version 2.5, defaulted to an infrared connection on install, and I couldn't find a Palm Extras folder, described in the *Macworld* piece, in the new install or on the Web page specified.

I know it takes time to get an article to press, but this PowerBook G3 information was months out-of-date.

STU MASCHWITZ
San Francisco, California

You're correct that the newest 400MHz PowerBook G3 Series computers support only IrDA, and Apple IR File Exchange works only with IRTalk.—Ed.

Lenticulatin' Macs

I JUST GOT YOUR LATEST ISSUE AND wanted to let you know that although you say there is no company that makes Mac software for lenticular technology ("Lenticular Art Comes of Age," *News*, January 2000), there actually is. Two weeks ago, I downloaded a Mac-only lenticular program from a company called Lexer (www.lexer.com).

MIKE CLEMENT
Saint Louis, Missouri

continues

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Forty Bits Bites Back

I LAUGHED OUT LOUD AT JOE Lewis's gripe about 40-bit encryption ("Forty Bits Bites," *Letters*, January 2000). He complained that the AirPort's 40-bit encryption was inadequate, particularly for sending a 128-bit–encrypted secure Web communication. These fears are silly. For one thing, the range of AirPort transmissions is limited to 150 feet. In theory, someone could park outside your home or office and intercept, decode, and steal your credit-card number, but I doubt the cost of this surveillance would justify the limited yield. Also, while the 40-bit encryption occurs between the iBook transmitter and the AirPort, the 128-bit encryption occurs in the Mac. In fact, you'll see stronger encryption, as the 40-bit encryption is on top of your browser's 128-bit encryption.

People often confuse where security risks are. Hackers don't sit wielding antennas in your parking lot. They filter Internet transmissions along a server or other such places and then search them for credit-card and Social Security numbers. The AirPort's 40-bit encryption should be plenty for its purpose: to protect transmissions from anyone, such as a neighbor, who may be nearby listening with an AirPort-equipped Mac.

STEPHEN DENAGY
Idaho Falls, Idaho

Letters should be sent to *Letters*, Macworld, 301 Howard St., 16th Fl., San Francisco, CA 94105; via fax, 415/442-0766; or electronically, to 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*.

CORRECTIONS

We misidentified the name of Tektronix's site where artists and photographers post examples of their work ("Adobe Builds a New Web Presence," News, January 2000). The name of the site is CreativeSight.com.

We incorrectly stated that the iSub is powered by USB ("The iMac Is Back," January 2000). It requires an external power source. m

The second thing you notice about the new Graphire™ tablets from Wacom is the mouse. Three buttons and a scrolling thumbwheel, no cord to knock over your coffee cup, no ball to clean– and it's five times more accurate than the iMac mouse. The third thing you discover is the famous Wacom pen, complete with DuoSwitch™, built-in eraser and 512 levels of pressure-sensitivity, so you have control over everything from drawing a quick sketch with your free copy of Painter Classic to signing your name.

The first thing you notice, however, is that at under $100, that blueberry Graphire is looking pretty good. But so is the grape... and the lime... and the tangerine...

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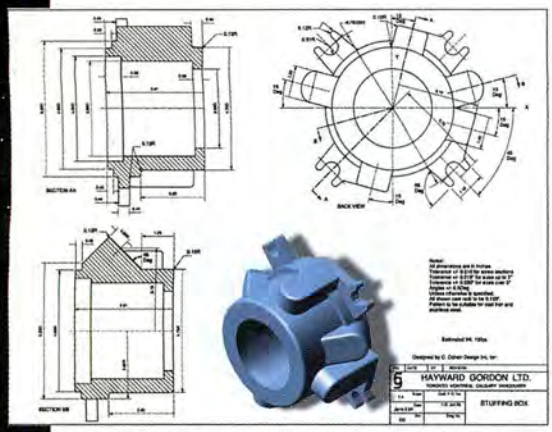

Carlos Cohen, C. Cohen Designs Inc., Toronto, Canada; Rendered with RenderWorks

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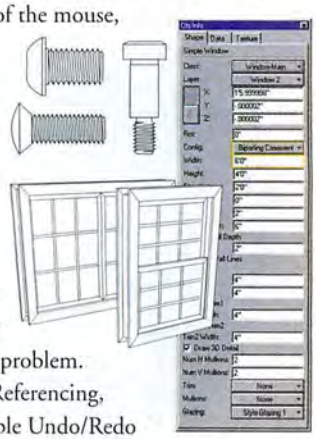

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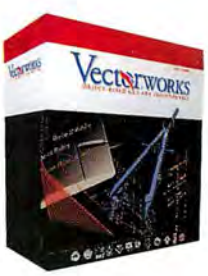

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The Vision Thing

by Andrew Gore

Scenes from an iMovie

GIVING NOVICES PRO VIDEO POWER DOESN'T MEAN THEY'LL ALSO HAVE PRO VIDEO TECHNIQUE

RUN TITLE, FADE TO Scene One. I'm in a restaurant, eating dinner with two friends. They're both in the movie business. We're talking about iMovie, Apple's new digital-video–editing tool that, in combination with a FireWire-equipped camcorder and an iMac DV, makes it possible for anyone, and I mean anyone, to create his or her own professional-looking movies.

"OK, I can see how it might give them the *tools* to make good-looking movies," one of my friends says. "But what about the *technique?*"

"iMovie handles transitions, fades, titling—even sound effects," I respond. "And the interface makes it pretty simple to figure out how everything works."

"How about blocking, pacing, lighting, camera angles, the elements of staging, and good storytelling?"

I counter: "Well, I guess it's just a case of garbage in, garbage out. We had the same problem at the beginning of desktop publishing—just because you can put 35 fonts on a page doesn't mean you should.

"What really matters is that the tools are here to give budding filmmakers the ability to express themselves—without hiring a film crew and a postproduction studio. And, hey, maybe you won't nod off during the next showing of *My Daughter's Prom Night.*"

A pause. Then: "What about sound?"

Foley Folly

Cross-cut to Scene Two: ominous music plays in the background. I don't claim to be a video expert, although as an AV buff, I've used most of the video-editing tools that have come and gone on the Mac platform. But until that dinner, it had not occurred to me to think about the problems of sound and digital video. Sound to me was just that second and third track in the Adobe Premiere window.

But once I sat down to play with iMovie, and look at sound from an aesthetic as opposed to a technical perspective, I realized just how little I know about this simple fundamental of filmmaking.

So there I am, in my study, wrestling to make the sound *sound* right. But no matter what I do, I can't get there. The sound captured by the camera has just got too much ambient noise, no direction, and no leveling. And I can't separate the voice from the background. After years of watching films with multimillion-dollar soundtracks, it's almost

impossible for us to listen to unprocessed sound. The sound recorded by a camera is too realistic, and as a result comes off cheap and cheesy.

And here I am producing films that sound like they were recorded over a long-distance call from Nepal. (Excuse me while I hang up the tin can.)

Story Bored

Scene Three. Cut from aerial shot of San Francisco into an office where a meeting is in progress. "So, we all agree that what most iMovie users really need is guidance." That's our features editor, Scholle Sawyer, speaking. We've just finished a brainstorming session on how *Macworld* should cover digital video in general and iMovie in particular.

"No one is going to become a Spielberg after reading one article in *Macworld,*" another editor chimes in. "But maybe we can give them enough advice so their next vacation video won't put the family to sleep."

Yes. Keep to the basics. Plan out your video before you shoot it by writing an outline, and stick with it. Make your scenes short, and no matter what, don't fall in love with your own footage, unless you want to be the only person who can sit through it. If you think it'll take ten minutes to tell your story, do it in five. If you think it'll take five, try to make it three.

Above all, set your expectations appropriately. Don't think MTV—think *America's Funniest Home Videos.* That way, you won't be disappointed. Remember, those MTV people work in million-dollar studios and have dozens of highly paid professionals who help make their videos look great. All you've got is a $1,300 computer, a video camcorder, and a few hours of spare time.

Who knows? Maybe you will break through the barrier and be the big discovery at next year's Sundance Film Festival. But even if all you're doing is saving your houseguests from the boredom of an hourlong presentation of your trip to Hawaii, you will have accomplished something.

"Okay, that's a wrap." Scholle says as the meeting concludes. "Let's go make a great feature!"

Yes. Let's.

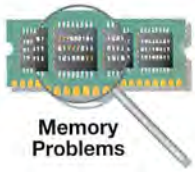
Fade out. Roll credits. m

Questions? Comments? E-mail them to Andy at visionthing@macworld.com.

ANTHONY RUSSO

The Seven Deadly Macintosh Sins:

Software Conflicts



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Damaged Software

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News

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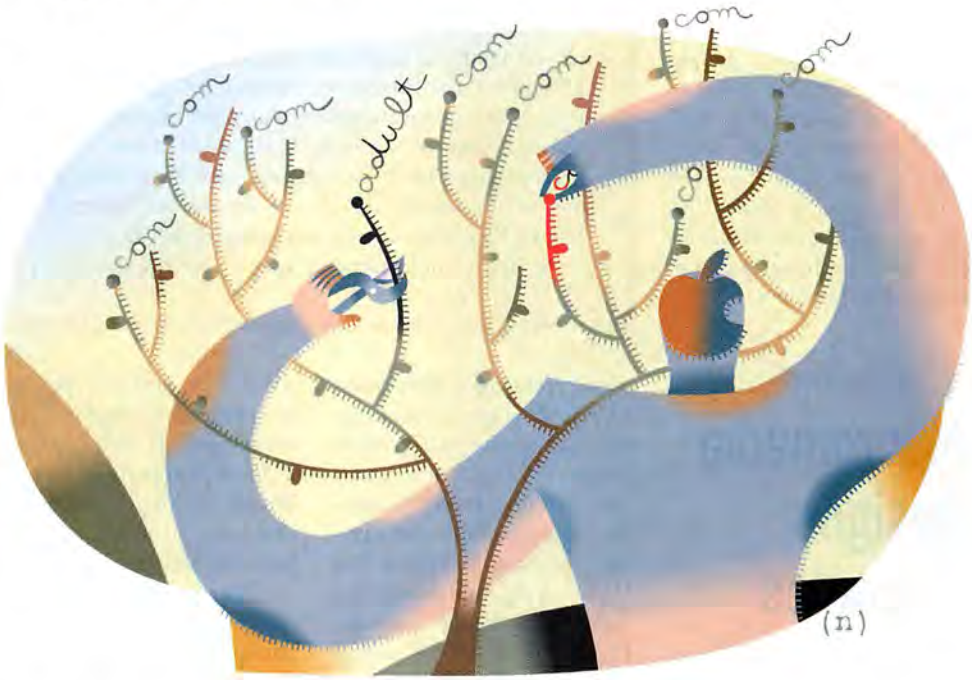
Is Apple Going All Out Online?

COMPANY TACKLES INTERNET CONTENT WITH iREVIEW, KIDSAFE TOOLS

by Philip Michaels



Forget about sleek new PowerBooks and flashy operating systems. To hear Apple (800/767-2775, www.apple.com) tell it, the future of the company includes more than just hardware and software. Indeed, its newly announced Internet strategy seems to be steering Apple toward the increasingly crowded neighborhood of online portals.

The strategy was unveiled at January's Macworld Expo by iCEO—that's *i* as in *Internet*, not *interim*—Steve Jobs. Apple has spruced up its Web site with new services and other tools that exploit the features in Mac OS 9 (see "Mac Tools Get OS-Specific," elsewhere in this section). Among the additions are a service that offers Web-site reviews and a tool that controls where kids can surf online.

Reviews Revealed The reviews feature—dubbed iReview—includes Web-site descriptions and ratings Apple has put together. The reviews cover 15 categories, such as computers, news, movies, and finance sites. Users can suggest Web sites for Apple to review or can provide rankings of their own—but only if they sign up as members at Apple's Web site. And you can register only if you're using Mac OS 9.

"We're going to do for reviews what Amazon.com did for books and CDs," Jobs declared during his Macworld Expo keynote speech.

Of course, it's not quite that simple. Apple's foray into the world of Web reviews raises several questions about Apple's direction and intentions. Who's responsible for the reviews, and what are their criteria? Who decides which sites to review? And most important, can users count on Apple to give objective, trustworthy reviews when dealing with the Web sites of its partners—or its rivals?

Apple's not planning to divulge the names of employees who write and publish iReview, citing the same company policy that exists for other products. But what works for hardware and software may not carry over so well to the world of content.

Safe at Home? Apple's other venture into Web content is KidSafe, a tool that aims to protect children when they venture onto the Internet. Besides preventing kids from surfing adult Web sites, the feature can also disable e-mail, chat rooms, or games. Mac OS 9 users can download KidSafe from Apple's Web site and install it on their desktops. Parents can use OS 9's Multiple Users function to turn KidSafe off

continues

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when they're on the computer.

KidSafe works differently from most filtering programs. Those programs specify what kids can't see, using words and terms to block forbidden sites. KidSafe, on the other hand, specifies what children *can* see, using a database of 50,000 approved Web sites. A panel of teachers and librarians selects those sites; Jobs says Apple will add 10,000 Web sites to its KidSafe database each month.

That approach is an effective way to protect kids, online-safety experts say. But it has its drawbacks, too. No matter how thorough Apple's database, people using KidSafe still have to accept limitations they may not always agree with. Parents can add approved Web sites to KidSafe, but the majority of the decisions over what's appropriate have been made for them.

Paperport Goes USB

WITH PRICES FOR FLATBED SCANNERS HOVERING around $100, you might think it's time to write the obituary for their sheetfed cousins. "Not so fast," says Visioneer (888/229-4172, www.visioneer.com), which has announced Visioneer Strobe Pro, a $199, 30-bit, sheetfed color scanner that boasts 300-by-600-dpi resolution along with USB and SCSI interfaces. The scanner includes the Paperport Deluxe document-management software and ScanSoft's TextBridge text-recognition software.—STEPHEN BEALE

multimedia

Macromedia Designs Upgrades

FREEHAND, DIRECTOR GET TIMESAVING TOOLS

by Frith Breitzer

Two of Macromedia's (800/457-1774, www.macromedia.com) most venerable programs will get upgrades this year. FreeHand 9 and Director 8 boast new tools that further integrate the company's product line and aim to streamline the design process.

Macromedia may believe the future of design lies online, but the company is still serving print designers, with FreeHand 9. Previously, Macromedia positioned FreeHand as a print and Internet graphics tool. It now trumpets the product as "the professional illustration and layout solution for print and Web" and emphasizes the tight integration between FreeHand and Web design products such as Flash.

Recognizing that many customers already use FreeHand to lay out print products, Macromedia added new print-oriented features. FreeHand 9 supports a simpler multipage-management scheme, ColorSync support, linked file management, and customized page sizes.

Dash for Flash At the same time, Macromedia is pushing FreeHand as a sophisticated design tool, ideal for creating graphics and storyboards for Flash presentations. FreeHand 9 supports the export of native SWF files, and you can use the program's layers as Flash animations. It also supports a Flash-compatible symbol library, making it easier for designers to share graphics between programs.

Among FreeHand 9's new features are a perspective-grid illustration to help designers place artwork in a three-dimensional perspective framework, live enveloping that lets users warp and distort graphics precisely, custom scaling, magic-wand tracing, and editable vector transparency. Users can also open FreeHand files in Adobe Photoshop with layers intact and produce and edit Portable Document Format (PDF) documents within FreeHand.

Director's Cut Macromedia has given Director 8 Shockwave Studio a makeover, hoping to encourage marketers and Web-site developers to think of the program as a means of creating engaging, dynamic content quickly and easily. The new release streamlines the Shockwave authoring process with timesaving features and offers new optimization and compression schemes.

A new Property Inspector window centralizes editing operations and allows batch editing. Director 8 has guides to make layouts more precise. It also lets users lock objects so no one can edit them inadvertently. Other features let developers sort cast members by name, size, date, type, and comments.

Director 8 adds 70 new Lingo commands, which add new effects and behaviors, such as imaging and sound effects, to presentations. The program now features built-in JPEG compression, loader movies that play while content loads in the browser, and scalable presentations.

FreeHand 9 retails for $399, while an upgrade sells for $149. Director 8 Shockwave Studio sells for $999, and an upgrade costs $499.

multimedia

Creative Labs Makes Noise

PC SOUND-CARD LEADER TO INCLUDE OFFERINGS FOR MAC USERS

by Philip Michaels

For Macintosh gamers, the good news keeps coming. In the past year alone, game enthusiasts have seen enhanced graphics, stronger support from developers, and a slew of new games. And now the leading maker of PC sound cards is taking

GIBSON

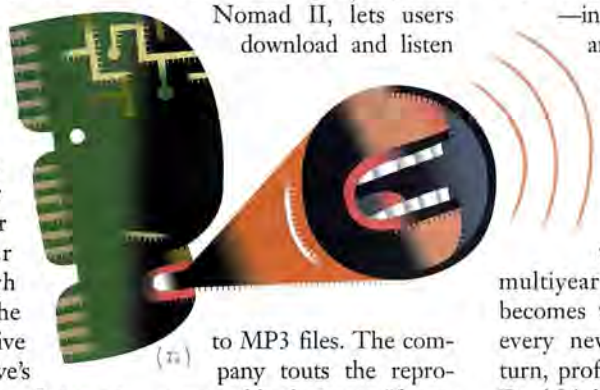
its act to the Macintosh.

Creative Labs (800/998-1000, www.creative.com) will release Mac versions of its Sound Blaster Live line of sound cards, some of the most common and compatible sound cards for PC users. Creative estimates that more than 60 percent of all PC audio systems use the company's Sound Blaster technology.

New Options Unlike PCs, Macs have always come with built-in sound. But Mac users who wanted to improve the quality of their built-in sound systems found they had few options. The lack of a quality consumer-level sound card hit Mac gaming enthusiasts especially hard. Creative's move to the Mac should change that.

The company's decision is another sign of Apple's resurgence. Indeed, Creative cited the Mac's recent good fortunes and the success of the company's own personal–digital-entertainment products as the reasons it decided to broaden its reach.

Sound Blaster Live cards for the Mac are set to debut in the second quarter of 2000. They mirror the cards Creative makes for the PC. The Sound Blaster Live X-Gamer promises better gaming through digital sound. The Sound Blaster Live MP3+ is Creative's sound card for Internet music. The Sound Blaster Live Platinum combines the strengths of both cards to support games and MP3 files.



Souped-Up Sound So if these are just Mac versions of existing PC products, what's the big deal? Creative says Sound Blaster Live cards add environmental audio, surround sound, and a level of realism not currently available from the Macintosh. "People want a high-quality audio experience," said Craig McHugh, president of Creative Labs. "They shouldn't be limited to what comes in the desktop."

The cards are powered by Creative's Emu10K1 processor, which handles sound and effects in real time without any drop in quality, leaving your computer's processor free to tackle other tasks.

Going Nomadic The company also plans to release Mac versions of products from its personal–digital-entertainment line. It's launching its WebCam Go camera and its Nomad portable MP3 player in February. Both products may already be available by the time you read this.

The portable WebCam Go doubles as a digital still and video camera. In addition, this USB device can capture images off the Internet and download them into e-mail and reports. Creative's new portable digital-audio player, the Nomad II, lets users download and listen to MP3 files. The company touts the reprogrammable device as "future proof," meaning it will let users upgrade to future audio-compression standards via downloads. The Nomad II doubles as a voice recorder and has a built-in FM tuner.

Creative plans to keep Macintosh sound-card prices in line with what it charges for PC products—$99 for the Sound Blaster Live X-Gamer and MP3+, and $199 for the Sound Blaster Live Platinum. The WebCam Go will sell for $149. Prices for the Nomad II will range from $199 for the no-memory version to $399 for the 64MB model.

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online

Mac Tools Get OS-Specific

INTERNET STRATEGY PUSHES SPECIAL FEATURES FOR OS 9

by Frith Breitzer

Steve Jobs has been telling people for almost two years that *i* is for *Internet*. And with the launch of the new iTools features on the Apple Web site and a multimillion-dollar deal with EarthLink, Apple seems to be remaking itself as a company that can compete in every arena of the computer market—in hardware, software, and Web services and as an Internet service provider.

Take Apple's $200 million investment in EarthLink. Under the terms of the multiyear deal, EarthLink becomes the default ISP for every new Mac. Apple, in turn, profits from every new EarthLink Mac customer and gets a seat on the company's board of directors. The deal aims to boost Apple's income while giving Mac users a streamlined service that offers Mac-friendly tech support.

Disk Driver At the crux of Apple's Internet strategy are the new iTools announced by Jobs. Besides the Internet screening tool, KidSafe, there's iDisk, which gives Mac OS 9 users 20MB of free storage on Apple's secure servers. iDisk works with OS 9 to let users transfer files among Macs or share documents with drag-and-drop simplicity. That feature resembles the free storage services from Driveway.com and FreeMacSpace.com.

The iDisk service also lets Apple enter the free–home-page market, which companies such as Geocities and Tripod currently dominate. With Apple's HomePage iTool, users can choose from several templates for setting up basic Web sites. Users can also create sites in other programs and place them in a public folder.

Macintosh Mail? Apple's fourth iTool offers free e-mail accounts through the Mac.com domain. However, the service does not compete with other free e-mail offerings such as Microsoft's Hotmail, because Mac.com is not a Web-based program. Users have to check their e-mail through a third-party program such as Microsoft Outlook Express or Qualcomm's Eudora.

Because these iTools are available only to Mac OS 9 users, one goal of Apple's Internet strategy may be to give users of older operating systems a reason to upgrade. Mac OS 9 costs $99.

Apple's Internet strategy also includes iCards, the company's answer to the Blue Mountain Arts greeting-card site. iCards allows all Web surfers—including Windows users—to send e-mail greeting cards that appear within recipients' mailboxes rather than at separate URLs. Users can adorn their iCards with everything from Monet and Degas artwork to pictures from Apple's "Think Different" ad campaign.

continues

Product WATCH

Blazing Scanners Epson (800/463-7766, www.epson.com) and Umax (800/562-0311, www.umax.com) have announced FireWire scanners. Epson's **Expression 1600** is available in a Pro FireWire configuration. The scanner features 1,600-dpi true resolution and retails for $1,399. Umax's dedicated FireWire **PowerLook 1100** has 1,200-by-2,400-dpi resolution and is available with various software bundles starting at $999.

And the Beat Goes On Beatware (650/556-7900, www.beatware.com) has announced **e-Picture 2.0**, an update to its Web animation program. This version features advanced animation effects and can export to QuickTime, Flash, and SVG formats. The program ships at the end of the March and sells for $179. An upgrade costs $49.

Giga-Size Storage Pushing gigabyte technology further along, LaCie (816/483-0755, www.lacie.com) has announced the revamped **PocketDrive** line of hard drives. The new PocketDrives are the first peripherals that offer both USB and FireWire support. Available in 6GB and 18GB capacities, they measure only 3.5 by 5.75 inches and weigh less than a pound. They should be available in February for around $399 for the 6GB drive and $749 for the 18GB drive.

—EDITED BY FRITH BREITZER

publishing

Adobe Places PDF Tools in Production

ADOBE PLUG-INS TARGET ACROBAT DOCUMENTS

by Philip Michaels

When Adobe (800/833-6687, www.adobe.com) released Acrobat 4.0 with several Windows-only plug-ins, Mac users cried foul. But with the launch of InProduction, Mac print production professionals now have Acrobat tools to call their very own.

InProduction brings together five integrated Portable Document Format (PDF) print production tools in a plug-in for Acrobat 4.0.5. Although some of these capabilities are available in third-party applications, InProduction promises to save users time and reduce the chance of error involved in switching among programs.

Five Tools InProduction tools include Preflight, which creates reusable profiles to inspect PDF documents for output and display errors, and Separator, for specifying, previewing, and creating color separations. Until now, Lantana's Crackerjack 3.0 was the only plug-in that could produce color separations from Acrobat files.

Other InProduction offerings include Trim/Bleed, which helps users define image areas and alter media, bleed, trim, or art boxes for accurate positioning. Color Converter provides multiple options for converting into CMYK, and Adobe in-RIP Trapping lets users specify trapping parameters for later execution in an Adobe PostScript 3 RIP.

For now, only Mac users have access to those tools. Adobe plans to release a Windows version of InProduction eventually.

That's a sharp contrast to the controversy over Acrobat 4.0. Adobe didn't develop plug-ins such as Web Capture, Compare Page, Digital Signatures, and Send Mail for the Macintosh, arguing that those tools weren't key to Mac users. But user outcry spurred the company to ultimately release Macintosh versions.

InProduction should ship this spring. Users can buy Acrobat 4.0.5, InProduction, and the Adobe Gamma utility for $899. Acrobat 4.0 users can get an upgrade to 4.0.5, InProduction, and Gamma for $699.

publishing

Digital-Photo Biz Developing

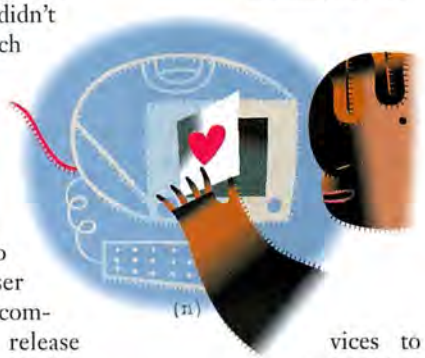
ONLINE LABS TURN DIGITAL FILES INTO FINISHED PRINTS

by Frith Breitzer

Low prices and better pictures have made digital cameras a more attractive alternative to traditional film photography. The problem? The images people send electronically to friends and family lack the tactile intimacy, portability, and accessibility of printed photos.

Several online companies hope to overcome that hurdle. And they're turning to an old standby—photo prints—to help them do it.

Photo Finishers Shutterfly (650/610-5200, www.shutterfly.com), PhotoAccess (206/264-2488, www.photoaccess.com), and Ofoto (510/647-0514, www.ofoto.com) either offer or have announced services to process images from digital cameras.



It's just like dropping off film at a Fotomat, except customers never leave their computers. They just send these companies digital image files over the Internet. The services then turn the files into photo-quality silver-halide prints and send them back via snail mail. They also let users create online photo albums, from which friends and relatives can order prints.

Quick Pix Digital-image processors charge around 50 cents for a 4-by-6-inch print and several dollars for larger sizes. Instead of running to the photo lab to drop off and pick up prints, customers can order from their computers. Instead of printing every picture on a roll of film, they can look at their digital files and pick which ones to keep.

Companies offering digital photofinishing services have a large market to conquer. Their challenge? Making consumers aware of the technology that can turn their digital images into photo prints. If they can pull that off, digital cameras could evolve from high-tech toys to everyday tools.

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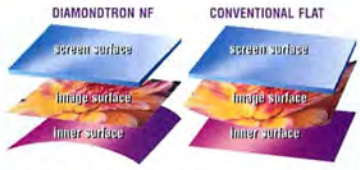

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PC WORLD WORLD CLASS — Diamond Pro 900u July 1999

Macworld EDITORS' CHOICE — Diamond Pro 2020u June 1999

CADENCE LAB verdict — Diamond Pro 2020u June 1999

PC MAGAZINE EDITORS' CHOICE — Diamond Pro 900u Jan. 19, 1999; Best 19" upgrade March 9, 1999

1998 Eddy WINNER — Diamond Pro 900u March 1999

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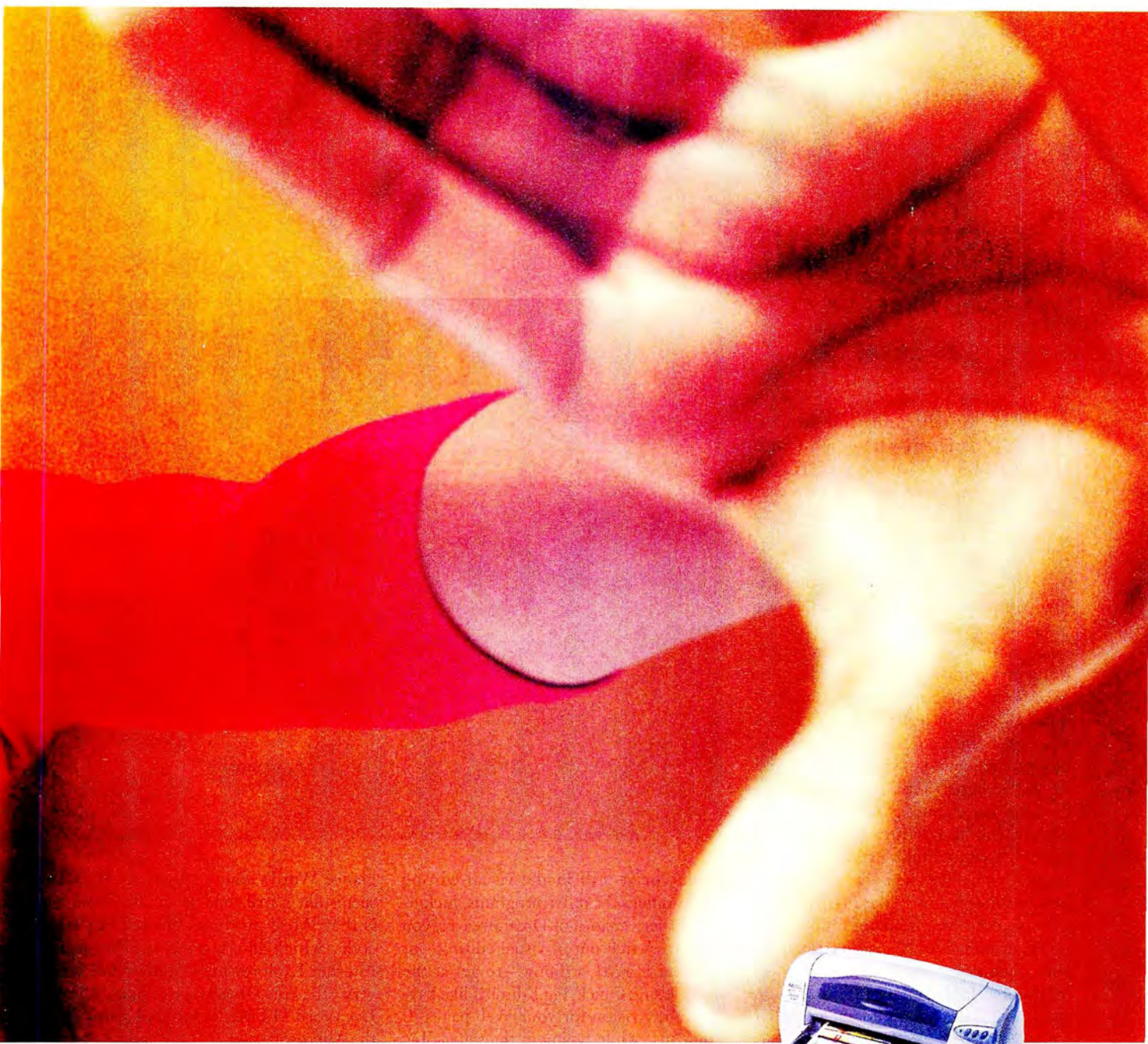

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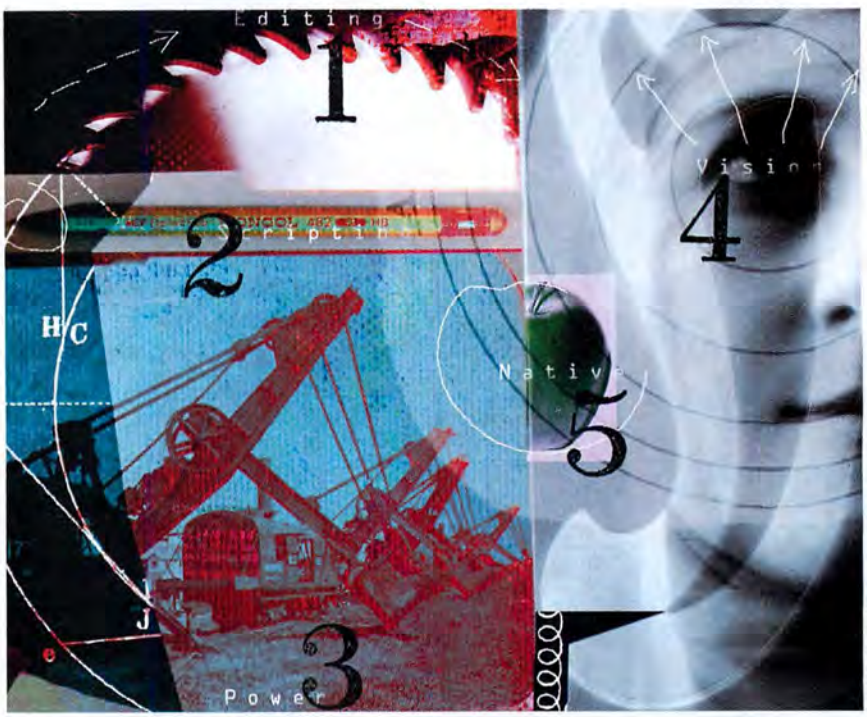
Reviews

Dreamweaver 3

WEB TOOL WAKES UP

WEB SITE BUILDERS



WEB EDITING TOOLS HAVE to walk a fine line between designers who don't want to get bogged down by HTML and programmers who want the kind of control only code-hacking can provide. Dreamweaver 3 finally calls a truce between these two sides.

Dreamweaver 3 builds on the program's traditional strengths, such as page templates, strong site management, and respect for your HTML code (unlike other programs, it won't rewrite your HTML or JavaScript when you switch to visual mode). The new version has innovative page-editing tools, better features for design teams, and unparalleled extensibility that add up to a must-have upgrade.

One big change is under the hood. Macromedia has rewritten Dreamweaver 3 from scratch as a fully native Macintosh application, unlike its predecessors, which behaved suspiciously like fugitive Windows applications. Many of the interface quirks that annoyed Mac users in the past have gone away, and Dreamweaver now supports such Mac OS features as window shades, spring-loaded folders, and Navigation Services.

Better Page Editing

Dreamweaver 3's new Quick Tag Editor should thrill HTML jockeys. This pop-up window lets you view and edit the underlying HTML code for any object while you're still in the visual-editing environment. In other programs, including earlier versions of Dreamweaver, you have to switch out of visual editing—or open an HTML window—to get at the code. Using Quick Tag Editor is like having X-ray vision for your Web pages. If you pause while typing in the Quick Tag Editor, a pop-up window shows all the HTML tags Dreamweaver understands. The list is context-sensitive, so if you, pause on a tag, a list of attributes appears.

Much text that ends up on Web pages begins in Microsoft Word, and at first glance Word's ability to save as HTML seems like a real time-saver. The trouble is that Word produces bloated HTML code, which looks great in Microsoft Internet Explorer for Windows but isn't very efficient. Dreamweaver's new Clean Up Word HTML command strips out the Microsoft-specific junk and produces cleaner, smaller Web pages. Excel users will appreciate the new Insert Tabular Data command, which converts any text-only tab-delimited file into a table.

The ability to create and apply paragraph and character styles is a cornerstone

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: ★

of any decent word-processing program, but these features are hard to implement in Web designs. The problem is that you have to decide between font-tag attributes and Cascading Style Sheets (CSS). CSS styles are flexible, but display reliably only in recent browser versions (4.0 or later), and even then they often exhibit problems, such as type that appears in unreadably small sizes. Font-tag attributes display correctly in any browser, but applying multiple tags to a selection—say, for font, size, and type style—is time-consuming. The new HTML Styles palette lets you store multiple font-tag attributes as a style and apply them with a click. Dreamweaver stores the site's HTML Styles in an XML document within the site folder, making the styles available to anyone who works on your site.

The new Design Notes feature solves a key problem Web-building teams face: keeping track of who made what changes, and when. Dreamweaver maintains a Design Note, a separate XML document to which you can add date-stamped comments.

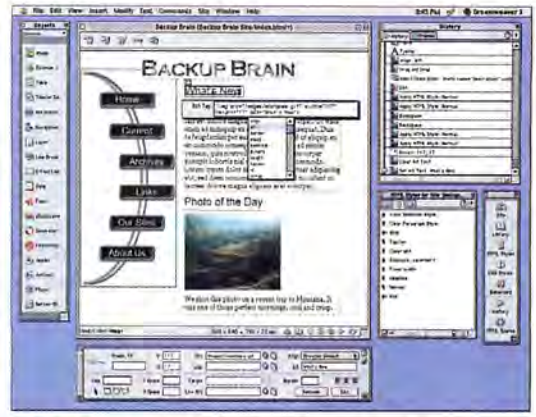
Often the teams that build sites, especially larger ones, are using both Macs and Windows PCs. Until recently, Dreamweaver was the most popular cross-platform HTML program among design pros. Adobe finally stepped up to the plate with GoLive 4.0 for Windows, but it has a significant limitation—you can't interchange its project files with those of GoLive for Macintosh. This throws up unnecessary barriers for Mac-and-Windows teams collaborating on Web sites.

Dreamweaver 3 negates some of GoLive's advantages by adding new objects with prebuilt frame sets, special characters such as copyright or euro symbols, and easier addition of e-mail links. Like GoLive, Dreamweaver's Site Window can synchronize a remote site with a local version.

Need More? Build It!

Beginning with Dreamweaver 2, you could extend the software using JavaScript and HTML. Dreamweaver 3 takes customization into the stratosphere. It defines everything, including menus, palettes, dialog boxes, and the entire feature set, as some combination of HTML files, XML files, and JavaScript. If you can think of a feature, you can create it and add it to one of Dreamweaver's menus.

Developers have jumped on this ability with a vengeance. Hundreds of additional objects, commands, and behaviors are now available on Macromedia's Dreamweaver Exchange Web site. JavaScript's cross-platform nature makes it a scripting tool superior to proprietary languages such as AppleScript or Visual Basic.



A Quick Dip into the Code With the new Quick Tag Editor, it's easy to inspect and change the underlying HTML for any object.

The ability to customize the menu system is a boon for design shops, which can give a simplified, custom version of Dreamweaver to their clients. This version could, for example, omit Dreamweaver commands an inexperienced client might misuse, while including new commands that make it easier to create content pages from prebuilt templates.

Extendability in Dreamweaver 3 isn't just for programmers. The new History palette keeps track of what you've done, and a slider bar lets you move backward and forward through your actions. It's the ultimate undo and redo feature. The only limitation is that the History palette just records keyboard actions, not mouse clicks and drags. The best part is that you can automate your work by selecting steps in the palette and choosing the Save As Command. After you name the new command, it appears in the Commands menu.

Web Graphics Just a Click Away

Macromedia timed the revision of its Web graphics tool, Fireworks 3, to coincide with the release of Dreamweaver 3, and the two programs make a potent combination. From Dreamweaver, you can click on a graphic to edit or optimize it in Fireworks, which returns the modified image smoothly to Dreamweaver. Dreamweaver understands rollovers and other JavaScript created in Fireworks, so navigation bars, buttons, and image maps built in Fireworks drop into your Web layout with the Insert Fireworks HTML command; the links update automatically. Because both programs are completely scriptable via JavaScript, programmers can write scripts that drive Fireworks from Dreamweaver or vice versa. For example, you can create a script that optimizes and makes thumbnails of a series of Fireworks images, then builds a Web page of the thumbnails, linking each one to pages containing the larger optimized images. Macromedia sells the two programs together as the $399 Dreamweaver 3 Fireworks 3 Studio.

Macworld's Buying Advice

Dreamweaver 3 is an excellent successor to an already good Web design tool. It finally gets rid of the weird pseudo-Windows interface in previous versions in favor of a real Mac look-and-feel. Dreamweaver 3 starts off the latest round of innovation in Web design tools, and Adobe is readying its reply with the next version of GoLive. Because it was cross-platform right from the start, Dreamweaver built a large, loyal customer base, enabling Macromedia to improve Dreamweaver on a fast Internet time scale. Now that GoLive has gone more than a year without significant revision, Adobe faces a real challenge to maintain its user base.

Dreamweaver directly targets Web developers, and Macromedia keeps adding the features hard-core Web geeks request, such as amazing extensibility, tight integration with Flash and Fireworks, and smooth incorporation of server-based Web production tools such as ASP, Cold Fusion, and WebObjects. With GoLive, Adobe builds on its base of print and graphic designers who want to reuse and repurpose their work for the Web. Chances are, both approaches will succeed, as Web developers are a diverse group.

For now, the momentum is definitely behind Macromedia and Dreamweaver 3. Until the next big program comes along, Dreamweaver 3 is the tool of choice for the professional Web site developer.—TOM NEGRINO

RATING: ♦♦♦♦♦ **PROS:** Almost infinitely customizable via JavaScript; practically limitless undos; good integration with Fireworks 3; excellent site-management and collaborative features. **CONS:** None significant. **COMPANY:** Macromedia (800/457-1774, www.macromedia.com). **COMPANY'S ESTIMATED PRICE:** $299.

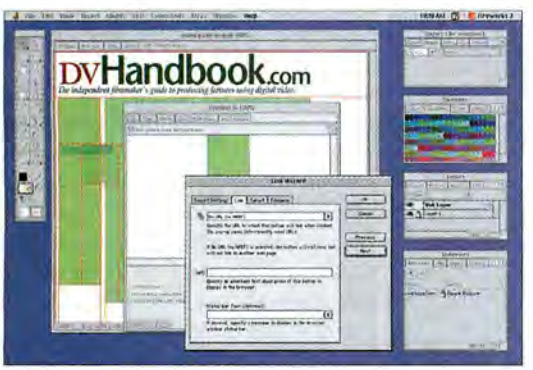
Fireworks 3

MACROMEDIA TIGHTENS GRIP ON WEB GRAPHICS

FIREWORKS 3, THE LATEST RELEASE of Macromedia's Web-graphics software, bolsters that company's already strong grip on the market for Web-based creative tools. While previous versions provided useful vector-based drawing tools, Web-optimization features, and automated JavaScript creation, version 3 adds tighter integration with Macromedia's Dreamweaver as well as other improvements that make the package hard to beat.

Face-lift

Fireworks 2 users will notice a few interface changes as soon as they run the software. The program's tabbed, floating palettes are better behaved than in previous versions; they now open anchored to the right side of the screen. This and other Adobe Photoshop–inspired palette changes, such as control buttons at the bottom of palettes, make for an interface that's easier to navigate. Unfortunately, other niceties, such as zoom controls that resize a document window while zooming, have been left behind.



Magic Links Fireworks' Link Wizard function makes it easy to add hyperlinks to Web graphics.

Fireworks' palettes still have some odd interface quirks, such as small modal windows that you have to close before you can go elsewhere in the software. Considering that palettes are supposed to operate in a modeless fashion, these controls feel very clunky.

Although Fireworks sports a clean, easy-to-use interface, it can be a little confusing at times, with items and commands spread among menus, palettes, and menus nested inside of palettes.

New Tools

Fireworks' tools provide a great mix of drawing and painting functions. While the tools are vector based—as in Macromedia FreeHand or Adobe Illustrator—shapes created with the tools can be filled and stroked with painterly textures. With textures and strokes ranging from crayons and chalk to weird alien substances, you can easily create images that look as if they were produced in a painting or image-editing program.

Although Fireworks 3 adds no new tools, it does provide a number of enhancements. As in previous versions, the text tool displays a dialog box for entering and editing text. Version 3 adds controls that let you preview a font before it's applied. You can also resize text blocks as you enter text, and the program now provides three levels of anti-aliasing. However, kerning and leading adjustments aren't displayed in the Text dialog box.

The program's excellent Live Effects feature, which lets you edit or remove effects filters after they've been applied to an object, has been expanded to support third-party Photoshop-compatible plug-ins. Installed plug-ins can be edited and managed through the Effects palette, just like any of Fireworks' built-in effects. Live Effects is one of Fireworks' best features, and in version 3, it's even better.

A new collection of filters lets you perform simple color corrections on any bitmapped image in your document. You can modify contrast, brightness, hue, and saturation and apply standard level and curve adjustments to any bitmapped object. Having these effects built-in is a great time-saver. In addition, Fireworks 3 now lets you choose from standard interpolation methods for scaling bitmapped images.

Finally, Macromedia has added a Photoshop-like History palette for undoing any number of actions. Unfortunately, as in Photoshop, history information is not saved with the document. However, Macromedia has implemented a clever scripting system that lets you save groups of steps from the History palette as executable scripts. In a program as palette-heavy as this one, this is elegant streamlining.

Good Behavior

Macromedia has also expanded Fireworks' Java support. As with previous versions, you can attach Behaviors to any object to create rollover buttons and other interface features. Version 3 provides new Behaviors for creating navigation bars and disjointed rollovers (one object's rollover changing the state of another object). Since Fireworks Behaviors are now compatible with Dreamweaver's Behavior features, you can easily create buttons, navigation bars, and animations for simple export to your Dreamweaver projects.

Unfortunately, implementing complex Behaviors requires some of Fireworks' least-intuitive procedures. Disjointed rollovers, for example, involve a complex combination of slicing, layering, and creating different frames. Though the manual provides a pretty good explanation of these features, many processes could stand to be streamlined.

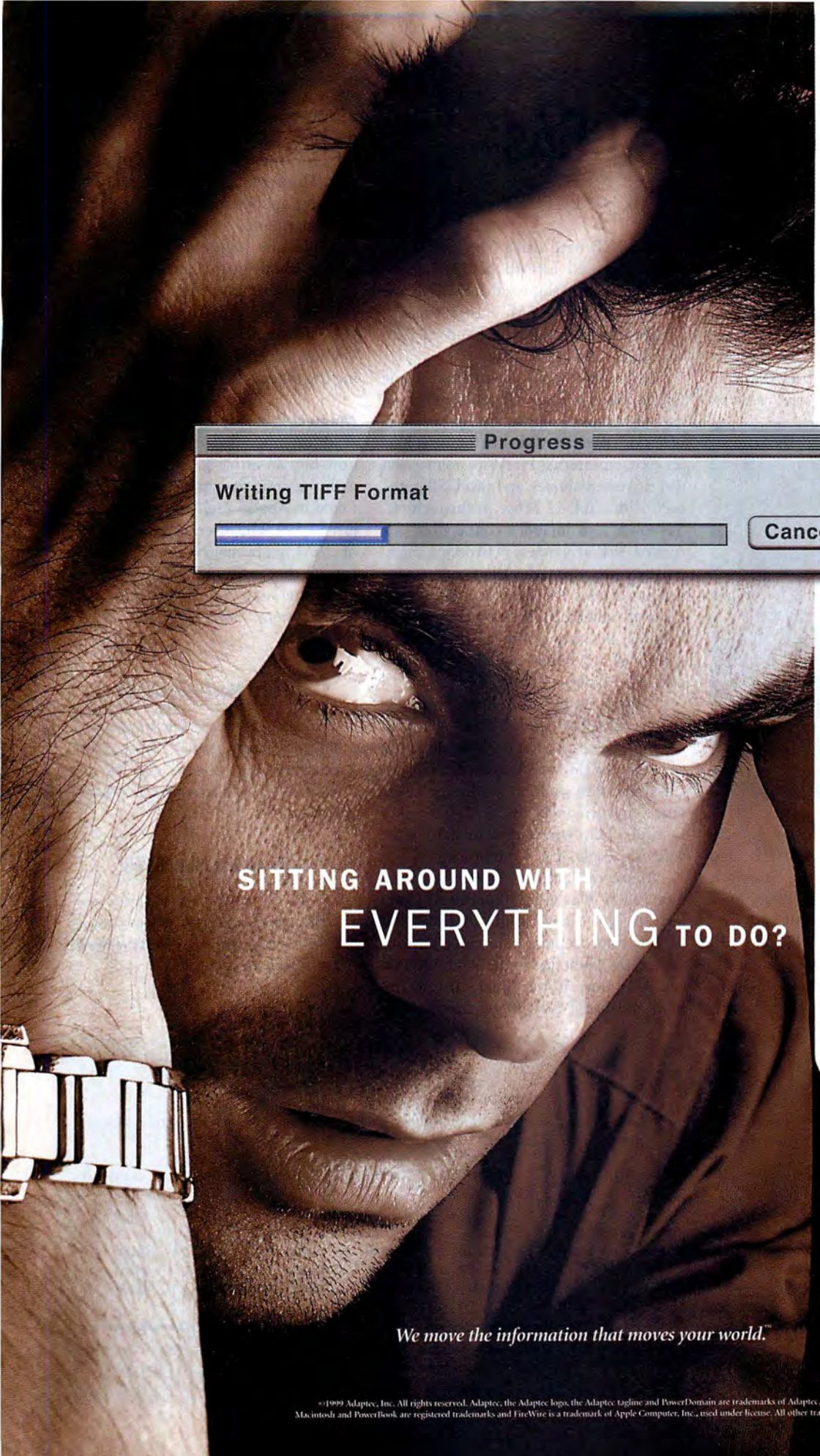
Fireworks' importing and exporting have been improved with the ability to import Illustrator files, Flash files, and layered Photoshop files. Similarly, you can export Fireworks documents as vector illustrations for use in FreeHand and Illustrator or as SWF files for use with Flash.

Fireworks' performance felt just a tad sluggish on our 400MHz Power Mac G3. Opening and previewing documents and dragging filled objects had a slower feel than what we've come to expect from modern painting and illustration packages. Though not slow enough to affect productivity, Fireworks' performance was a bit distracting.

Macworld's Buying Advice

Although previous versions of Fireworks have offered powerful features, version 3 might even compel longtime Photoshop users to learn a new program. Users of previous Fireworks versions shouldn't hesitate to upgrade.—BEN LONG

RATING: ♦♦♦♦ **PROS:** Great drawing and effects tools; excellent integration with Dreamweaver. **CONS:** Somewhat complex interface; performance a little slow. **COMPANY:** Macromedia (800/457-1774, www.macromedia.com). **COMPANY'S ESTIMATED PRICE:** $199; with Dreamweaver, $399.



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Power Macintosh G4s

NEW SYSTEMS FEATURE UNIFIED ARCHITECTURE

AFTER SOME INITIAL CONFUSION, Apple has tidied the Power Mac G4 into a powerful line of systems, all finally with the same architecture. At first, Apple offered high-end systems with the new Sawtooth design and an entry-level system with the older Yikes architecture, based on

GIBSON

the blue-and-white Power Mac G3. Now Apple is offering 350MHz, 400MHz, and 450MHz models, all with the Sawtooth design (see *Reviews*, February 2000, for a look at the Power Mac G4/400).

The standard Power Mac G4/350 ships with a DVD-ROM drive, a skimpy 64MB of RAM, an internal 56-Kbps modem, a 10/100BaseT Ethernet port, and a 10GB hard drive (the system we tested included 128MB of RAM). The standard G4/450 ships with a DVD-RAM drive, 256MB of RAM, a 10/100BaseT Ethernet port, a Zip drive, and a 27GB hard drive—but no modem.

Sawtooth—Apple's internal code name for the design—features faster memory and hard-drive buses; support for up to 1.5GB of RAM; a swift 2X AGP port for the graphics card; an internal FireWire connection and two external ones; and two USB ports, each with a full 12 Mbps of throughput. Sawtooth also includes connections for Apple's AirPort wireless-networking cards.

By comparison, the Yikes architecture supported up to 999MB of RAM; featured a slower, 66MHz PCI slot for the graphics adapter; and drove both USB ports at a combined 12 Mbps, which sometimes caused USB devices to bog down.

Driving the display in Apple's new systems is the ATI Rage 128 Pro video card, an upgrade to the Rage 128 card Apple shipped with previous Power Mac G3 and G4 systems. In addition to offering faster video performance, the card features a Digital Video Interface connector that supports Apple's LCD monitors.

Macworld Lab tests revealed that the new Power Mac G4/350 performs similarly to the Yikes-based G4/350. The biggest improvement is in video performance, no doubt due to the Rage 128 Pro and AGP port. In our Quake II test, the Sawtooth-based G4/350 generated about 55 frames per second (fps), versus 52 for the Yikes-based system.

Not surprisingly, the Power Mac G4/450 proved speedy, especially when running applications optimized to take advantage of the G4's Velocity Engine. For example, the high-end Power Mac ran Adobe Photoshop's Gaussian Blur filter about three times as fast as a G3/400 system and about twice as fast as either G4/350 system. In our Quake II tests, the G4/450 maxed out at 67.4 fps, far outpacing the other systems.

Macworld's Buying Advice

With the upgraded architecture, you can now buy an entry-level Power Mac G4 with the same speedy system components found in Apple's high-end systems, all for just $1,599. However, the system's 64MB of RAM is a bit paltry; to take full advantage of that extra performance, invest in more memory. The G4/450 is Apple's fastest system.—DAVID READ

Power Macintosh G4/350

RATING: ♦♦♦♦ **PROS:** Strong performance; affordable. **CONS:** Skimpy RAM allocation. **COMPANY:** Apple Computer (800/795-1000, www.apple.com). **COMPANY'S ESTIMATED PRICE:** $1,599.

Power Macintosh G4/450

RATING: ♦♦♦♦ **PROS:** Excellent performance. **CONS:** Expensive. **COMPANY:** Apple Computer (800/795-1000, www.apple.com). **COMPANY'S ESTIMATED PRICE:** $3,499.

Macworld LAB TEST

A Faster 350?

Best results in red. *Reference system in italics.* Photoshop, Word, and Excel results are in seconds. Bryce and SoundJam results are in minutes:seconds. Quake II results are in frames per second.

	PHOTOSHOP 5.5			WORD 98	EXCEL 98	BRYCE 4.01	SOUNDJAM 1.5.1	QUAKE II
	Gaussian Blur	Unsharp Mask	Lighting Effects	Find/ Replace	Recalc	Render Scene	MP3 Encode	640 × 480
Apple Power Macintosh G4/450 (Sawtooth)	4.1	6.6	4.8	9.7	6.4	19:48	2:11	67.4
Apple Power Macintosh G4/350 (Sawtooth)	8.5	8.1	5.9	12.1	8.1	25:37	2:45	55.2
Apple Power Macintosh G4/350 (Yikes)	9.2	8.5	5.9	12.2	8.0	24:47	2:44	52.2
Apple Power Macintosh G3/400	*13.2*	*12.0*	*14.4*	*10.1*	*6.9*	*23:20*	*3:22*	*50.4*

Shorter bars are better. For Quake frame rates, longer bars are better.

Behind Our Tests We tested each system with Mac OS 9, a minimum of 128MB of RAM, and virtual memory disabled. We performed Photoshop tests with a 30MB file. We tested MP3 encoding with an audio-CD track that is 9 minutes and 25 seconds in length.—**Macworld Lab testing supervised by Gil Loyola**

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Tax-Preparation Software

MACINTAX DELUXE, KIPLINGER TAXCUT DUKE IT OUT AGAIN

GIVEN THE COMPLEXITY OF OUR tax laws, you need tax software if you want to handle your own returns. Both Block Financial's $40 Kiplinger TaxCut '99 Deluxe Filing Edition and Intuit's $50 Quicken MacInTax Deluxe '99 simplify the tax-preparation process while maximizing the amount of money you get to keep. But this year's Kiplinger TaxCut is easier to use and navigate than Quicken MacInTax—and it's less expensive.

(*Macworld*'s policy is to review only final, shipping versions of software. However, due to the time-sensitive nature of these programs, this review was based on late-beta versions.)

Kiplinger TaxCut contains provisions for personal taxes and home offices. MacInTax Deluxe lacks home-office features; for those you'll need the $65 MacInTax Home and Business edition. The latter offers more help with small-business taxes than does Kiplinger TaxCut, but TaxCut provides almost all the features most home-office users really need.

The Taxman Cometh

Both programs ask a series of questions designed to gather your tax information, and then they produce the appropriate tax forms. As you answer the questions, you can view any portion of the current form or jump to other forms. You can also enter or edit data directly on the forms if you wish.

One difference between the programs is that TaxCut asks questions in plain English; MacInTax often uses language straight from tax forms. For instance, MacInTax might ask you to choose between Start New Schedule E or Done With Schedule E, or whether you want to start a new Form 1099-MISC. The TaxCut software selects the appropriate form for you.

TaxCut also provides a cleaner interface. The main interview window is divided into three tabbed pages: Prepare, where you enter tax information; Review, where the software checks for missing information or items the IRS might flag; and File, where you print the returns or file electronically.

MacInTax Deluxe forces you to navigate through nine tabs, and the Home and Business edition adds a tenth. And MacInTax's interview process is not well organized; for example, the business edition asks for information about your *business* office immediately after you enter the percentage of your home used for a *home* office, making it easy to confuse business- and home-office expenses. Other home-office questions come later.

Both programs provide easy access to a table-of-contents window that lets you jump

At Your Fingertips Kiplinger TaxCut's Prepare screen lists frequently asked questions about tax topics.

to different parts of the interview. Unfortunately, Intuit has removed the Overview window, a handy navigation aid in last year's edition. Both programs provide commands that let you go back to previous screens, much like the Back button in a Web browser. However, the MacInTax Back command is a text hyperlink that appears in different locations on each page—annoying if you're backing up through several screens.

First Aid

Help is a big part of any tax-preparation program, and both programs list frequently asked questions—with links to answers—on the right side of the interview window. The questions are context sensitive, changing as you flip through interview pages. Both programs also provide a wealth of built-in reference material, including IRS documentation and tax-planning tips.

However, TaxCut provides more hyperlinked terms and makes it easier to find the help you need. When you click on the Help button, the program almost always brings up an explanation of what you're doing on a particular interview page. MacInTax doesn't always bring you to the information you need. For example, when you click on the Help button in a window called Get Organized—Deductions, the program displays a Federal Information Worksheet. On the plus side, MacInTax's Guide Me link leads to detailed explanations, such as who qualifies as a dependent, and the business edition provides more built-in tax information than the other programs.

Kiplinger TaxCut and MacInTax Deluxe both include QuickTime movies that illustrate tax concepts and help you learn the software. However, TaxCut includes more movies than MacInTax Deluxe does, and TaxCut's material is better integrated with other help facilities. For example, if you click on the Help button, TaxCut provides more information on the movie's topic. MacInTax Home and Business doesn't include any movies.

Both programs also offer links to their own Web sites for more information. Once again, TaxCut takes you directly to the information you want, and the Tools menu includes an Update TaxCut command that automatically downloads any needed software updates, including those required to complete new tax forms. A similar MacInTax command takes you to a search screen at the Intuit Web site.

Macworld's Buying Advice

In past years, Quicken MacInTax has been the preferred tax program for Macintosh users. But this year's improvements in Kiplinger TaxCut make it the clear choice for your 1999 tax return. It has a cleaner interface, it's less expensive, and it doesn't require extensive knowledge of IRS forms and schedules.—JOHN RIZZO

Kiplinger TaxCut '99 Deluxe Filing Edition

RATING: ♦♦♦♦½ **PROS:** Easy to use; good tax advice; help when and where you need it. **CONS:** For home and home office only. **COMPANY:** Block Financial (818/779-7223, www.taxcut.com). **LIST PRICE:** $40.

Quicken MacInTax Deluxe '99

RATING: ♦♦♦½ **PROS:** Good, plentiful tax advice; good information on small-business issues. **CONS:** Sometimes difficult to navigate; uses too much IRS jargon. **COMPANY:** Intuit Software (800/446-8848, www.macintax.com). **LIST PRICE:** $50; Home and Business edition, $65.

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Color Ink-Jet Printers

EPSON'S STYLUS COLOR 760 AND 860 CHALLENGE HP

FEELING THE COMPETITIVE heat from Hewlett-Packard (HP), Epson has improved its ink-jet printer line with faster, sturdier, and quieter offerings. Macworld Lab tested the $199 Stylus Color 760 and $279 Stylus Color 860, and concluded that the printers should appeal to SOHO users with USB-equipped Macs. The Stylus Color 760 replaces Epson's Stylus Color 740; the Stylus Color 860 is slightly faster, but otherwise identical to the Stylus Color 760.

Faster Output

With the Stylus Color 740, you had to print images at 1,440 dpi to get excellent photo quality, and printing at that resolution was a slow process. The new printers feature a number of enhancements, including a smaller droplet size and a more-accurate printhead, that allow them to produce photo-realistic images relatively fast at just 720 dpi. Both printers can also print at a slower 1,440 dpi if you want additional detail.

Epson positions these printers against HP's DeskJet 882C and DeskJet 895C (see *Reviews*, September 1999), but we were more interested in comparing them with a more recently introduced model, HP's $399 DeskJet 970 (see *Reviews*, January 2000), *Macworld*'s Eddy Award winner for Best Printer/Imaging Device (March 2000).

Although the DeskJet 970 remains an excellent general-purpose printer for homes and small businesses, our testing showed that both Epson models offer marginally better photographic quality when printing at the manufacturers' recommended resolutions: 720 dpi for the Epson printers and 600 dpi for the DeskJet 970. The Epson printers' color accuracy especially impressed us, although tweaking the colors is a little tricky because you have so many options, including Apple's ColorSync and Epson's Photoenhance3 color-management systems. Ironically, we got the best results by turning off the color-correction and color-management options. The HP DeskJet 970 produced sharper-looking prints at comparable resolutions, but our jury determined that its color was a little flatter than the Epson's.

The Epson printers were also somewhat faster than the DeskJet when printing a 26MB, 8-by-10-inch Photoshop image at 720 dpi: the 860 took 4 minutes, 2 seconds; the 760 took 4 minutes, 22 seconds; and the DeskJet 970 took 5 minutes, 2 seconds. However, when printing plain text, the DeskJet 970 remains the speed champ, printing a 10-page Microsoft Word document in 300-dpi Normal mode in 1 minute, 11 seconds, compared with 1 minute, 49 seconds for the Stylus Color 860 and 2 minutes, 41 seconds for the Stylus Color 760, both at 360 dpi.

SUZANNE ROADY

Epson Stylus Color 860

Text quality at 360 dpi is adequate for letters to friends or interoffice correspondence, but you should print résumés or formal correspondence at a higher-quality setting. Printing the same Word document at 720 dpi on Epson's photo-quality ink-jet paper, our jury rated text output as excellent. Expect to wait, however: the Stylus Color 860 took 15 minutes, 19 seconds, while the Stylus Photo took 16 minutes, 20 seconds.

Quiet Ride

Both printers are quieter and more solidly built than their predecessors, although neither is as quiet as the DeskJet 970. Thanks largely to the high-quality servoless stepper motor that moves the printhead, Epson rates the noise level at 42 dB, compared with the 45 dB of the Epson 740. The cases are constructed of a higher-grade polystyrene that reduces rattle and vibration noise while giving the printers a sturdier and more-pleasing look. The Stylus Color 860 also has a tinted panel through which you can watch the printhead move. However, the 860's printhead, with its slightly faster print speed, is also noisier when printing at high resolutions; at times this was a bit annoying, especially when we were printing on film.

One sad note for users of older Mac systems: Epson, the last holdout to provide serial ports on its printers, has finally abandoned them. If you have an older Mac, you'll need a USB adapter to use these or any other new ink-jet printers. However, both printers work with the $159 Axis 1440 print server, which provides Ethernet connectivity.

Epson bundles both printers with Polaroid PhotoMax Pro image-editing software and ArcSoft Photoprinter SE photo-layout software. You can choose two additional software titles, such as Diablo or Corel Photo-Paint, for $7.95 shipping and handling.

Macworld's Buying Advice

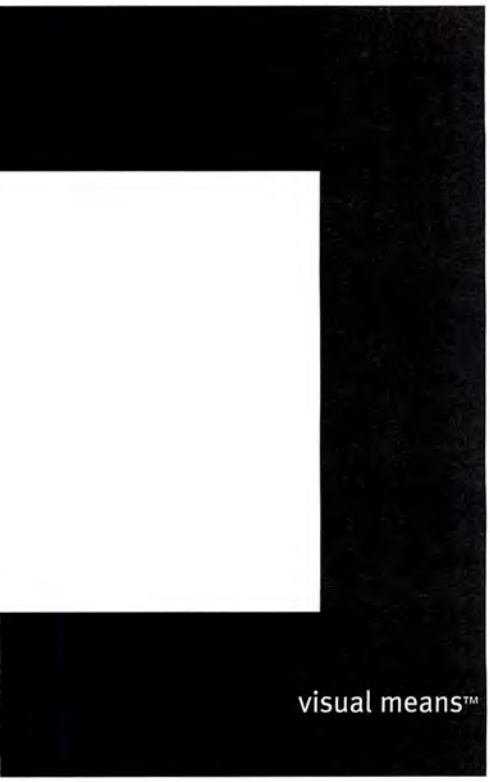
The HP DeskJet 970 remains the best general-purpose printer, but at $199 (after a $30 rebate) the Stylus Color 760 is a great value for high-quality photographic printing, especially if you already have a laser printer for producing text documents. The Stylus Color 860 offers marginally faster output, but most users will probably find the speed not worth the extra $79 outlay.—KEVIN MITCHELL

Stylus Color 760

RATING: ♦♦♦♦ **PROS:** Fast, accurate color output; excellent value. **CONS:** No serial port; slows down when printing high-quality text. **COMPANY:** Epson (800/463-7766, www.epson.com). **COMPANY'S ESTIMATED PRICE:** $199 (after $30 rebate).

Stylus Color 860

RATING: ♦♦♦½ **PROS:** Fast, accurate color output. **CONS:** No serial port; slows when printing high-quality text. **COMPANY:** Epson (www.epson.com, 800/463-7766). **COMPANY'S ESTIMATED PRICE:** $279.



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One-Megapixel Digital Cameras

EPSON PHOTOPC 650, OLYMPUS D-450 ZOOM OFFER AFFORDABLE ALTERNATIVES

TWO-MEGAPIXEL DIGITAL CAMeras are now commonplace and will soon be superseded by a new generation of three-megapixel cameras. But it wasn't long ago that one-megapixel cameras overwhelmed us with their image quality. Do you really need more than 1 million pixels in your digital images? If the answer is no—and you want to save some money—the last of the megapixel cameras have just come to market, in the form of the Epson PhotoPC 650 and the Olympus D-450 Zoom. Both cameras produce good-looking pictures, but the Olympus model stands out with higher resolution and a host of useful features, including—true to its name—a 3× optical zoom.

ARNOLD TIOSEJO

The Olympus D-450 Zoom (left) and the Epson PhotoPC 650.

Positive Image

The PhotoPC 650 captures images at a maximum of 1,152 by 864 pixels; the D-450 Zoom boasts a more impressive 1,280 by 960 pixels. However, we were generally pleased by the image quality of both cameras. Images produced on the PhotoPC 650 did not display excessive levels of noise or artifacts, but they looked a little soft—enough that you might want to sharpen them in your image-editing program. Images from the D-450 looked better, with sharp detail and low noise levels, requiring minimal editing. Indeed, the noise level equaled that of images from some costly two-megapixel cameras.

Like most inexpensive digital cameras, both models use range-finder designs, meaning you view a scene through a different lens than the one that captures the image; Olympus's C-2500 and D-620L, in contrast, are single-lens–reflex cameras.

Fit and Finish

The D-450 Zoom is much easier to handle. It sports the same feature and button layout as Olympus's earlier point-and-shoot cameras, and its simple operation is reminiscent of a 35mm camera. The 3× zoom lens is a bit slow to respond to the zoom control, but it gets the job done.

The PhotoPC 650 has a boxy feel, and the on/off switch is inconveniently placed under the lens. The controls and labeling are not always intuitive; prepare to spend some time with the manual familiarizing yourself with the camera's functions.

Both cameras offer multiple flash options, including forced flash and red-eye reduction. However, if you use the PhotoPC 650 flash when capturing an image, be patient. Once you've pressed the image-capture button, you have to wait up to four seconds for the camera to trip the shutter. By comparison, the D-450 is quick on the trigger, whether it's using available light or the built-in flash. And the PhotoPC 650 lacks the D-450's optical zoom, although it does feature 37mm threads for attaching a variety of optional lenses.

Storage and Connectivity

The D-450 Zoom stores images on Lexar Media SmartMedia cards; the package includes one 8MB card. You can purchase additional cards with a maximum capacity of 32MB; it's unclear whether Olympus will modify the camera to accept the 64MB cards that are expected later this year. The PhotoPC 650 stores images on sturdier—but costlier—CompactFlash cards, also from Lexar. The package includes one 8MB CompactFlash card, on which you can store 30 megapixel images with minimal compression or 47 at medium resolution.

One disappointing aspect of both cameras is the lack of built-in USB ports. Instead, both cameras feature serial interfaces and Mac/PC serial cables; as any experienced digital-camera user knows, transferring images through a serial cable can be painfully slow. However, the CompactFlash card included with the PhotoPC 650 is USB-enabled; just attach one of Lexar's JumpShot USB cables to the card to transfer images directly to any USB-equipped Mac. But JumpShot does you no good if you have CompactFlash cards that don't support USB.

Olympus offers no USB connectivity at all; users of recent Mac models will need to add a serial interface or, if you want faster transfers, a USB-based SmartMedia reader. Both cameras also include video-out ports for viewing images on a TV set.

Macworld's Buying Advice

Both cameras are good for capturing images to post on the Web, and you can use them to produce decent-looking prints as large as 8 by 10 inches. At $499 for the Olympus D-450 Zoom and $350 for the Epson PhotoPC 650, both are affordable as well. However, the Olympus camera, with its sleek design, higher resolution, and 3× optical zoom, is clearly the better choice, despite its higher price tag; images from the PhotoPC 650 look good, but the D-450 Zoom's images look even better. The biggest knock to the Olympus camera is the lack of USB connectivity; the Epson camera also lacks built-in USB but compensates with its USB-enabled CompactFlash cards.—RICK OLDANO

Epson PhotoPC 650

RATING: ♦♦♦ **PROS:** Affordable; good image quality; uses USB-enabled CompactFlash media. **CONS:** No zoom; unintuitive design. **COMPANY:** Epson America (800/289-3776, www.epson.com). **COMPANY'S ESTIMATED PRICE:** $350.

Olympus D-450 Zoom

RATING: ♦♦♦♦ **PROS:** Affordable; excellent image quality; good assortment of features. **CONS:** No USB interface. **COMPANY:** Olympus America (800/622-6372, www.olympus.com). **COMPANY'S ESTIMATED PRICE:** $499.

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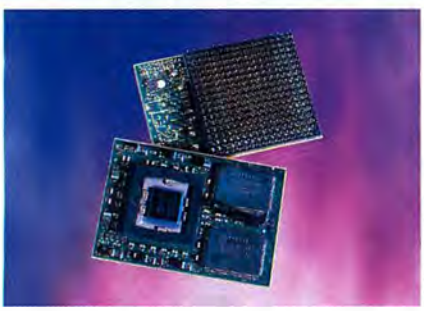
*October 1999 research by IDC and NPD online independent market research firms showed that over 185 million Web users have the Flash Player already installed. For details, please visit: www.macromedia.com/software/flash/survey/

G4 ZIF Socket Upgrades

XLR8 AND NEWER CARDS BOOST G3 PERFORMANCE

NOW THAT APPLE IS SHIPPING its G4 hardware, the Power Mac G3 that blazed through your applications a year ago might seem a bit long in the tooth. But thanks to the zero insertion force (ZIF) socket in Apple's G3 systems, it's relatively easy to swap in a faster CPU, and developers are racing to offer G4 upgrades for older Macs. First out of the chute are Newer Technology, with its Maxpowr G4 400MHz, and XLR8, with the 400MHz Mach Speed G4z. The two cards offer comparable performance, providing a substantial speed boost when running 3-D–rendering software or AltiVec-enabled applications. However, you'll likely see only modest improvements when running everyday business applications or graphics-intensive computer games. Both upgrades work with Apple's full range of Power Mac G3 systems.



SUZANNE ROADY

Macworld Lab tested the upgrades in a 300MHz blue-and-white Power Mac G3. Results were predictable (see "400MHz ZIF Upgrades"). When running applications that had been enhanced to take advantage of the G4's Velocity Engine (Apple's brand name for Motorola's AltiVec G4 extensions), both upgrades provided huge performance improvements to our test system. Adobe Photoshop's Lighting Effects plug-in ran more than three times as fast with an upgrade, and the Gaussian Blur filter was about twice as fast.

When encoding MP3 audio with Casady & Greene's SoundJam 1.5.1—another AltiVec-enabled program—the CPU upgrades almost doubled the performance of our test system. You can also expect a speed boost when running CPU-intensive 3-D–rendering tasks; a Bryce scene that took about 31 minutes to render on the G3 system rendered in about 23 minutes when we added an upgrade.

However, other performance gains were minimal. For example, the upgrades shaved just a few seconds off a Microsoft Word find-and-replace operation, and when running Quake II, they provided only a modest boost in frame rate. The latter shouldn't be surprising, since 3-D–video playback performance is largely determined by the graphics controller, not the CPU.

The CPUs are a cinch to install; you just plug the card into the ZIF socket and add a system extension. Although there were early reports that blue-and-white G3 systems would not accept G4 upgrades, the extensions appear to solve any compatibility issues; we encountered no unusual system crashes or other anomalies after installing the CPU upgrades.

Macworld's Buying Advice

Both upgrades work as advertised, bringing G4 speeds to Apple's previous-generation G3 Power Macs. But does it make sense to shell out $800 or $900 for a CPU card when you can have a spanking-new G4 system for $1,599? If you have a beige Power Mac G3 and a big investment in SCSI peripherals, the answer might be yes, because getting a new G4 system also means junking those old peripherals and making the move to USB and FireWire. However, if you've already made the move to the new interfaces, you're probably better off investing in a new G4 system—at least for the time being. The CPU-upgrade business is highly competitive, and you can expect prices to fall as other vendors offer their own G4 upgrades.—STEPHEN BEALE

Maxpowr G4

RATING: ★★★½ **PROS:** Easy to install. **CONS:** Expensive. **COMPANY:** Newer Technology (316/943-0222, www.newertech.com). **COMPANY'S ESTIMATED PRICE:** $799.

Mach Speed G4z

RATING: ★★★½ **PROS:** Easy to install. **CONS:** Expensive. **COMPANY:** XLR8 (888/957-8867, www.xlr8.com). **COMPANY'S ESTIMATED PRICE:** $879.

Macworld LAB TEST

400MHz ZIF Upgrades

Best results in red. *Reference system in italics.* Photoshop and Word results are in seconds. Bryce and SoundJam results are in minutes:seconds. Quake II results are in frames per second.

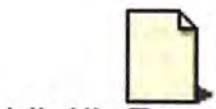
	PHOTOSHOP 5.5			WORD 98	BRYCE 4.01	SOUNDJAM	QUAKE II
	Gaussian Blur	Unsharp Mask	Lighting Effects	Find/ Replace	Render Scene	MP3 Encode	640 × 480
XLR8 Mach Speed G4z	6.7	10.3	5.8	18.2	22:52	2:29	18.5
Newer Maxpowr G4	6.9	9.7	6.1	19.3	22:31	2:37	18.7
*Apple Power Macintosh G3/300**	*14.7*	*15.9*	*19.5*	*21.4*	*31:01*	*4:19*	*17.2*

Shorter bars are better. For Quake frame rates, longer bars are better.

**Previous G3 architecture.*

Behind Our Tests

We tested both cards in a Power Macintosh G3/300 with Mac OS 9, a minimum of 128MB of RAM, and virtual memory disabled. We performed Photoshop tests with a 30MB file. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds in length.—**Macworld Lab testing supervised by Jeffy K. Milstead**



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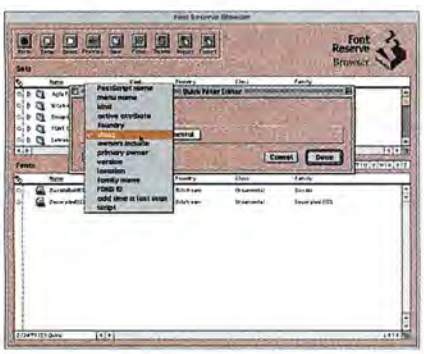
Font-Management Software

FONT RESERVE AND FONTAGENT KEEP YOUR FONTS TOGETHER

MACS HAVE COME A LONG WAY over the years, but keeping track of your fonts can still be a challenge. Insider Software's FontAgent 8 and DiamondSoft's Font Reserve 2.5 both aim to simplify the way you use your fonts. They may sound like competitors, but the programs complement each other, making a strong argument for having two font utilities.

Clean Those Files

FontAgent 8, the simpler of the two programs, scans your hard disk or network, analyzing, repairing, and organizing all fonts into user-designated folders or suitcases. It will not activate your fonts for use in specific applications but provides a good starting point for other font managers that do provide activation, such as Font Reserve, Extensis Suitcase, and Adobe ATM Deluxe.



Font Filters Font Reserve lets you sort and filter fonts using a variety of criteria.

FontAgent's main window consists of three large buttons, with clear explanations of their respective tasks. The first button, Set Optimization Options, tells the program to locate all fonts in the system. Once it finds them—which it does rather quickly—you can choose from several optimization options. In addition to removing duplicate or incomplete fonts, you can get rid of unneeded bitmapped versions of the typefaces. Removing all bitmaps larger than, say, 12 points, saves an astounding amount of hard-disk space: on our system, we reduced an unwieldy 350MB type library to 120MB. FontAgent also attempts to repair any corrupted fonts it locates.

The second button, Set Organization, lets you set options for collecting and sorting fonts. You can keep them in their existing suitcases; move them into new, lean, alphabetized suitcases; or move them into designated folders. You can also add extensions to each suitcase that identify its contents as a Type 1 or TrueType font. The process worked without a hitch, but we would feel safer if the program let you copy the fonts—keeping them in their original locations—in addition to moving them.

The third button, Problem Fonts, lets you direct any irreparable corrupted fonts into a separate folder. You can then delete the font or reinstall it from the original disk.

Get Organized

Once you've optimized your fonts, a font-organizing utility can keep track of them. Our personal favorite is Font Reserve; version 2.5 is an update to a nearly flawless font-management tool.

The first change you notice is not part of Font Reserve at all, but rather the addition of a free, bundled version of Action WYSIWYG, a $30 utility that reorganizes the Mac font menu into logical groups, much as Adobe Type Reunion does. The package also includes 40 Bitstream fonts.

The program itself scans your system for fonts and stores them in a database. You then run the Font Reserve Browser to view the fonts, using filters to sort and access the typefaces by a variety of parameters. For example, you can limit the display to ornamental faces by clicking on the Filter button and defining a search.

But the most useful feature is activation—just drag and drop fonts into sets you can then activate and deactivate as needed. Font Reserve 2.5 activates fonts even faster than before, and with less hassle than other utilities. The previous version could activate fonts in many applications merely by opening documents that contained those typefaces. The update adds a technology called Font Sense that stores the exact font specification within a QuarkXPress or Adobe Illustrator document, ensuring that the document will open with the same version of the font as before. DiamondSoft says it's working with other vendors to support Font Sense.

The update adds full compatibility with Mac OS 9; if you have your Macintosh set up for multiple users, each one can have a separate Font Reserve database. DiamondSoft has also enhanced Font Reserve's Specimen Book feature: sample fonts print faster than before, and the program doubles the number of specimen templates to 20.

At $120 for the CD-ROM version, Font Reserve is a little pricey. But you can purchase a download-only version for $90, and the bundled fonts and Action WYSIWYG utility certainly sweeten the pot. Upgrades from previous versions sell for $40—a good deal considering that Action WYSIWYG alone sells for $30.

Macworld's Buying Advice

Font Reserve is the smartest, most comprehensive font-management application on the market. This update adds only a few new functions, but the program still raises the bar on other font-management packages. FontAgent 8 is a great complement to Font Reserve or any of the other font-activation utilities. Although Font Reserve's filtering capabilities duplicate some of the font-organizing functions in FontAgent, the latter's ability to streamline font files and repair corrupted fonts makes it a worthy addition for any Macintosh user who handles type on a frequent basis.—ANDREW SHALAT

FontAgent 8

RATING: ♦♦♦♦½ **PROS:** Easy interface; streamlines font files. **CONS:** No option for copying font files. **COMPANY:** Insider Software (800/700-6340, www.insidersoftware.com). **COMPANY'S ESTIMATED PRICE:** $70; network edition, $160.

Font Reserve 2.5

RATING: ♦♦♦♦½ **PROS:** Comprehensive font management; fast activation. **CONS:** None significant. **COMPANY:** DiamondSoft (415/381-3303, www.fontreserve.com). **COMPANY'S ESTIMATED PRICE:** $120; download-only version, $90.

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Kai's Power Tools 6

ALL-NEW ADOBE PHOTOSHOP PLUG-INS

MOST ADOBE PHOTOSHOP users have encountered MetaCreations' Kai's Power Tools, the popular collection of special-effects plug-ins known by its initials, KPT. Over the years, MetaCreations has offered infrequent upgrades—spruced-up versions of the old plug-ins, along with a handful of new ones. But with KPT 6, MetaCreations has changed its approach: rather than updating the same software, the company has released a set of new filters to be sold alongside KPT 5, the previous—and now concurrent—version. (At press time, MetaCreations had recently announced its intention to divest itself of much of its graphics software, so it's likely that the KPT plug-ins will eventually be offered by a different company.)

Like its predecessors, KPT 6 is a mix of some useful tools and some silly effects. Though the program's interface is not as obtuse as those of previous versions, some users may find that it has annoying characteristics.

A New Perspective With Kai's Power Tools 6's Projector filter, you can create still or animated perspective distortions by dragging the corners of your selected image.

Staying Sharp

KPT 6 consists of eight new plug-ins that work with Photoshop, MetaCreations Painter, and other image-editing programs that support the Photoshop plug-in architecture. As in previous KPT versions, each filter consumes the entire Mac screen with its own un-Mac-like interface. While it looks cool, this "modal" interface can be irritating. For example, if you want to edit a document while viewing a reference image in the background, you're out of luck.

We found the most useful new filter to be Equalizer, which lets you selectively sharpen different parts of an image using controls resembling those of an audio graphic equalizer. One Equalizer mode, Bounded Sharpen, prevents halos from appearing around high-contrast edges. The manual recommends using Equalizer with downsampled images, but we found it to be a good tool for many sharpening chores.

LensFlare, a good replacement for Photoshop's simple Lens Flare filter, offers an impressive degree of control and high-quality results. However, lens flares are so overused that we can't get too excited about this plug-in.

KPT 6 also includes a number of filters for creating textures and odd surface effects. Materializer, for example, treats an image as a height map, where darker areas are higher (or lower, depending on your settings) than lighter areas. Materializer does all the work of adding highlights and shadows to make your 2-D image stand out in relief, giving you full control over light position, highlighting, and reflections. This plug-in is much more convenient than a 3-D package for creating bump-map and embossing effects, but its usefulness depends on the kinds of images you like to create.

Ideal for creating still or animated water textures—as well as cool abstract patterns—Turbulence lets you distort an image into patterns that resemble pond ripples. This plug-in is beautiful to watch, and it's a good tool for videographers and 3-D animators.

KPT's Reaction filter lets you create complex "organic" textures from underlying images. Similar to Photoshop's Stamp filter, it performs a series of actions that would otherwise require multiple steps and several layers.

And the Projector filter provides a simple interface for applying perspective to an image. It maps an image to a plane that you can tilt by dragging corners.

Gel or Goo?

The Goo filter incorporates some of the features in Kai's SuperGoo. The best smearing and smudging tool around, Goo lets you create realistic distortions or wild abstractions simply by dragging a tool across an image. As with its stand-alone predecessor, you can also use Goo to create animations that you can export as QuickTime movies.

Gel lets you paint on an image using a thick, viscous goop that looks like tree sap or hot glue. In addition to a good assortment of tools for cutting, pushing, and pulling, Gel includes useful lighting, tinting, and reflection controls.

Finally, KPT 6 includes two extra plug-ins previously sold by Rayflect, both of which use more-conventional interfaces. SceneBuilder (formerly known as Rayflect Photo Tracer) provides a tidy 3-D scene-building environment for use in Photoshop. You can import models, position and light them, and then render a finished scene. Though no substitute for a full-blown 3-D package, SceneBuilder is a great shortcut for creating simple logos and renderings.

SkyEffects (formerly known as Rayflect Four Seasons) lets you create horizons and skies, complete with clouds, moons, rainbows, and sunsets. While a far cry from the beautifully ray-traced skies in MetaCreations Bryce, SkyEffects is a great way to quickly create an environment map for a 3-D program, or a simple sky for a backdrop.

Macworld's Buying Advice

KPT's Equalizer, Turbulence, Goo, and Projector filters alone are worth KPT 6's $150 price tag. You probably won't find yourself using these filters every day, but given their popularity, you can expect to see artwork that obviously incorporates their effects. We're a little nervous recommending a product that's likely to be sold off by its current developer, but with KPT's successful track record, the program is likely to find a happy home with a different software publisher.—BEN LONG

RATING: ♦♦♦♦ **PROS:** All-new Adobe Photoshop filters, some more useful than those in previous versions. **CONS:** Nonstandard interface. **COMPANY:** MetaCreations (800/846-0111, www.metacreations.com). **COMPANY'S ESTIMATED PRICE:** $150.

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MACWEEK.COM

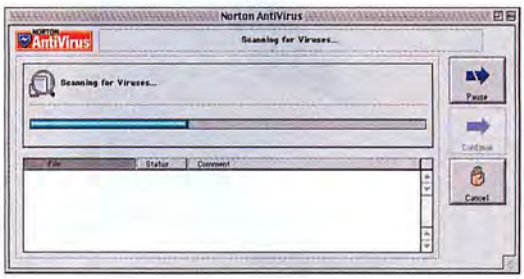
Expert Analysis of the Inside Story

Norton AntiVirus 6.0

INCREMENTAL UPDATE TO UTILITY

VENDOR-INDUCED PARANOIA aside, the reality of today's Net-connected world is that every networked computer—Mac and PC alike—is susceptible to viruses. Even careful computer users may have sloppy friends who unwittingly propagate malicious wares. Consequently, antiviral software is a necessity. For most Mac users, this means Symantec's Norton AntiVirus (NAV), currently the only credible antivirus software for the Mac.

Although it remains a solid protection tool, the latest incarnation—NAV 6.0.1—is a ho-hum upgrade. The main addition, LiveUpdate, automatically downloads software updates and information about new viruses, vastly improving on the automated updating feature in the previous version. Otherwise, little has changed since NAV 5.0 (see *Reviews*, March 1999).



Where's the Info? NAV's poorly designed main window doesn't convey useful information during a scan. It offers no indication of which file it's scanning or how many files remain.

Server-Unfriendly

NAV 6.0.1 consists of the main application, an autoprotect extension, and the new LiveUpdate utility. The extension, which scans your system for potential viruses, behaves just as in previous versions. You can configure it to scan incoming files and alert you if it detects any suspicious activity; otherwise it lies relatively dormant. You also need the extension if you want to perform scheduled virus scans.

Unfortunately, the autoprotect extension is not a viable option for servers. Virus scans slightly slow overall server performance, and an alert stops an entire Mac system in its tracks—this may be useful on a typical desktop Mac, but it's lethal in a server environment. Considering the large numbers of AppleShare servers sold over the years and the various e-mail and Web-server packages available for Mac OS, it's surprising that Symantec provides no Mac server support.

Like the autoprotect extension, the main NAV application remains largely unchanged. Although this version does have some under-the-hood performance improvements, the user interface is really showing its age. For example, when you're scanning a Mac system, NAV offers no useful feedback: the status bar marches from left to right, but you can't tell which file or folder the software is scanning or when it might be finished.

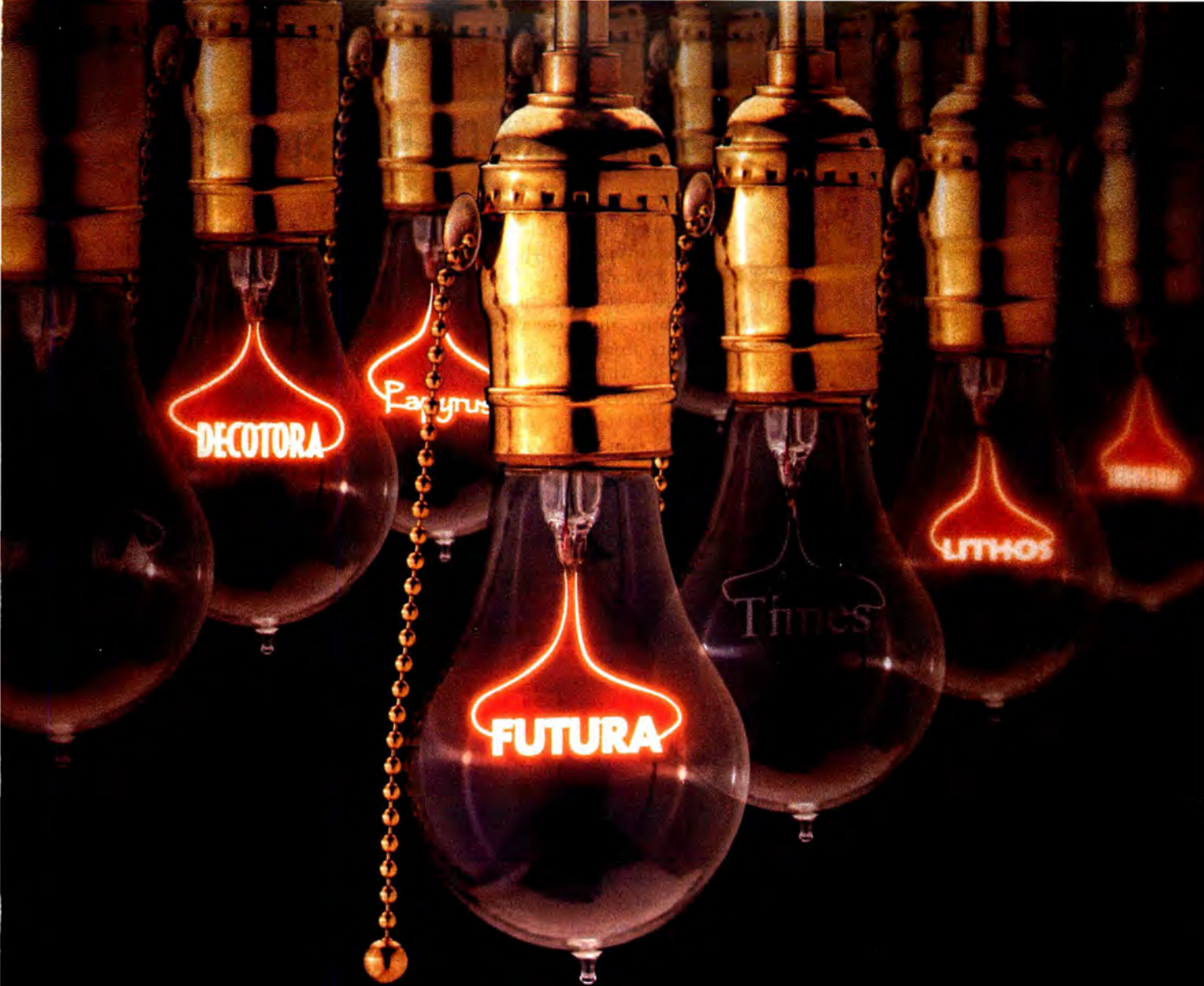
NAV's handling of compressed files is especially opaque. The program skips compressed files when it encounters them and then scans them all at the end of the process. If you interpret a full status bar as meaning the program is done scanning, you could be in for a rude surprise if you have many large archives on your disk.

Finally, NAV's QuickScan, which speeds performance by skipping previously scanned files, doesn't recognize previously scanned archives. Instead of skipping the archives, as it does with uncompressed files, QuickScan scans all of them each time.

Macworld's Buying Advice

With NAV's primary competitor, Dr. Solomon's Virex, apparently in limbo, NAV is the only reputable Mac antivirus package, and Symantec seems to know this. Instead of adding innovation, Symantec took the conservative approach and made only modest changes to the previous version. That said, NAV 6.0.1 is a solid package backed by a respected antivirus-research organization. The one-year subscription to virus-information updates, coupled with the new LiveUpdate feature, makes it a worthwhile addition to every utility set. We just wish Symantec would make this a more usable package.—STEPHAN SOMOGYI

RATING: ♦♦♦ **PROS:** Fast repeat scanning; improved LiveUpdate. **CONS:** Poor archive handling; uninformative interface; not server-friendly. **COMPANY:** Symantec (800/441-7234, www.symantec.com). **COMPANY'S ESTIMATED PRICE:** $70.



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SUMWNA021299

CD-ROM ToolKit, CD-ROM SpeedTools

NON-APPLE CD DRIVERS BEST FOR OLDER MACS

LIKE HARD-DISK DRIVERS, software drivers for CD-ROM devices are typically neither seen nor heard—yet these crucial bits of software allow the Mac OS to retrieve data from your drive. If you bought a Mac with a preinstalled CD-ROM drive, you're most likely using the Apple CD-ROM driver included in the Mac OS. But Apple's driver won't support most external drives and won't let you use CD-R or CD-RW burners to read discs. In addition, you can't use the Apple CD software with the drives in most Mac clones. FWB's CD-ROM ToolKit 4.0.1 and Intech's CD-ROM SpeedTools 4.1 let your Mac work with devices that Apple's stock drivers don't support.

Just Enough and No More CD-ROM SpeedTools' control-panel interface provides all you need to tune CD-ROM performance.

In with the New

The latest incarnation of FWB's ToolKit looks and works just like its predecessor, version 3.0. The only noticeable difference is the inclusion of limited editions of Audion, an MP3 player, and N2MP3, an MP3 encoder. ToolKit improves CD performance through multiple caching schemes: you can set up static and dynamic RAM caches, and even set them for specific CDs. ToolKit includes performance-tuning profiles for specific CD-ROMs, but it lists mostly old titles, and the profiles are of questionable value as they're appropriate only for data CDs—audio CDs don't benefit from caching drivers. An automatic tuning system would have been a good idea.

Intech's SpeedTools, a relative newcomer, features a svelte interface and an affordable price tag. While the driver includes a multiple caching scheme—just like ToolKit—for improved performance, it keeps things simple with just two tunable options, neither of them disc-specific. The default setting for one option lets the driver decide how to optimize performance.

To test the drivers' performance in our blue-and-white Power Mac G3, we used Casady & Greene's SoundJam to extract and encode a lengthy music track from a CD. The Apple and SpeedTools drivers offered similar performance, but we found that ToolKit 4.0.1 doesn't allow SoundJam to extract and encode in a single pass. As a result, users face considerably longer encoding times because the software must first extract the audio data from the disc. This omission is surprising in ToolKit, a product that should be quite mature by now.

Macworld's Buying Advice

If your CD-ROM drive works with the Apple driver, stick with that. But if Apple's driver doesn't recognize your CD-ROM drive, Intech's CD-ROM SpeedTools is the better choice. It costs half as much as FWB's package, it behaved well in our testing, and unlike ToolKit, it supports asynchronous operation for faster performance. SpeedTools is also thrifty with system resources, and Intech's policy of free future upgrades for SpeedTools customers makes the product an even better bargain.—STEPHAN SOMOGYI

FWB CD-ROM ToolKit 4.0.1

RATING: ♦♦½ **PROS:** Bundled with light versions of MP3 applications. **CONS:** Expensive; doesn't support asynchronous I/O on ATAPI drives. **COMPANY:** FWB (800/581-4392, www.fwb.com). **COMPANY'S ESTIMATED PRICE:** CD-ROM, $80; download, $70.

Intech CD-ROM SpeedTools 4.1

RATING: ♦♦♦½ **PROS:** Straightforward interface; good performance; inexpensive. **CONS:** Audio CD player has fewer features than Apple's. **COMPANY:** Intech (www.intechusa.com). **LIST PRICE:** $35.

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Network Storage Devices

INSTANT GIGADRIVE AND SNAP SERVER 2000 SIMPLIFY DATA SHARING

WHAT A SHAME—WASTING AN entire Mac only on file sharing. That's just the problem network storage devices address—they free up your Macs for real computer work by providing the function and performance of a 10/100BaseT Ethernet file server in a self-contained box requiring minimal administration. Linksys's EtherFast 10/100 Instant GigaDrive and Quantum's Snap Server 2000 bring this technology to Macintosh networks in a big way with 20GB and 40GB capacities, respectively. Both servers also let you share files with Windows users.

ARNOLD TIOSEJO

Quantum's Snap Server 2000

About the size of a large modem, the single-drive Linksys GigaDrive has three simple connections: power, Ethernet, and printer. The printer connection lets you attach a PC-style parallel-port printer to operate as a network output device.

A brief user's guide tells you everything you need to know to set up the GigaDrive—if you're a Windows user. Mac users must call Linksys tech support to get essential installation details, such as the server's default IP address. Linksys says it will remedy this shortcoming in the near future.

Quantum's somewhat bulkier dual-drive Snap Server is much more Mac-friendly, with a comprehensive user's guide and Mac-specific quick-start instructions. The Snap Server lacks print-serving capability but has other useful functions not found on the GigaDrive: a built-in Web server for hosting users' Web sites, and Network File Sharing (NFS) support for Unix interoperability. You have the option of configuring its dual disk drives as either RAID 0 (striping) to combine the drives in a single large logical drive, or RAID 1 (mirroring) to provide enhanced fault tolerance.

Both servers have common features: 10/100BaseT Ethernet, Web-based administration, Dynamic Host Configuration Protocol (DHCP) IP-address serving, e-mail notification of problems, and support for multiple users and groups. With both servers, you use a Web browser to set up individual user accounts and passwords, user groups, and shared folders.

The Snap Server supports AppleShare IP, which lets you share content across routers and over the Internet. Among Macintosh file-sharing protocols, the GigaDrive supports only AppleTalk, which is much slower than TCP/IP over Ethernet. In our tests on a 100BaseT LAN, this difference proved large: copying a 256MB file to the Snap Server was *ten times* as fast as copying the same file to the GigaDrive: 5 minutes versus 50.

Macworld's Buying Advice

The Instant GigaDrive's low price and built-in printer server make it an attractive choice for SOHO users, for whom speed is usually less important than cost and convenience. However, for larger networks with multiple users, the GigaDrive is too confining. If money is not the deciding factor, the faster, higher-capacity Snap Server 2000 is a better product: its Web serving, NFS, and multiuser features help it fit into nearly any network neighborhood.—MEL BECKMAN

EtherFast 10/100 Instant GigaDrive

RATING: ♦♦♦ **PROS:** Inexpensive. **CONS:** Incomplete documentation; no AppleShare IP; no RAID disk protection; no Web serving; slow. **COMPANY:** Linksys (800/326-7114, www.linksys.com). **LIST PRICE:** $649.

Snap Server 2000

RATING: ♦♦♦♦½ **PROS:** AppleShare IP support; RAID disk protection; fast. **CONS:** No external disk-capacity or network-speed indicators. **COMPANY:** Quantum (888/343-7627, www.snapserver.com). **LIST PRICE:** 20GB, $999; 40GB, $1,799.

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QuicKeys 4.0

KEYBOARD SHORTCUT TOOL

THE MACINTOSH INTERFACE, although easy to use, is sometimes frustrating for control freaks—er, we mean power users. Apple provides few tools for automating repetitive tasks, giving many users wrist-lash. CE Software's QuicKeys has always been the king of Macintosh automation, and the 4.0 release secures that crown even more tightly. A slew of enhancements joins a new Setup Assistant to make power users more powerful while getting novice users into the program more gently.

Quick Help The Setup Assistant walks you through the process of creating a QuicKeys macro, and new tool bars let you access macros without memorizing their keystrokes.

QuicKeys runs as a system extension, intercepting keystrokes and performing prearranged actions, such as launching an application or typing stock text. The program comes with some basic shortcuts, such as cut, copy, and paste, prewired to standard Mac keyboard function keys. Using the convenient QuicKeys editor, easily accessible from the menu bar, you can make more shortcuts, or macros. You can also assign any combination of keyboard typing, menu selections, mouse clicks, system functions, and dialog-box interactions to a single keystroke.

QuicKeys has taken some flak in the past for an unwieldy interface that new users found difficult. This release sports a Setup Assistant that walks you through the process of creating a macro, so novice users can avoid the complex QuicKeys editor. Also new is the ability to create floating tool bars that let you access macros with a single click. You can make tool bars universal—always floating above any application window—or set them to appear only in a specific program. With tool bars, you can access macros easily without assigning or remembering keystrokes.

Version 4.0 also adds a host of new plug-ins. Advanced Text Tools automates such operations as excerpting text, adding and removing quotation marks, and changing case. New File Tools includes a batch processor for automating work on a group of files, as well as tools for changing file contents and location. The E-mail Tool lets you reply to routine e-mail with a single keystroke, adding predefined attachments and boilerplate text. The Web Tool links Web URLs to a keystroke or tool-bar icon, giving you one-click access to any Web site or online resource. Password Vault safely stores passwords in macros, and Project Saver captures your current application environment.

With cunning combinations, you can construct QuicKeys macros to do just about anything. And because macros are portable from one machine to another, users can share them to spread the time savings around.

Macworld's Buying Advice There's much to like in QuicKeys 4.0. Its interface improvements show that the company is responsive to usability complaints, and the new features make this a must-have tool, even if you're *not* a control freak.—MEL BECKMAN

RATING: ♦♦♦♦♦ **PROS:** Inexpensive; Setup Assistant; tool bars; powerful plug-ins. **CONS:** None. **COMPANY:** CE Software (515/221-1801, www.cesoft.com). **COMPANY'S ESTIMATED PRICE:** $100.

StuffIt Deluxe 5.5

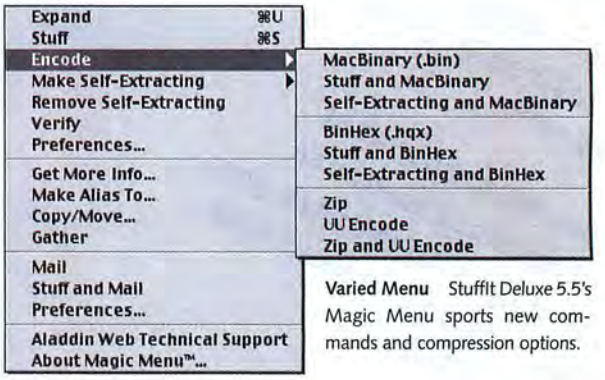
UPDATE INCLUDES FIXES, NEW OPTIONS

ALADDIN'S STUFFIT DELUXE, plagued by bugs and a lack of backward compatibility in version 5.0 (see *Reviews*, April 1999), is back on track with an update that offers far greater stability and a handful of helpful new options. Version 5.5 of the file-compression utility still won't let you save files in earlier StuffIt formats, but the new features make it worth considering if you have an earlier version.

Among the most-useful new features is the Archive command, which makes it easy to pull a single file out of a StuffIt archive. You simply control-click on the StuffIt archive file, select Archive from the contextual menu, and navigate through the hierarchical directory list to the exact file you wish to extract.

StuffIt Deluxe 5.5 also supports additional compression formats. You can now create Zip files with StuffIt's DropZip application or by appending the .zip suffix to any file; you can use the same suffix-renaming tactic to create UUencode files. StuffIt Deluxe 5.5 can also create self-extracting archives and Bzip files for Windows PCs.

Along with the new encoding features, Aladdin's Magic Menu now includes four additional commands—quite useful even though they have little to do with compression. Get More Info provides basic file information, Make Alias To creates an alias and places it in any designated folder, Copy/Move copies or moves files to other locations, and Gather moves selected files into a single folder. Another new component, the Secure Delete utility, trashes files so they're unrecoverable.



Varied Menu StuffIt Deluxe 5.5's Magic Menu sports new commands and compression options.

StuffIt Deluxe isn't quite as deluxe as it once was. Some users may be disappointed to learn that the update still can't save files in earlier StuffIt formats. Now that Apple bundles StuffIt 5.X-compatible versions of DropStuff and StuffIt Expander with the Mac OS, this isn't the big issue it once was, but some users may still need to create StuffIt 4.0 archives. Aladdin has also removed the SpaceSaver utility, which compressed and expanded files on your Mac. However, considering the capacity of today's hard drives, losing SpaceSaver is hardly devastating.

Macworld's Buying Advice With a return to stability and the addition of beneficial new features, StuffIt Deluxe is back in our good graces. If you have an older version of the software, consider upgrading (most upgrades cost $20). If the free DropStuff and StuffIt Expander don't address all of your compression needs, buy this more capable version.—CHRISTOPHER BREEN

RATING: ♦♦♦♦ **PROS:** Comprehensive compression options; useful navigation tools. **CONS:** Still not backward compatible. **COMPANY:** Aladdin Systems (831/761-6200, www.aladdinsys.com). **LIST PRICE:** $80.

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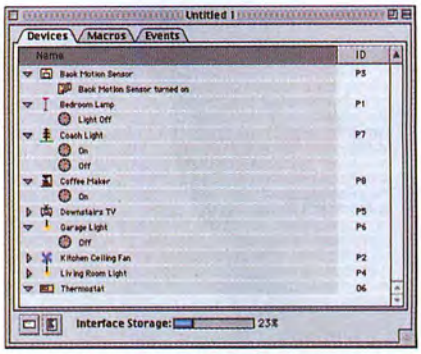
Thinking Home

SOFTWARE THAT AUTOMATES YOUR HOME

WITH ALL THE FUSS ABOUT smart homes and Internet-savvy refrigerators, you'd think that decades-old home-automation technology would be ready for the scrap heap. But X10, a protocol developed more than 20 years ago by X10 (www.x10.com), isn't about to run out of steam. The technology uses signals over existing electrical wiring, so it's easy to install without additional construction. When it's in place, you can control almost any electrical device without leaving your chair and repel burglars by giving your house a lived-in look when you're away.

A basic X10 setup includes three components: hardware modules to turn lamps, appliances, and other electrical equipment on and off; a computer interface to send commands to the modules; and software to program the interface hardware. While several companies sell X10-compliant hardware and software, Thinking Home 1.0.3, a $39 program from Always Thinking, is one of only a handful of commercial X10 applications for the Mac. (See *Reviews*, February 1999, for a review of MouseHouse 2.0, another Mac-compatible X10 program.)



Control List Thinking Home's Devices list shows modules and events.

Thinking Home supports most popular X10 hardware, including the defunct CP-290 interface from X10, as well as newer models such as IBM Home Director. If you don't own any X10-based hardware, Always Thinking offers a $59 bundle that includes Thinking Home, an IBM Home Director starter kit, and a Mac adapter cable.

We had no difficulty using Thinking Home to program our CP-290 or Home Director interface, but we were disappointed by the program's lack of graphical displays and controls. For example, Thinking Home forces you to enter each module's on and off times by typing them on the keyboard or by clicking on arrows; sliding controls would be a simpler alternative. We were also disappointed that we couldn't list the settings for all our modules at once. Additionally, Thinking Home doesn't provide a visual indication of each module's settings.

On the plus side, Thinking Home includes a remote-control function that lets you send On, Off, and Dim commands immediately to any module. There's also a handy screen that lets you monitor the status of as many as 16 modules, and this screen provides an estimate of the remaining life in the interface's backup batteries.

Macworld's Buying Advice At $39, Thinking Home costs $30 less than MouseHouse, although the latter boasts a superior event display. Unfortunately, neither application uses graphics as effectively as the Windows software that ships with X10's hardware kits. Still, Thinking Home offers a cost-effective way to program an X10-based home-automation system with your Macintosh.—FRANKLIN TESSLER

RATING: ▮▮▮ **PROS:** Inexpensive; understands voice commands. **CONS:** Graphically challenged; limited display options. **COMPANY:** Always Thinking (800/556-9559, www.alwaysthinking.com). **LIST PRICE:** $39.

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We were impressed by the quality and depth of the program's printed documentation, which includes an excellent introduction to bibliographic concepts. Papyrus also provides extensive context-sensitive help and summaries of shortcuts, both in HTML format. Cash-strapped researchers will appreciate Research Software Design's license agreement, which permits individual members of a research group to install Papyrus on their own computers, as long as everyone uses the same reference database. (Two users cannot make simultaneous changes to a single database file over a network, however.)

With 59 different fields, 16 predefined reference types, and a database capacity of 16 million records, Papyrus can likely handle whatever you throw at it. Papyrus even provides a field for pictures; alas, the program stores the actual images instead of just pointing to them, so databases that incorporate graphics can grow extremely large.

Picture Perfect You can insert graphics into a Papyrus database by dragging or by cutting and pasting.

You can import references—saved as text files—from a variety of sources, including online and offline reference collections, as well as bibliographic database programs such as ISI ResearchSoft's EndNote and ProCite. However, unlike EndNote, Papyrus doesn't let you search for and retrieve references directly from Z39.50-compliant online databases such as the National Library of Medicine's PubMed.

Transferring citations into a word-processing document isn't as convenient as in ProCite, which lets you search for references without leaving Microsoft Word. The search dialog box, which doesn't include such text-specific operators as "begins with" or "contains," is also less straightforward than ProCite's. Once you've located the correct references, you have to copy or drag them into your manuscript. When you're ready, Papyrus formats the in-text citations and generates a bibliography. Papyrus supports documents created with Microsoft Word versions 5 through 98, WordPerfect 3.X, or Nisus Writer 5.X. Otherwise, you have to save your document as a plain text or RTF file before Papyrus can format it.

Macworld's Buying Advice Although it lacks some amenities, this comprehensive reference manager should satisfy most research authors' needs. At only $99 for the CD-ROM version, Papyrus is a bargain that's hard to pass up.—FRANKLIN TESSLER

RATING: ♦♦♦½ **PROS:** Inexpensive; comprehensive documentation. **CONS:** Cumbersome search tools; no direct online database retrieval. **COMPANY:** Research Software Design (503/796-1368, www.rsd.com). **LIST PRICE:** Full version, $139; CD-ROM only, $99; online download, $89.

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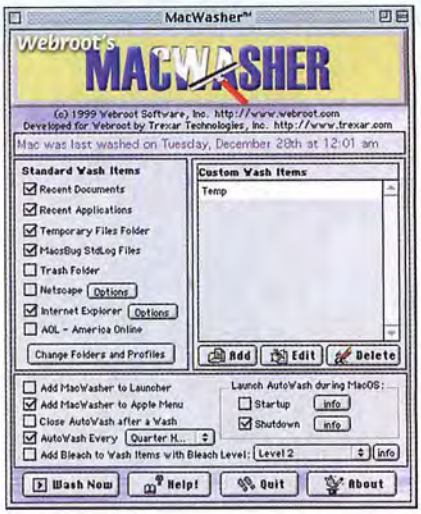
MacWasher

UTILITY COVERS TRACKS OF WEB WARY

MOST OF US THINK TWICE before giving out a credit card number. But have you ever stopped to think how much personal information is readily available to anyone who sits down at your Mac? For instance, the Recent Documents folder in the Apple menu lets anyone see which documents you've recently opened. And your Web browser is an open book on your Web habits: it stores a history of the sites you've visited; temporary items (such as graphics) that make up Web pages; and *cookies* that tell Web sites who you are, where you've been, and so on. If you want to avoid leaving such telltale tracks, MacWasher 1.0.2, an inexpensive utility from Webroot Software, may be the solution.

From MacWasher's main screen (see "Wash This"), you can configure the application to delete any of the following items: the Apple menu's Recent Documents and Recent Applications lists; log files from MacsBug (Apple's debugging tool); and the contents of the Temporary Files folder, the Trash, and folders you've specified. America Online users can tell MacWasher to delete the cache as well as the download and history folders. In addition to those items, Microsoft Internet Explorer and Netscape Navigator users can also instruct MacWasher to delete cookies.



Wash This You can set all of MacWasher 1.0.2's options in this window. Click on the Wash Now button to give your system an immediate cleaning.

Deleting files makes it difficult for casual users to discover what you've been up to, but MacWasher can also "bleach" files—overwriting them from one to ten times. Three and seven overwrites meet Department of Defense (DOD) and National Security Administration standards, respectively. Bleaching can be extremely time-consuming: to bleach a single 350K file one, three, and seven times took 2.5, 7.4, and 17.0 minutes, respectively.

Bleaching prevents data-recovery tools from resurrecting the deleted data; however, it does not prevent them from displaying the *names* of the bleached files. By comparison, Norton Utilities' Wipe Info can overwrite selected files and folders in a few seconds, not only meeting DOD security requirements but also deleting the file names.

Macworld's Buying Advice While MacWasher will find a welcome home with computer novices, more-experienced users will quickly find other ways to meet MacWasher's security objectives. For example, you can turn off your Web browser's history, disable cookies, and create simple AppleScripts to delete the contents of selected folders.—STEVE SCHWARTZ

RATING: 3½ **PROS:** Easy to configure; flexible. **CONS:** Technical support via e-mail only; bleaching is time-consuming and doesn't hide names of deleted files. **COMPANY:** Webroot Software (800/772-9383, www.macwasher.com). **COMPANY'S ESTIMATED PRICE:** $30.

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Descent 3

3-D SHOOTER RETURNS, BUT BUGGY

THOSE WHO'VE NEVER HAD THE opportunity to float about in weightless conditions—pinging around the interior of an orbiting space shuttle, for example—may find Graphic Simulations' Descent 3 a bit disorienting. After all, like other gravity-free environments, Descent 3 lets you maneuver on all axes, and it's often difficult to determine where "down" stops and "up" begins.

Descent is a name familiar to longtime Mac gamers. Descent I and II—3-D shooters that placed you behind the controls of a laser- and missile-equipped spacecraft sent to battle nefarious robots—were very popular titles on the Mac. At first blush, Descent 3 looks like more of the same. As in the earlier games, you buzz through robot-infested environments, blasting anything that moves and most likely succumbing to the vertigo induced by jinking your craft around in spaces where you have no real sense of direction.

Once that first blush wears off, however, you'll realize that Descent 3 has more in common with modern shooters such as Quake than with earlier iterations of Descent. In the original Descent, your object was to locate a reactor, blow it to pieces, and then quickly find your way out of a labyrinthine mine before the whole works exploded in your face. Descent 3 is more Quake-like: it asks you to carry out a series of tasks—locate a security key, for example—in order to progress through a mission. Descent 3 also differs from the original in offering outdoor environments.

The Great Outdoors Descent 3 breaks from past versions of the action game by allowing you to take your troubles outside.

Descent 3's modern system requirements include 3-D–acceleration hardware—via either some kind of 3dfx Voodoo card or an ATI Rage Pro or Rage 128—and a 233MHz or faster G3 Mac.

If your Mac meets or—even better—exceeds these requirements, the look of the game won't disappoint you. Descent has never been more attractive. And the benefits of this lush look are more than skin deep: thanks to Descent 3's enhanced graphics, you can actually make out enemy robots hovering at a distance.

Regrettably, the OpenGL version of Descent is far from stable. Even after we upgraded the original and *very* buggy version with the 1.3.1 updater, we had problems in OpenGL mode—blocks of graphics disappeared and the game occasionally locked up. We hope Graphic Simulations will address these problems in another update. In the meantime, if you have a Voodoo card, play the game in the more stable Glide mode.

Macworld's Buying Advice Descent 3 is a great game marred by bugs. Those with Voodoo cards, fast Macs, and a love of frenetic action will have a blast. If your ATI-equipped Macintosh lacks a Voodoo card, either add one or wait for the next game update.—CHRISTOPHER BREEN

RATING: ▮▮▮ **PROS:** Furious action; beautiful graphics. **CONS:** OpenGL version is buggy. **COMPANY:** Graphic Simulations (972/386-7575, www.graphsim.com). **LIST PRICE:** $45.

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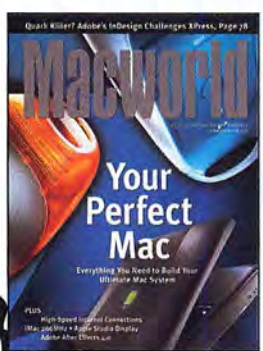

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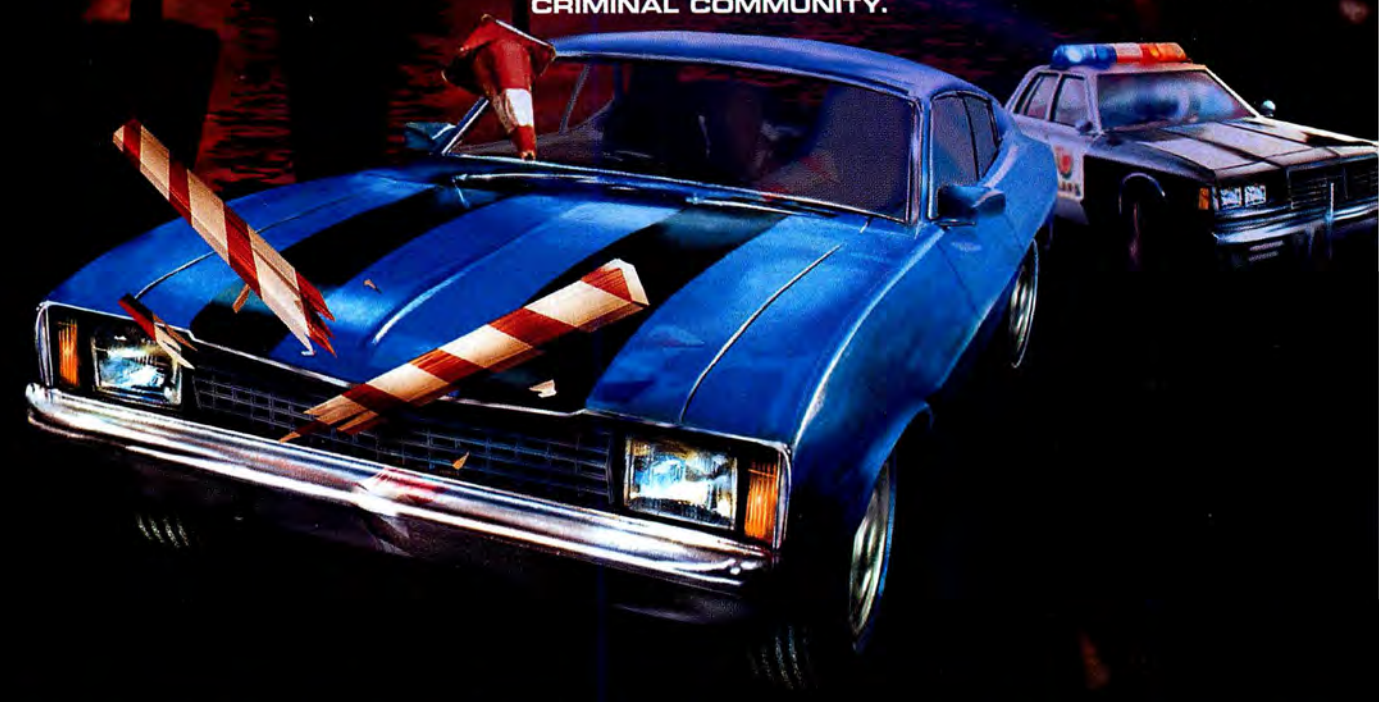

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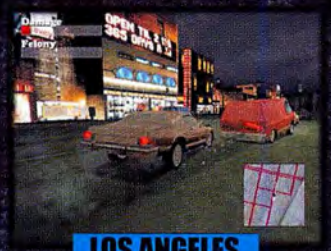

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Hot-Rod Your Mac

TURN YOUR OLD MAC INTO A KILLER CUSTOM GAMING RIG

by Christopher Breen

Like any columnist who proffers opinions only slightly more controversial than the telephone directory's white pages, I get my share of unanswerable mail from the tragically "het up." Such missives generally run along these lines: "I herd from my secund cusin Bubba that someone on som news groop said that you were a magazin riter that said that Gallactic Space Wars was a stupid game. Well I think that your stupider! Gallactix Space Wars is really grate and if you dont know that your really really stupid!! If I had a subscripshun to your stupid magazine Id cancel it cuz your so stupid!"

Now, don't get me wrong: I love getting mail—regardless of how often people question my intelligence and morality. But other than suggesting that spelling checkers have come a long way in the past few years, how do you respond to something like the preceding? However, every so often I get a letter from a correspondent who's actually read my column, and—though its tone may be slightly confrontational—within the message lies a cogent concern. Specifically: "I herd from my secund cusin Billy-Bob that someone on som news groop said that you were a magazin riter that said you could put a voodo card in your Mac. I looked at my latest ishoo of MacWorld and saw that you said that to. If your so smart why dont you tell us how to do it instead of just saying it stupid!"

This reader has a point. It's easy enough for me to cavalierly mention that I've upgraded my Macs in one way or another, but unless I relate the ins and outs of doing so, you possess only a small piece of the puzzle. Allow me now to make amends by describing how I transformed my 266MHz Power Mac G3 (beige) from a hefty hunk of steaming junk into a game machine that holds its own against the latest G4s.

Room to Move

If you're a Mac gamer, you understand that computer-game publishers have the kind of gung-ho, Manifest Destiny spirit found in this nation's early settlers. "Move aside, lowly word processor!" modern Mac games cry. "We've got

500MB of data to plant on this here hard drive, and by gum, we mean to plant it!"

As you might suspect, I play a *lot* of games, and in short order, half a dozen of these massive game installations filled my Mac's 4GB hard drive to the tippy-top. I needed something roomier.

These early-model beige G3 shipped with internal IDE drives (rather than SCSI drives), which can make adding a second internal drive tricky because you can chain only two IDE drives together. Worse yet: if, like me, you have a beige G3 without a Rage Pro graphics chip, you can't add a second IDE drive at all unless you sacrifice your CD-ROM drive (the CD-ROM drive is the other IDE device on the chain) or purchase a PCI IDE card such as ProMax Technology's (www.promax.com) $200 TurboMax. I had plans for my three PCI slots, and I wasn't about to give one up simply to add another hard drive.

I wanted something fast, expansive, and inexpensive, and I found it in Maxtor's (www.maxtor.com) 27.2GB DiamondMax Plus EIDE drive. Because this 7200-rpm drive—with an average access time of less than 9 seconds and a 2MB buffer—cost all of $250, I discarded any thoughts of saving my old drive.

Moving data from my old drive to the new Maxtor drive was a cinch. I simply pulled the IDE and power cables from the CD-ROM drive and attached them to the new Maxtor drive (I placed the drive, circuit board facing up, atop the power supply inside the opened case), and then I ran Apple's Drive Setup to initialize the new drive. Once initialized, the drive appeared on the Mac's desktop, and from there I copied all the data from my old drive to the new one. With that done, I removed the old drive, installed the Maxtor in the old drive's place, and reattached the CD-ROM drive's cables.

3-D Times Two

The 266MHz G3 processor inside my Macintosh is robust enough to play some

continues

RICCARDO STAMPATORI

The Voodoo You Do So Well

UNLIKE VOODOO3 CARDS, VOODOO2 CARDS PROVIDE A PASS-THROUGH CABLING scheme—you connect your monitor to the output port on the Voodoo2 card, and attach the included pass-through cable to the Voodoo2's video-input port and your Mac's (or video card's) video-output port. When a game requires 3-D hardware acceleration from the Voodoo2, the Voodoo card takes over the graphics chores.

Although the Voodoo2 chip set can crank out frame rates nearly comparable to those of ATI's Rage 128 chip set, it has limitations: it doesn't support resolutions higher than 800 by 600 pixels, and it renders only 3-D graphics—you still need some kind of 2-D output, either from your Mac's on-board video or from an installed video card such as ATI's Rage Orion.

3dfx's Voodoo2 1000 PCI card costs less than $70, and you can find Mac drivers for it on 3dfx's Web site (www.3dfx.com).

fairly demanding games, but the wimpy on-board 3-D–graphics chip is incapable of anything but the most basic hardware acceleration. Some of the games I cherish—Pangea's Bugdom, for example—require the RAVE hardware-acceleration API, while others prefer the Glide or OpenGL standards. I need hardware acceleration that will work with all three of these standards, and no one board currently handles them all adequately. To cover my bases, I filled one PCI slot with a Rage 128–based ATI Rage Orion card ($149; www.atitech.com) that supports RAVE and OpenGL, and I filled my second PCI slot with a 3dfx Voodoo3 2000 card ($90; www.3dfx.com) that supports OpenGL and Glide games.

Now, hang on a second there, Jimmy-Joe—before you send off that acrimonious letter, allow me to explain: I know full well that installing these two cards requires that I either have a monitor for each card or plan to swap the monitor cable from one card to the other on a regular basis. I'm fortunate in that I do have a couple of spare monitors, so adding a second monitor is no big deal for me—but you might not be as monitor-rich as I am. If you have a single monitor, you can play the cable-switching game or you can add a Voodoo2 card (see the sidebar, "The Voodoo You Do So Well").

For those with dual monitors—and I should mention that you'll need two multisync-resolution (not fixed-resolution) monitors—this two-card monte isn't a bad way to go. However, there's a trick to using the Voodoo3 card. It's intended for PCs, and to use it with a Macintosh, you must update the card's ROM and install Mac-compatible drivers. Fortunately, you can find the Macintosh drivers and the FlashROM utility on 3dfx's Web site. To update the ROM you need to connect your monitor to a video source other than the Voodoo3 card, install the card in a free PCI slot, and run the FlashROMVoodoo3 utility. Instructions for doing this are in the Mac Voodoo3Drivers folder.

Before-and-After Science The clear differences between Unreal Tournament rendered under software (above) and with a Rage 128 chip (below) should be compelling enough reason to upgrade to hardware acceleration.

Most games that offer both Glide and OpenGL or RAVE acceleration will automatically choose the appropriate card and monitor—the Voodoo3 card for Glide games and, by default, the ATI card for OpenGL and RAVE games. If you want to use your Voodoo3 card for OpenGL acceleration—not a bad idea considering that at higher resolutions a Voodoo3 card seriously spanks anything ATI has on the market—you may have to muck about with drivers to get this to work.

For example, while testing the Quake III: Arena demo, I had to turn off the OpenGLRendererATI extension for the game to work with the Voodoo3 card. Quake II requires that you play the game on the monitor that bears the menu bar. If you want to play the game with the Voodoo3 card, open the Monitors & Sound control panel (or Monitors if you're using OS 9), click on Arrange, and move the menu bar to the monitor attached to the Voodoo3 card. Wacky.

Fire It Up

Although a 3-D card offers the most bang for your gaming buck, you can boost frame rates even more with a CPU upgrade. I did just that with Newer Technology's 400MHz Maxpowr G3 upgrade ($460; www.newertech.com). On average, this upgrade bought me an extra 12 frames per second in Quake II at a resolution of 640 by 480 pixels on both the ATI and Voodoo3 cards.

Lock It Down

Not all of you have beige Power Mac G3s, so these exact upgrades may not apply to you. But they certainly indicate the steps you can take to make your Mac a finer and faster gaming machine. If you have other suggestions to offer, feel free to drop me a line. I just love reading the mail. **m**

Contributing Editor CHRISTOPHER BREEN is happy to do the numbers for those readers who are math- as well as spelling-challenged. The total upgrade cost for his beige Power Mac G3 was $949, without tax.

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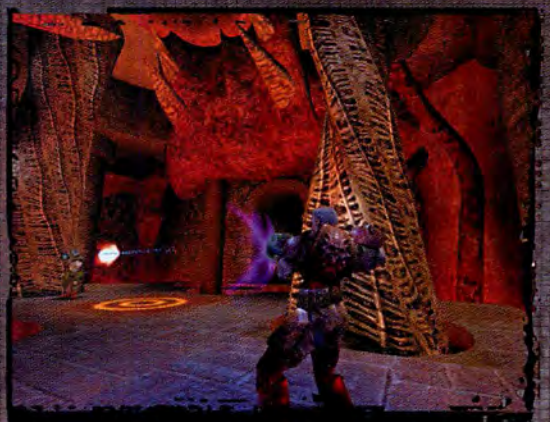

"ALL HAIL THE KING OF MULTIPLAYER 3D ACTION" - COMPUTER GAMES

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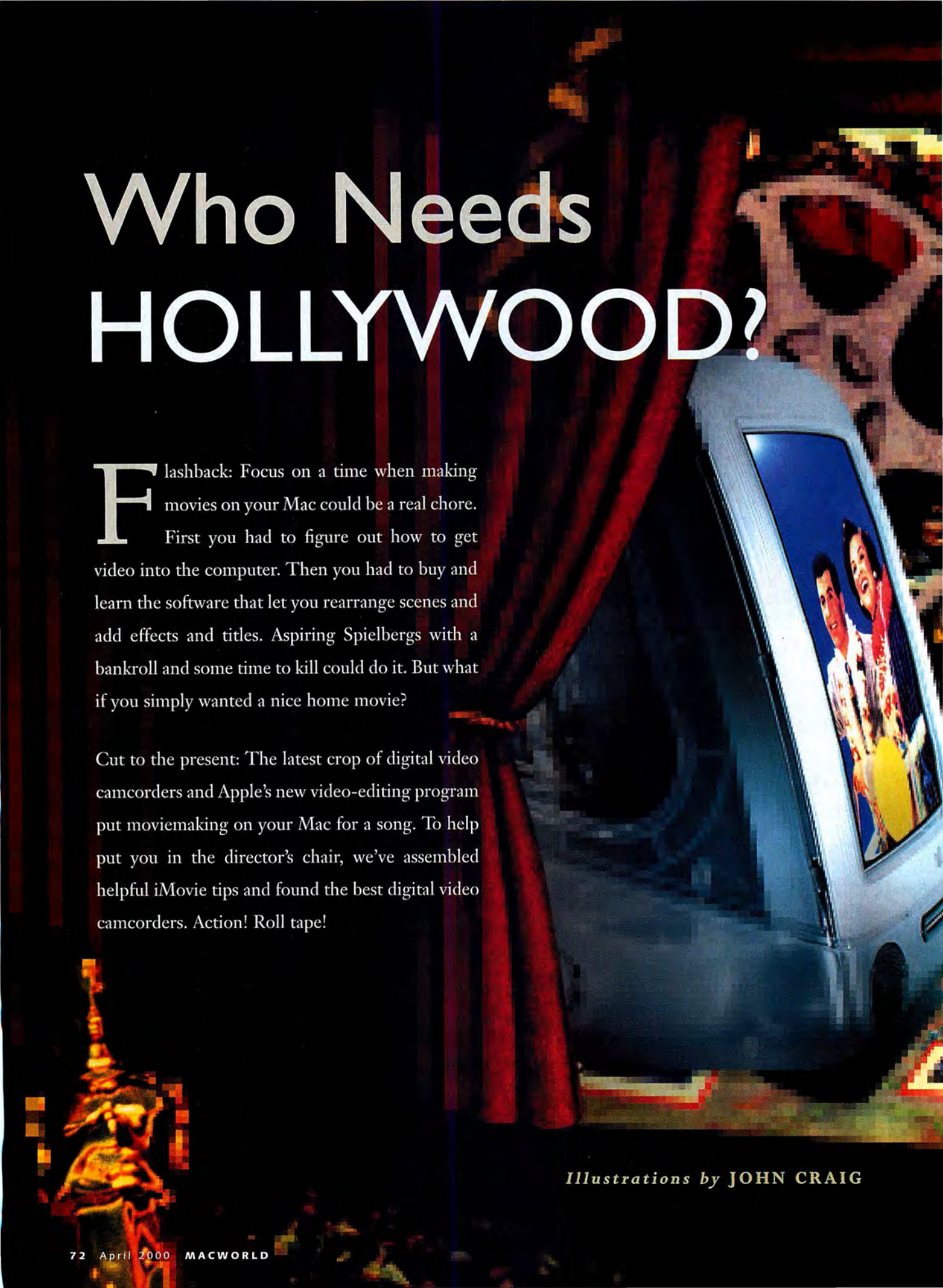
Who Needs HOLLYWOOD?

Flashback: Focus on a time when making movies on your Mac could be a real chore. First you had to figure out how to get video into the computer. Then you had to buy and learn the software that let you rearrange scenes and add effects and titles. Aspiring Spielbergs with a bankroll and some time to kill could do it. But what if you simply wanted a nice home movie?

Cut to the present: The latest crop of digital video camcorders and Apple's new video-editing program put moviemaking on your Mac for a song. To help put you in the director's chair, we've assembled helpful iMovie tips and found the best digital video camcorders. Action! Roll tape!



Illustrations by JOHN CRAIG

HOME-MOVIE Magic

iMovie Tips and Tricks Put You in the Director's Chair

Next to yelling "fire!" in a crowded theater, there's no better way to clear a room than to get out the home movies. It isn't that friends and family aren't interested in seeing little Mary battle gravity on her first bicycle—it's that the presentation often leaves something to be desired. Most home videos are seemingly endless series of unrelated scenes, their length made all the more painful by jerky camera movement and unintelligible sound. They're moving pictures, but they aren't *movies*. A movie tells a story, and any form of storytelling can benefit from planning and editing. Fortunately for home-movie audiences everywhere, today's desktop moviemaking tools can help. Apple's $1,299 iMac DV (the *DV* stands for "digital video") or $1,499 iMac DV Special Edition (800/795-1000, www.apple.com), combined with the iMovie software that comes with them, can make a terrific home-movie studio. You can bring video into the iMac DV; then you can use iMovie to remove the boring parts and add sound and special effects. When you're finished, you can export the final product to videotape, publish it on the Web, or e-mail it to others.

iMovie makes moviemaking easy, but it still has complexities and limitations that may frustrate even seasoned Spielbergs. Here's a look at the production process, along with some tips for working faster and getting around the application's limitations. For tips on planning your movie, see the sidebar "Planning Makes Perfect."

Reel It In: Capturing Video

The first step in creating your home-movie blockbuster is getting that footage of Mary's first bike ride off your camcorder and into your iMac DV.

Use a Compatible DV Camcorder Unlike other home-movie tools, iMovie is designed exclusively for use with camcorders that use MiniDV tapes and have a fast, FireWire interface. If you don't have a DV camcorder with FireWire, see the sidebar "Moviemaking for All USB Macs." For a comparative review of digital camcorders, see the accompanying feature, "Camcorder Casting Call."

Connect your iMac DV and your DV camcorder with a FireWire cable, and you can bring video into your Mac (and send it back to tape) with remarkable ease. The iMovie software controls your camcorder—rewinding, pausing, playing, and recording—in much the same way that professional video-editing software controls high-end video decks. This kind of device control eliminates groping for your camcorder's play, rewind, and other tape-control buttons as you work, and it enables you to record your completed efforts to tape with the click of a mouse.

Note that iMovie's device-control delights work only if you have one of the DV camcorders that iMovie supports (see a current list at www.apple.com/imovie/gear/). If your DV camera isn't on Apple's list, you may have problems capturing or exporting video—for example, when you try to export video, your camcorder may not actually go into record mode. Camcorders from JVC are especially prone to problems, due to JVC's implementation of the FireWire interface. The aforementioned Web page contains tips on dealing with problematic camcorders, but the bottom line is that you'll save yourself some aggravation by beginning with a compatible camcorder.

Start Your Epic Once the camcorder is connected, starting a new project in iMovie couldn't be easier. Just choose New Project from the File menu, give your movie a name, and click on Create. Behind the scenes, iMovie creates a folder with the name of your movie. Once you've made edits and added ele-

ments, this folder will contain a document icon that represents your project's edits and a Media folder that holds your project's video clips, sounds, titles, and other elements.

Separate Scenes When you import—or *capture*—video, iMovie places a representative icon on a "shelf." From there you can add the clip to your project. You could capture an entire 60-minute DV cassette as a single clip (if you had enough free disk space—more about this in a moment), or you could import only specific scenes. But locating such scenes would be tedious. You'd wear out your tendons hunting through an hour of birthday-party footage for the magic moment when your dog discovered the birthday cake.

A better technique is to use iMovie's scene-detection feature, which causes iMovie to begin a new clip each time it detects a scene break. (Your camcorder generates a scene break automatically each time you press its record button.) To turn on scene detection, choose Preferences from the Edit menu, click on the Import tab, and then check the box labeled Automatically Start New Clip At Scene Break.

Belly Up to the Spacebar You can also start and stop clip capture by pressing the spacebar as a videotape plays back. This is a handy way to grab portions of scenes: click on iMovie's Play button to play the tape, and when you see something you want to capture, hit the spacebar to grab it.

Build a Bigger Shelf Despite its name, the iMovie shelf is not one long area, but a grid of thumbnail images. It holds a finite number of clips; the specific number depends on, of all things, the iMac DV's screen resolution. The shelf can hold only 9 clips at the iMac DV's default 800-by-600-pixel resolution. To expand its capacity to 12 clips, use the Control Strip or the Monitors control panel to boost the screen resolution to 1,024 by 726. Whatever you do, don't change the resolution to 640 by 480—doing so causes iMovie to quit. Regardless of the screen resolution, the movie's final dimensions remain the standard 720 by 480 pixels.

by **Jim Heid**

Disk Space—the Diminishing Frontier Beware: Each minute of digital video inhales about 210MB of disk space, so unless you really have hard-disk space to spare, don't capture anything that you *know* won't make it into your final project.

Sounds, Stills, Movies: Acquiring Other Content

A real movie uses more than just moving pictures to tell its story—music, sound effects, and still images help to set a mood and enhance the presentation. And hey, some spice can be fun. Why not have "Born to Be Wild" playing as Mary wobbles successfully down the sidewalk on her two-wheeler?

iMovie can also import other types of content: audio files saved in the standard AIFF format, music tracks from audio CDs, and still images saved in any of several popular formats. You can even coerce iMovie into importing existing QuickTime movies that you've created in other programs or downloaded from the Internet. Read on to learn how.

Use CDs for Soundtracks—Legally iMovie's ability to record music tracks from audio CDs makes it easy to add music soundtracks to your production. But remember that you can't sell or commercially release movies containing copyrighted tunes. For commercial projects, invest in a *buyout* music library. Akin to royalty-free stock photography, buyout libraries are offered by companies such as Award Winning Music (www.royaltyfreemusic.com) and many others. (Do a Web search on *buyout music* to see what's available.)

Import Photos and Make Slide Shows You can import still images into a project and combine them into a video slide show, or you can sprinkle them throughout your movie. Still images are often a big part of documentary filmmaking—think of Ken Burns's epics on the Civil War and on baseball, and then consider how you might apply stills to your efforts. Making a video of your grandmother's 90th birthday party? Scan some vintage photos of her and start your movie with them. Have a bunch of great digital images of your vacation? Assemble them and end your vacation movie with a montage.

iMovie lacks image-tweaking features, so if you want to crop, rotate, or otherwise tweak images, do so using an image-editing program, such as Adobe Photoshop or PhotoDeluxe (800/833-6687, www.adobe.com), and then import the edited images. iMovie can import all common image formats.

iMovie displays still images for a default time of 10 seconds. To make your slide show or montage's pacing more interesting, vary the duration of still images. To change the amount of time an image appears on the screen, select the image and then type a duration value in the time area of the Clip Viewer. After you've imported images, add transitions between them (cross-dissolves work well).

Import QuickTime Movies Your kid dressed up as Darth Vader for Halloween—so why not include a snippet of the *Star Wars* trailer in your Halloween video? (Just don't try to sell the resulting movie.) Alas, iMovie can't import QuickTime movies that you've captured using analog gear, downloaded from the Web, or copied from a CD-ROM. But if you have Apple's $29 QuickTime Pro (www.apple.com/quicktime/upgrade/), there is a workaround. Open the movie with QuickTime Player, select the Export command, and choose the Movie To DV Stream option from the Export pop-up menu. Next, locate your project's Media folder and save the file there. Now start iMovie and open your project. iMovie will report that your project contains one or more "stray files" and will put them on the shelf; now they're ready to be added to your movie.

Note that each minute of an exported DV stream will gobble the same 210MB of disk space as freshly captured digital video. Compressed QuickTime movies balloon to gargantuan sizes when saved as DV streams.

Import Analog Video iMovie is great for all the footage you shoot with your new DV camcorder, but what about the years of memories you've collected with your trusty VHS camcorder? iMovie's DV-centric nature works against you if you'd like to capture or edit analog footage.

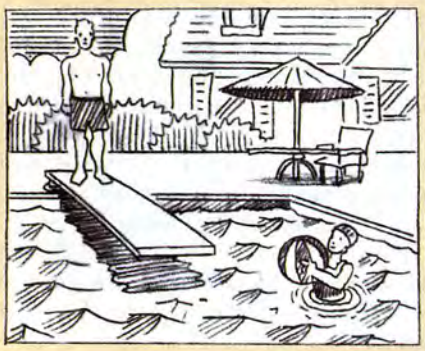
PLANNING MAKES PERFECT

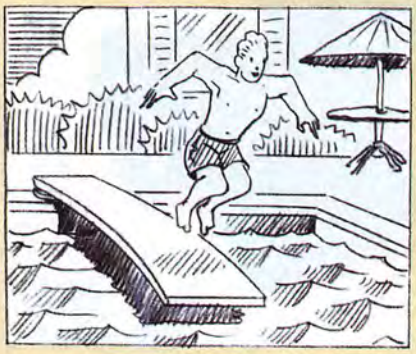
MAKING GREAT MOVIES TAKES MORE than great software, of course. First you need the right raw material. Some advance planning will help ensure that you have the money shots. And following some basic videography techniques will make for more-professional results.

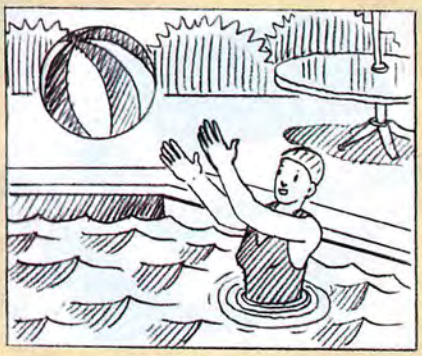
Planning means "developing an outline"—in Hollywood parlance, a *storyboard*—that lists the shots you'll need in order to tell your tale. Professional moviemakers storyboard every scene and camera angle. You don't have to go that far, but you will tell a better story if you plan some shots.

Consider starting with an *establishing shot* that clues viewers in on where your story takes place: for example, a shot of the swimming pool. To show the big picture, zoom out to your camcorder's wide-angle setting.

From there, you might cut to a *medium shot* that introduces your movie's subject: little Bobby preparing to belly flop off the diving board. Next, you might *cut away* to Mary tossing the ball. Cut back to Bobby, and then







STORYBOARD ART BY PETER HOEY

Apple suggests buying an analog-to-DV converter—specifically, Sony's $499 DVMC-DA1 (800/222-7669, www.sony.com). This converter transfers analog footage directly to your iMac. But why spend a third of what the iMac DV costs? Simply dub your analog cassettes to your DV camcorder by connecting the analog VCR's outputs to the DV camcorder's inputs with standard video patch cords. (You can get a dubbing kit, catalog number 15-1103, from Radio Shack for $6.99.) Once you've made the connections, press your DV camcorder's record button and your VCR's play button. When you've finished, use iMovie to capture the DV dub.

The Cutting-Room Floor: Making Edits

Once you've brought the raw material into iMovie, you're ready to assemble your masterpiece. How? Simply drag clips from the shelf into the Clip Viewer, whose timeline-like display enables you to sequence clips, add transitions, and more.

Name Your Clips iMovie automatically names captured clips, but names like *Clip 01* and *Clip 02* aren't exactly descriptive. You can rename clips simply by clicking on their names. Give them descriptive titles, such as *Bird Close-up* or *Forestwide Shot*, to help you identify them.

Trim the Fat Chances are, each of the clips you capture has extraneous junk at its beginning and ending—some jerk momentarily blocking your view of the recital stage—or maybe just a few seconds of uninteresting footage. By removing—or cropping, in iMovie terms—this excess, you'll make a better movie (and reclaim gobs of disk space as a bonus). To crop a clip in iMovie, you position crop markers to indicate the material you want to keep.

Empty the Trash When you crop a clip, iMovie puts its discarded portion in the Trash—not the same Trash the Finder provides for discarding unwanted icons, but a separate, iMovie-specific Trash. You can reclaim disk space by emptying iMovie's Trash as you work (choose Empty Trash from the File menu). But if you've done a lot of cropping, emptying the Trash can take a few minutes, so wait until you're ready to take a break.

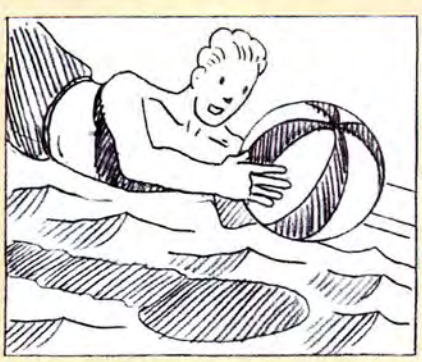
Play Only One Thing Remember that you can choose to play just one item—a clip, a title, a transition, or a music soundtrack—by selecting that item in the Clip Viewer and then clicking on the Play button or hitting the spacebar. This can be a handy way to check out a title or transition you've just added. To play an entire project, deselect everything (press ⌘-D or click in a blank area of the Clip Viewer) and then click on Play.

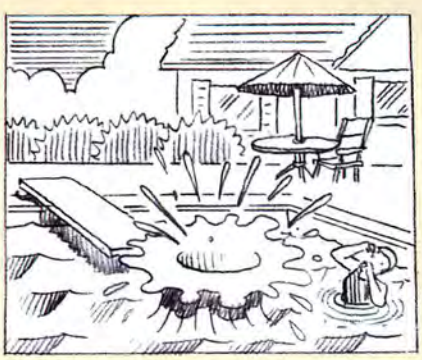
Move Clips Faster If you need to move a clip a significant distance—say, from the end of a project to the beginning—you can drag it and let the clip window scroll automatically. But there's a faster way. Drag the clip from the Clip Viewer into any empty box on the shelf. Scroll through the Clip Viewer to the new destination, and then drag the clip from the shelf back into the viewer.

finish with a *long shot* of the entire scene.

And remember, you don't have to shoot every scene in chronological order—sequencing your shots is what iMovie is for. For example, shoot Mary's throw any time you like and edit it into the proper sequence using iMovie.

It's worth mentioning, by the way, that Avid Technology's (800/949-2843, www.avidcinema.com) Avid Cinema program provides a superb built-in storyboarding feature that helps you plan your scenes. The Avid Cinema manual also contains terrific tutorials on moviemaking. Apple should consider adding goodies like these to future iMovie revisions; while iMovie is a terrific tool, it doesn't help teach technique.





Also keep in mind that your subjects should move, not your camera. Nausea-inducing camera work is a common flaw of amateur videos. Too many people mistake a video camera for a fire hose: they sweep across a scene, panning left and right and back again. Or they ceaselessly zoom in and zoom out, making viewers wonder whether they're coming or going.

A better practice is to stop recording, move to a different location or change your zoom setting, and then resume. Varied camera angles and zoom settings makes for a more interesting video. If you must pan—perhaps to capture a dramatic vista—do it slowly and steadily.

And vary shot lengths. Your movie will be more engaging visually if you do. Use longer shots for complex scenes, such as a wide shot of a city street, and shorter shots for close-ups or reaction shots.

Adding Polish: Transitions and Titles

Text titles and visual transitions can add a professional touch to your project. Titles can help set the stage by describing a place or a scene, and of course, they give credit where credit is due. And visual transitions, when used sparingly, can be pleasant alternatives to jarring cuts.

Transitions can even help tell a story. For example, a cross-dissolve—one clip fading out while another fades in—can imply the passage of time. (Imagine slowly dissolving from a nighttime campfire scene to a campsite scene shot the following morning.) Similarly, iMovie's Push Right transition, where one clip pushes another out of the frame, is a visual way of saying "meanwhile . . ."—imagine using this transition between a scene of an expectant mother in the delivery room and a shot of her husband pacing in the waiting room, chain-smoking nervously. (OK, so this is an old-fashioned maternity movie.)

Titling Tips To superimpose title text over a specific clip, select the clip before opening the Titles palette. Be sure to choose a text color that adequately contrasts with the clip's contents. If your movie will be viewed on an analog television, you'll get the best results with chunky fonts that remain legible despite the TV's limited resolution. For example, Arial Black works better than Times, which has ornamental serifs that can break up when viewed on a TV set. (For more information on creating titles, see the sidebar "Roll Credits.")

Inserting a Clip between a Transition You've added a Push Right transition to that maternity movie, but then you decide you want to insert a new clip—a shot of the doctor striding down the hospital hallway. If you drag the new clip to the Clip Viewer, you'll notice that iMovie doesn't open a space in which to drop it. That's because inserting a clip between two clips connected by a transition is a two-step process. First, delete the transition by clicking on it and then pressing the delete key. *Now* you can insert the new clip.

Updating Titles and Transitions Change your mind about using a particular font, title, or transition style? To change a title or transition, first click on it in the Clip Viewer. Make the changes, and then click on the Update button in the Titles or Transitions palette in the Effects palette.

Some Background on Rendering When you create a title or transition, iMovie must create its video frames. This *rendering* process takes time and memory; you'll notice that iMovie slows down when it's taking place. Avoid adding multiple transitions or titles in rapid-fire succession—this not only slows iMovie to a crawl but also might cause an error message saying there isn't enough memory to add anything until rendering is complete. To gauge how long the wait will be, look at the window that contains the transitions or titles you've added: a little red progress bar shows how far along rendering is.

Improving on a Good Thing The cross-dissolve is one of the most often used transitions, perfect for creating a graceful segue between scenes and for implying the passage of time. Alas, iMovie 1.0's cross-dissolve transition adds an undesirable slow-motion effect to clips. Apple fixed this in iMovie 1.0.1, a free update (available at www.apple.com/imovie/).

While you're downloading the iMovie 1.0.1 updater, also grab the iMovie Plug-in Pack—it adds six title styles and eight transition effects. Just remember to use these spices judiciously.

Listen Up: Sound Advice

iMovie's audio features are weak. You can't, for example, replace one clip's audio track with another's. This is a common technique in *cutaways*—imagine seeing Barbara Walters nod knowingly while you're hearing Fabio describe what kind of tree he'd like to be. Despite this and other limitations, there are still a few sound tricks you can perform.

Adding Music If you have a scene with less-than-gripping audio—the unintelligible din of a party, for example—consider adding a music soundtrack. In iMovie's Audio Viewer, lower the scene's audio levels until they're quieter than the music but still audible. If the clip's audio is genuinely horrific—nothing but outdoor wind noise, for example—mute it entirely.

Sound and Transitions You have lowered a clip's volume or checked its Fade In box. Then you add a transition before the clip. When you play the movie, the transition contains a brief blast of the clip's audio at full volume—not good. The solution: Select the transition and then turn its volume down partway or all the way.

Working Around Volume Limitations A common video-production technique is varying a clip's volume levels to fit around a music soundtrack or other audio. Aside from fading in and out, iMovie doesn't let you vary a clip's sound level. But there's a workaround—split the clip at the point where you want to change its level (choose Split Clip At Playhead from the Edit menu). You now have two clips with levels you can adjust independently.

MOVIEMAKING FOR ALL USB MACS

You don't have an iMac DV or a DV camcorder? You can still be a part of the moviemaking trend. Several companies also offer video-capture systems that work with other iMac models—and indeed, with any USB Mac. These products are designed for use with analog video gear, such as VHS or Hi8 camcorders.

Avid Cinema for Macintosh with USB This $299 hardware-and-software bundle from Avid Technology (800/949-2843, www.avidcinema.com) is the best non-DV editing system available for USB Macs. The Avid Cinema software is more powerful than iMovie and just as easy to learn (see *Reviews*, August 1999). The accompanying USB capture hardware enables you to capture full-motion video, but you can't transfer your final product to videotape: you must view it on the Mac's screen or transfer it to an old AV Mac that has video-output features. You can, however, export to a wider array of video formats than iMovie supports, including RealNetworks' RealVideo G2, the most popular format for streaming Web video.

InterView Costing just $99, XLR8's (888/957-8867, www.xlr8.com) the InterView combines USB analog capture hardware with Strata's powerful, often complex VideoShop editing software. VideoShop is far more capable than either iMovie or the Avid Cinema software, but the InterView's lack of printed documentation makes it difficult to learn.

MyTV/FM This $200 translucent blue box from Eskape Labs (925/249-6500, www.eskapelabs.com) gives your USB Mac a cable-ready TV tuner and FM stereo tuner—and can capture video. The included EskapeTV software lacks editing features, but if you use QuickTime Pro to export video as DV streams, you can use iMovie for editing and exporting.

Expanding Your Soundscape Apple has posted a page of free sound effects and music clips—animal noises, crowd sounds, wind and weather, and much more (www.apple.com/imovie/freestuff/). You can also add any AIFF sound file to iMovie's Sounds palette: just stash the file in the Sound Effects folder, which is tucked inside the iMovie folder's Resources folder.

It's a Wrap: Exporting Your Movie

You've finished your epic—now what? You decide. With iMovie's Export Movie command, you can record it to videotape and show it to local friends and family, or save it as a QuickTime movie and post it on your Web site for all the world to see.

End with Black When exporting to videotape, iMovie lets you add a few seconds of black before the movie begins. Unfortunately, it doesn't let you add black *after* the movie. When your movie ends, you're jarred back to the camcorder's blue background. To add some black, use an image-editing program to create an all-black PICT file whose dimensions are 720 by 480 pixels—these are the dimensions of a DV movie frame. (You can also download an all-black file from Apple's free-stuff page, mentioned previously.) Then import this image into your project and drag it to very end of the timeline.

Export to QuickTime iMovie provides several presets for exporting a project as a QuickTime movie, each aimed at common tasks, such as sending the file via e-mail or posting it to a Web site. You can also specify your own settings by choosing Expert from the Export Movie dialog box's Format pop-up menu. For example, if you're going to post your movie on the Web and want to make for a faster download, you might opt for a mono soundtrack instead of a stereo one. (Less sound means a smaller file size.) Or you might prefer to use the Cinepak video-compression scheme for broader compatibility—iMovie's default scheme, Sorenson Video, isn't supported by older versions of QuickTime. (To learn more about the art of video compression, visit Terran Interactive's Codec Central site, at www.codeccentral.com.)

The Last Word

The DV format and FireWire interface have transformed video production, dramatically lowering the price and hardware requirements for creating professional-quality video—thus making it easier for the rest of us to tap our creative juices, preserve our family memories, promote our businesses and organizations, or just play Hollywood. By building FireWire into the iMac DV family and creating iMovie, Apple has made digital-video editing more accessible than ever. (And the company has again inspired Microsoft to Think Similar: last December, Microsoft announced that it would begin shipping a DV-editing program called Windows Movie Maker in a future Windows release.)

If you want to explore more sophisticated moviemaking applications, see the online sidebar, "Beyond iMovie," at www.macworld.com/2000/04/features/.

Of course, great gear doesn't guarantee great movies. That requires practicing the same cinematic storytelling techniques that go back to the days of flammable film. Learn those basics, and you'll go from making moving pictures to making movies. **m**

Contributing Editor JIM HEID (www.heidsite.com) has been making home movies since 1978 and editing desktop video since 1991.

ROLL CREDITS

You can use any TrueType or PostScript font on your system and a variety of styles to create titles. The following walks you through iMovie's Titles palette.

A This is a small preview of the title. To update it, click on the current title style. To view a large preview in the Monitor window, click on the Preview button. To add the title to your project, drag the small preview to the Clip Viewer's timeline.

B When changing an existing title, apply your changes by clicking on the *Update* button.

C Use this slider to adjust the title's duration. For some styles, this slider adjusts scrolling speed.

D Normally, iMovie superimposes the title text over the currently selected clip. To create a simple black background instead, select the Over Black option.

E With some title styles, you can click on these tiny arrows to specify text alignment and scrolling direction.

F Type or paste the title's text here. In title styles that provide multiple text boxes, you can jump from one box to the next by pressing the tab key.

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CAMCORDER Casting Call

Macworld Lab Tests 5 Affordable Digital Video Cameras

We're in the midst of a revolution, and this one will *definitely* be televised. Long established at the high end, consumer-level desktop video has been a long time coming—but it's finally here. And just as scanners and laser printers propelled desktop publishing, digital video (DV) cameras make videotaping easier and editing your footage more affordable.

Whether your goal is to immortalize your kid's school play or to shoot a feature-length movie à la *The Blair Witch Project*, a DV camera will yield far better footage than you could ever get with a consumer-grade analog camcorder. With 500 lines of horizontal resolution, DV formats have twice the resolution of VHS and 8mm film's 250 lines, and 25 percent more than Hi-8's 400 lines. In addition, DV provides much better color fidelity with far less color bleeding and noise than traditional analog consumer formats. Best of all, some of these new camcorders now cost less than $2,000 and sport interfaces that make it easy to get your footage onto your Mac, where you can edit and enhance it (see the accompanying feature, "Home-Movie Magic").

We looked at five digital video cameras: the Sony DCR-TRV103, DCR-PC1, and DCR-TRV10; the Canon Elura; and the Panasonic PV-DV910. They range in price from $999 to $1,799 (see the table, "5 DV Cameras Compared," for details about each model). To determine image quality, we performed a number of tests under controlled studio lighting and outdoor lighting. In addition, we shot still images with each camera and compared these to the same images from a low-cost digital still camera. A panel of experts examined all the footage and images to decide on quality. We also com-

by **Ben Long**

pared the cameras' ergonomics and evaluated the features a typical Mac user would need to shoot the best-quality video.

How It Works

The problem with video is it takes up *a lot* of room—a single minute of video contains about 210MB of data. And anyone who's ever duplicated a file on a Mac knows that the average computer can't move huge amounts of data around quickly.

DV Lowdown In the past, if you wanted to work with video on your Macintosh, you had to get specialized—and *expensive*—hardware that not only took care of digitizing a video signal but could also compress it for storage on a very fast hard drive array.

Not so with a DV camera: unlike a traditional analog camera, it doesn't store an analog signal on tape. Rather, a DV camera digitizes and compresses a video signal and stores a digital stream on tape, in a process similar to writing a computer file to a tape drive. With all of the compression hardware in the camera rather than on a special video card, you need only a speedy processor, a good-size hard drive, and a FireWire interface. The speedy interface known to Mac users as FireWire (technically IEEE-1394, and I.Link in Sony's nomenclature) is now standard on most desktop Macs. This previously missing link makes it possible to move video into and out of your Mac without expensive digitizing hardware (see the sidebar "Getting Connected" for details).

Types of Tapes The most popular DV format for less expensive cameras is MiniDV. Although the MiniDV, DV, DVCam, and DVCPro formats all provide the same image quality, MiniDV tapes and hardware are usually much cheaper. We looked at four MiniDV cameras, all equipped with FireWire interfaces. For users who already have an investment in 8mm or Hi8 equipment, Sony produces a proprietary Digital8 format that, in addition to recording in a new digital format, can play back regular 8mm and Hi8 tapes. Though this is a great way to edit older tapes using your Mac, the Digital8 tapes have slightly lower-resolution video than DV. Our tests included one Digital8 camera, the $999 Sony DCR-TRV103.

Roll Tape! Most of the DVD camcorders we looked at use MiniDV tapes (right). Sony also sells cameras that use Digital8 tapes (left).

The Eyes Have It As in a digital still camera, the lens in a DV camera focuses light onto a charge-coupled device (CCD), a grid of light-sensing electrodes that acts as the camera's eye. The size of the CCD has a lot to do with the resolution and sharpness of your final image. This feature didn't differentiate the cameras we tested, however. They all have ¼-inch CCDs, and even though the pixel count ranges from Canon's 380,000 to 680,000 on the Sony DCR-PC1 and DCR-TRV10, image resolution doesn't vary because of the way these cameras sample and process image data.

Quality Counts

No matter what you choose to buy, the high resolution of the DV specification ensures image quality that would have been unaffordable just a few years ago. As with any type of camera, final image quality depends largely on the quality of the optics. In other words, a DV camera with a better lens will do a better job of focusing an image onto the camera's sensor.

Through the Looking Glass Sony and Canon both equip their cameras with high-quality lenses, which produce excellent detail and sharpness. Our jury found that the $1,799 Canon Elura and the more expensive Sony models, such as the $1,699 DCR-PC1 and the $1,799 DCR-TRV10, produced images with much better detail than the $1,100 Panasonic PV-DV910 or Sony's cheaper DCR-TRV103 Digital8 camera. This is no surprise, given that both Sony and Canon put better-quality lenses on their higher-priced cameras.

All digital cameras apply sharpening to their images, just as you might apply sharpening to a picture in an image-editing program. Although sharpening can greatly improve image detail, it can also have some unfortunate side effects. The Sony DCR-TRV10, for example, has a bad tendency to *oversharpen* its images, resulting in lines with severely jagged edges or, in some cases, lines that appear to flicker and blink. Our jury found that the Panasonic PV-DV910 produced fewer sharpening artifacts than any other camera we tested. However, if detail is important to you, be aware that the PV-DV910 produces slightly soft images. The Sony DCR-TRV103 and DCR-PC1 and the Canon Elura all struck a good balance, sharpening details without creating jagged edges and annoying artifacts.

Color reproduction varied significantly from camera to camera, although the Sony models consistently produced less saturated colors with a somewhat bluish, cold tone. Our jury found that Sony's cameras also tended to produce bands of slight hue change when shooting a complicated image with lots of fine detail. Although not too distracting, the banding was very noticeable.

Canon aims for a more saturated look, and the Elura tends to produce images with a warmer, reddish tint. If you like this warmth, the Elura will please you, though its colors are less accurate than those of the other cameras. The Panasonic PV-DV910 fared the worst in our color tests—its huge color shifts resulted in a green or blue cast that appeared and disappeared as the camera moved.

Although all of the cameras had some color quirks, in general they produced very good images. If you're used to shooting with an analog video format, the DV format's ability to show bright colors without bleeding or blurring will surprise you. And with the format's higher resolution, a DV camera produces much better detail than its analog predecessors—although annoying artifacts from sharpening occasionally crop up.

Come In Closer

If you enjoy nature or sports photography, you know getting closer to what's going on isn't always easy—that's where the zoom lens comes in handy.

The Better to See You With As with the analog video cameras of old, all of the DV cameras we looked at have built-in zoom lenses that let you zoom between wide-angle and telephoto views of your action. The zoom features on our test cameras ranged from 10× on the Sony DCR-PC1 and DCR-TRV10 to 20× on the DCR-TRV103. Unless this

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feature is critical to your work, don't hold out for a more power-ful zoom—it's more important to choose a camera with good image quality.

Zoomin' In All of these cameras offer a digital zoom feature in addition to their optical zoom. With this option activated, the camera digitally enlarges your image once you've passed the optical zoom limit of your lens. Just as zooming in on a picture in an image-editing program shows you a blocky, pixelated mosaic, digital zoom increases jagged lines and distortion and can turn your image into a grid of large, distorted color blocks.

The Panasonic PV-DV910, for instance, has a ridiculous 300× digital zoom that turns the family cat into an unrecognizable grid of pixels. Unless you're deliberately trying to achieve a grungy, stylized look, avoid using digital zoom and don't let a salesperson sell you a camera based on this feature.

The Bottom Line None of the cameras we tested provides flawless images. Overall, they do produce very good images—meaning that once you've decided which quality trade-offs you can live with, you can base the rest of your buying decision on the camera's features.

Fantastic Features

From wacky special effects to image stabilization, today's DV cameras are feature packed. Although you may find the nifty "old-movie effect" on one camera tempting, you need to concentrate on the most essential features.

In the Palm of Your Hand DV cameras come in a number of sizes and form factors, and one of your first feature considerations should be the camera's ergonomics. If small size and maximum portability are important to you, take a close look at the Sony DCR-PC1, the smallest camera we tested.

Similar to the DCR-PC1, but a tad bigger, the Canon Elura has a palm-size design with about a Walkman's dimensions. You hold both devices upright, and they have a lens on the front and a flip-out LCD viewfinder on the side. They're ideal if small size is your main concern, but if you are used to a more traditional design, you may prefer one of the other cameras. All of them were comfortable to use, with well-placed, easy controls.

Steady Going Though small size is generally convenient, it can have a negative impact on shooting stable footage. The light weight of these camcorders can make smooth pans and steady shots hard to achieve. Although all include some sort of image stabilization feature, there's no substitute for a good tripod—and some cameras are better suited to tripod use than others.

While the Canon Elura lets you change tapes while it's mounted on a tripod, the Sony DCR-TRV10 doesn't. Similarly, you can't change the batteries on the Sony DCR-PC1 without first removing it from a tripod. Although this may sound trivial, while you're fussing with your camera, you might miss that great shot of your kid's first steps.

Dropping Anchor To offset the difficulties of holding a 1-pound camcorder steady, most vendors include either an electronic or an optical-image stabilization feature.

Electronic stabilization works by moving your image around digitally to compensate for shaking. If you shake the camera to the left, the camera moves the image in the other direction to keep the picture steady. Optical image stabilization uses special prisms, reshaped on-the-fly to redirect the light striking the CCD—this allows the camera to compensate for slight shaking (as opposed to intentional large movements).

In the past, electronic-stabilization features could adversely affect image quality. The camera's digital futzing with your image data sometimes created artifacts and weird motions. Now, electronic stabilization provides a more stable picture than before—without harming image quality. Optical stabilization, on the

GETTING CONNECTED

When the time comes to move that precious footage onto your Mac for editing, DV cameras offer a great advantage—the IEEE-1394 standard, known to Mac users as FireWire. This standard offers potential transfer speeds of 400 Mbps, and therefore perfectly suits DV's lofty bandwidth requirements.

All of the cameras we tested include a FireWire port that provides video and audio input and output. Each camera is fitted with the smaller four-pin FireWire jack (as opposed to the six-pin one on your Mac), so you'll need a six-to-four-pin cable.

Unfortunately, not all vendors implement their FireWire interface the same way, so you may run into some compatibility problems when you use features of higher-end editing applications such as Apple's Final Cut Pro or Adobe After Effects. Most software vendors publish lists of FireWire compatibility problems, including detailed descriptions of which features won't work properly with certain cameras. If you're determined to use a particular editing package, check with the maker of your software for compatibility issues before you buy a camera.

Apple now has a list on its Web site of the DV cameras compatible with iMovie (www.apple.com/imovie/gear), the consumer-level desktop video-editing software bundled with the iMac DV and iMac DV Special Edition. (Apple hasn't announced any plans to make the software available for separate purchase.) All of the cameras here work with iMovie.

other hand, works by adjusting optics rather than by manipulating image data, so there's no concern that it will add strange artifacts to your footage.

The Canon Elura is the only camera we tested that uses optical stabilization, and it works flawlessly. The Sony cameras use an electronic image stabilization that functions equally well. In general, either option works fine.

Juice It Up Vendors make a lot of claims about battery life, and frequently they're true. No matter what they say, though, you're going to want extra batteries.

Plan on buying at least one extra battery, preferably a longer-life one than your camera includes. All of these cameras have AC adapters with built-in battery chargers. Unfortunately, the Elura does not let you charge batteries while providing power to the camera.

Cause and Effect Each camera offers a good assortment of special-effects features, such as sepia tones and mosaics, but the ergonomics, battery life, and viewfinder should weigh much more in your buying decision than esoteric features.

A Good Choice All these cameras have something special to offer, but for overall balance of features, Sony's DCR-TRV10 is our Editors' Choice.

User Friendly

Though DV video cameras are very technologically sophisticated, you'll find using one no different from using an older analog camcorder.

A View to a Kill One important part of a DV camera is the color display. These models all have both a large, flip-out LCD viewfinder and a smaller eyepiece viewfinder. You're going to spend a lot of time looking at those tiny screens, so make sure your camera provides a sharp image that doesn't tire your eyes.

The large viewfinders are nice, but bright sunlight often washes them out, rendering them unusable. Of the cameras we tested, the viewfinders on the Sony DCR-PC1 and DCR-TRV10 worked best in bright sunlight. Although not as strong in direct sun, the Canon Elura had the most pleasing LCD viewfinder, with smooth details and good contrast. The Sony DCR-TRV103 had the worst LCD, and—unlike all the other cameras we examined—its eyepiece viewfinder is black-and-white.

Manual Adjustment The modern camcorder is a wonder of automated cinematography. With autofocus, auto-iris, and auto–white balance, you can just switch it on and start shooting. However, even the best algorithms can't handle every situation, and manual control can be a lifesaver in a difficult situation such as shooting against a bright window or trying to capture fast action at a sporting event.

To make matters easier, your camera should provide manual control for focus, white balance, and exposure. Autofocus mechanisms base their settings on what's in the center of the frame. This is fine if you always center your subject, but if you want to be more creative, you're out of luck. Say, for example, you want to shoot a friend standing at the left of a frame, with the Eiffel Tower in the background. Because your friend isn't in the middle of the frame, the camera's autofocus mechanism will most likely focus on the distant tower, rendering your friend as a blur. With manual focus, you can be sure you've framed and focused the picture just as you wish. All the cameras we tested had manual focus.

The Blink of an Iris Nothing is more typical of bad video footage than that overexposed, washed-out look. Unfortunately, most auto-iris mechanisms tend to expose things a little on the hot side—bright areas flare and bloom, and in those spots color may actually bleed and blur. Outdoor conditions can exacerbate this problem, and none of the cameras we tested had auto-iris fea-

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5 DV CAMERAS COMPARED

Macworld LAB TEST

Company	Product	Mouse Rating	List Price	Contact	White-Balance Presets	LCD Size (in inches)	Extra Features
Canon	Elura	3½	$1,799	800/652-2666 www.ccsi.canon.com	yes	2.5	Progressive-scan mode for better still quality.
Panasonic	PV-DV910	3½	$1,100	800/211-7262 www.panasonic.com	yes	3.0	LP mode records 90 minutes on a 60-minute tape.
Sony	DCR-PC1	3½	$1,699	800/222-7669 www.sel.sony.com	yes	2.5	High-quality Carl Zeiss lens.
	EDITORS' CHOICE DCR-TRV10	3½	$1,799	800/222-7669 www.sel.sony.com	yes	3.5	Memory Stick stores still images; Nightshot mode for low-light shooting.
	DCR-TRV103	3½	$999	800/222-7669 www.sel.sony.com	yes	2.5	Nightshot mode for low-light shooting; reads 8mm and Hi8.

tures that could handle a difficult backlit situation. Although Sony and Canon provide exposure presets, a manual exposure control is best for difficult situations.

Bright Lights How a camera reproduces white varies greatly depending on the light conditions in which you are shooting. If the *white balance* of the camera is not set properly, all of the other colors will be off—usually they shift to red, blue, or green, making Mom's chiffon pie look more like, say, key lime. Although most cameras provide good auto–white balance controls, they're not always accurate in mixed lighting situations—for example, a fluorescent-lit room with daylight streaming through a window. All of these cameras provide manual white balance.

Fast Action Manual shutter-speed control is a great tool for shooting fast action such as Little League games. At higher shutter speeds, the camera can stop fast-moving action, resulting in sharper detail in each video frame. On the downside, because high shutter speeds remove a lot of motion blur, your video can have a too-sharp, stroboscopic look.

Of the cameras we tested, only the Canon Elura and Panasonic PV-DV910 provided manual shutter speed. Both cameras let you select shutter speeds ranging from 1/60 to 1/4,000 of a second. If you want total control, the Canon and the Panasonic provide better manual features than any of the Sony cameras we reviewed.

Be Still, My Heart In addition to the usual video features, all of these cameras can shoot still images. Simply frame the shot and capture your image, and the camera writes 7 seconds of that single frame onto tape. The cameras can also record audio while saving a still, letting you provide simple commentary or narration.

Two of the cameras we tested include extra still-image features. The Canon Elura shoots its stills using a progressive scan mode (scanning the image in a single pass instead of two), which produces stills free of the banding artifacts that sometimes afflicted the other cameras. The Sony DCR-TRV10 stores all of its stills on a Memory Stick—Sony's proprietary flash memory technology. This saves tape, plus you can easily sort and delete images on the Memory Stick or download them to your computer using a special reader.

If you really want to shoot still images, buy a still camera. None of the cameras we tested produce images as good as those of a low-end, $300 digital still camera. Certainly, none of the images provide enough resolution for printing, and all suffered from compression artifacts.

Macworld's Buying Advice

All of the cameras we tested are good units that provide fine results. If cost is your primary concern, the Panasonic PV-DV910 offers a good price/performance balance. If your main interest is maximum portability, either the Sony DCR-PC1 or the Canon Elura is the way to go. Though the DCR-PC1 earns extra marks for its built-in mike and headphone jack (see the online sidebar, "Sound Advice," at www.macworld.com/2000/04/features/), the Elura has better manual controls and an S-Video input for dubbing from other tape formats. Finally, if you've got a lot of 8mm or Hi8 footage you'd like to edit or view, the Sony DCR-TRV103 is your best choice, though you'll sacrifice a bit of quality, compared with a MiniDV camera's results. In the end, the Sony DCR-TRV10 provides the best all-around DV solution. Though some frustrating oversharpening artifacts plague this device, it has the best balance of picture, feature set, size, and ergonomics.

The good news is that all these cameras offer quality far better than the typical analog camcorder's, so what you see will pleasantly surprise you. m

BEN LONG is a coauthor of the forthcoming *Digital Filmmaking Handbook* (Charles River Media). Macworld Lab testing was supervised by Jeffy K. Milstead.

EDITORS' CHOICE

♦♦♦½ **Sony DCR-TRV10** For less than $2,000, this DV camera offers an excellent balance of features. **Company:** Sony Electronics (800/222-7669, www.sel.sony.com). **List price:** $1,799.

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.

Input/Output	Manual Controls	Format	iMovie-Compatible	Optical Zoom	Comments
FireWire, S-Video in/out, composite out	Focus, exposure, shutter speed, white balance	MiniDV	yes	12×	Excellent manual controls; includes S-Video in; no mike or headphone jack.
FireWire, S-Video out, composite out, mike input, headphone jack	Focus, exposure, shutter speed, white balance	MiniDV	yes	18×	Excellent manual controls; doesn't oversharpen; bad white-balance presets.
FireWire, S-Video out, composite out, mike input, headphone jack	Focus, exposure, white balance	MiniDV	yes	10×	Extremely portable, comfortable; annoying audio hum.
FireWire, S-Video out, composite out, mike input, headphone jack	Focus, exposure, white balance	MiniDV	yes	10×	Excellent balance of features; bad oversharpening artifacts.
FireWire, S-Video out, composite out, mike input, headphone jack	Focus, exposure, white balance	Digital8	yes	20×	Backward compatibility with 8mm and Hi8; slightly lower res than DV.

e-mail for Everyone

Find an E-mail Program That Fits the Unique Way *You* Correspond

DESPITE THE ILL-INFORMED doom and gloom you might have read in the media, we Macintosh users don't lack software, particularly when it comes to the many choices available for reading e-mail. At least a dozen Internet e-mail programs are in use today on Macs across the land.

This embarrassment of riches means you don't have to settle for what came with your computer or what your cousin recommends. You can pick *your* perfect e-mail program from among the ranks. If you're unhappy with your current one, or if you just want to see how the competition stacks up, read on. Whether you get 2 e-mail messages a day or 200, we've found an ideal program for the way you work. (See the table "11 E-mail Programs Compared" for ratings.)

The Casual Correspondent

Most people have modest needs that any e-mail program can meet. They get a few messages per day or per week, and then they delete them. If you're a casual correspondent, you probably use a program that came with your Mac, such as America Online, Apple's Cyberdog, Apple's Emailer (formerly Claris Emailer), Microsoft Outlook Express, or Netscape Communicator, or a program from your ISP (Internet service provider), such as Eudora Light.

Stick With It If you receive just a few messages, it's probably best to stick with what you've got. It doesn't really matter if your e-mail program is now defunct—as in the case of Apple's Cyberdog and Emailer—or if you're using a version that's several releases old, such as the widely distributed Eudora Light and Outlook Express 4.5. If you aren't having problems, why go to the trouble of setting up and learning a whole new application?

Free and Easy Ah, but what if the few messages you *do* receive contain essential baby pictures that your e-mail program won't display? Even people with limited needs might want to switch e-mail programs to take advantage of niceties such as seeing graphics in messages or the ability to click on e-mailed URLs to visit Web sites. Since you won't need advanced features and you want to avoid any hassles, switch to a free program that will help with the process of transferring such information as your address book (see the sidebar, "Making a Smooth Switch," for tips). You also might consider a program recommended by someone who can help you with conversion and answer your questions.

We recommend Microsoft Outlook Express 5.0 (see *Reviews*, March 2000), since it's free and easily obtained, and you can get help with it from both Microsoft and an active user community. It imports mail, addresses, filters, signatures, and accounts from earlier versions of Outlook Express and Eudora, as well as from Netscape Com-

by Adam C. Engst

municator 4.0 or later, Apple's Emailer 2.0, and text files.

THE CASUAL CORRESPONDENT'S IDEAL E-MAIL PROGRAM:
What you've got *or* Microsoft Outlook Express 5.0

The AOL Masses

As popular as America Online (AOL) is, its e-mail capabilities lag far behind those of any other program we looked at. The features it does have are difficult to find, and almost every window packs loads of advertising on top of your monthly fee. If you're disenchanted with AOL's e-mail capabilities, you have three options. You can stick with it, find a copy of Apple's Emailer for sending and receiving AOL mail, or get a separate e-mail account elsewhere.

Remain LoyAOL Despite all its drawbacks, you may want to stick with AOL if you receive little mail, and particularly if most of it comes from other AOL users, who can easily include graphics, styled text, and clickable URLs you can't receive from or send to other Internet users. One recent addition that might make the service more attractive is AOL Mail on the Web, which lets you read your AOL mail via any Web browser, with roughly the same features the AOL application offers.

Try Emailer Despite the fact that Apple hasn't updated Emailer in some time and the program has little if any future, it's still easy to recommend to anyone who seeks to gain more e-mail power while retaining a well-known AOL address. (Because of prior business agreements, Emailer is the *only* alternative e-mail program for Mac that can read AOL mail.) It provides powerful filters for managing quantities of mail and more. Visit the Unofficial Emailer Page, at www.macemail.com/emailer/, for information on Emailer, including where to purchase a copy.

Look Outside Finally, remember that AOL provides a more or less complete Internet connection via AOL Link, over which you can run most TCP/IP Internet programs, including Microsoft Internet Explorer and all the e-mail programs mentioned here. So you could set up a free POP e-mail account elsewhere—for example, with Apple's new Mac.com e-mail service (www.apple.com)—and use one of the e-mail programs we mentioned previously to read mail over your AOL-based Internet connection. (What's POP? See the table "Know Your E-mail Lingo" for a translation.)

THE AOL MASSES' IDEAL E-MAIL PROGRAM:
AOL's e-mail software *or* Apple's Emailer 2.0

The Aesthete

E-mail used to be ugly, and even today you can't be sure recipients will see exactly what you intended. That's a problem if you're planning on sending your perfectly formatted résumé to potential employers via e-mail.

ILLUSTRATIONS BY MICHELLE CHANG

But some modern e-mail programs support HTML-styled mail, which lets you send and receive messages that look just like Web pages, with text in different fonts, sizes, styles, and colors, not to mention inline graphics and text links to URLs. Also, if you use Netscape Communicator to browse the Web, you can e-mail especially interesting pages, such as a review of that oh-so-awful 1978 *Star Wars Holiday Special*, to friends.

If you really care what your e-mail looks like, you have three main choices: Eudora, Outlook Express, and Netscape Communicator. All three support HTML messages, but for the ultimate in styled elegance, go with Communicator. Thanks to its built-in Web browser and page-creation capabilities, you can read and create complex layouts.

Be aware, however, that Communicator's stylistic capabilities are useful only if you *know* that your recipients also use Communicator—for example, if you work at an organization that requires everyone to use Netscape. Otherwise, Eudora and Outlook Express offer layout and display engines that you may find useful in spite of their lesser capabilities.

Ascetic Aesthetics Perhaps you eschew styles altogether and spend your time tweaking characters and spaces for perfect formatting of ASCII tables, where you need numbers to line up. Or you use ASCII graphics created entirely from characters, such as those you can make with Sig Software's shareware program Email Effects (www.sigsoftware.com).

Although those who read mail in a proportional font may still miss your painstaking formatting efforts, if you rely on characters instead of HTML for formatting, more people will see what you want them to. For example, you could indicate underlining with underscores preceding and following the appropriate word or phrase. E-mail programs can aid your quest for well-formatted e-mail by removing unnecessary HTML styles and manipulating the text of your messages.

Several programs have useful features for avoiding styles. Eudora can strip styles from messages before sending them (this removes pasted-in graphics as well), and can prompt to see if you want to do this for each message, so you can easily remove unneeded styles from replies whose originals contained styled text. Netscape Communicator provides a check box that lets you indicate whether a contact in the Address Book can read HTML mail. If not, Communicator resorts to plain text.

Eudora and Outlook Express both offer tools for manipulating text while editing, so you can wrap or unwrap paragraphs, quote text, and achieve the look you want in your messages. However, the $79 Mailsmith from Bare Bones Software (see *Reviews*, December 1998) outdoes both with similar tools plus a full search-and-replace capability unique among the programs we explored. Mailsmith isn't necessarily easy to use, but if you need these features, it can't be beat.

THE AESTHETE'S IDEAL E-MAIL PROGRAM:
Netscape Communicator 4.7 *or* Bare Bones Software's Mailsmith 1.1.5

The Traveler

We've all suffered from falling out of touch on the road: you can't retrieve the phone number of a person you're supposed to contact during a trip, you learn too late of a canceled meeting, and worse. Despite Internet communications, we're traveling more than ever before for work, for play, and between home and the office. We're often expected to stay in touch via e-mail the entire time.

Get on the IMAP If you need to read e-mail and access archived messages from home and work, and potentially from multiple work locations, it's time to chat with your network administrator about IMAP, or Interactive Message Access Protocol. Most people are used to downloading mail to their Macs and then reading and filing it locally. With IMAP, in contrast, mail lives on the server, and you simply read a temporary copy on whatever Mac you're using. This approach is perfect if you need to access your stored mail from multiple locations. Many organizations don't provide IMAP support, so make sure you can use it.

Five of the programs we looked at support IMAP: Eudora, Cyrusoft's Mulberry, Netscape Communicator, Outlook Express, and CTM Development's PowerMail. (We looked at the public beta version of Mulberry.) Despite Mulberry's cluttered interface, it offers the best IMAP support.

Mulberry's speed at retrieving IMAP mailbox lists and messages particularly sets it apart, as does the way it lets you choose to display only certain message types. It also supports a disconnected mode, which makes reading IMAP mail possible while you're using a PowerBook on a plane. If you want to read mail from both your work IMAP account and the personal POP account you use at home via the same program, any of the programs above will work except Netscape Communicator, which restricts you to either IMAP or POP.

POPping Around the Country IMAP works best if you have a fast network connection at all times; if you're traveling with a PowerBook and connecting via modem, an e-mail program that retrieves mail to your PowerBook via POP will work more smoothly. You can read and write mail offline on the plane; once you arrive at your destination, just connect again to send and receive new messages. POP is especially useful if you want to tell your e-mail program to skip messages larger than a certain size when connecting via a slow modem on the road. Eudora offers the best, most flexible POP support. It pro-

Know Your E-mail Lingo

ASCII mail	American Standard Code for Information Interchange mail. The term *ASCII* basically means "plain text." ASCII e-mail messages use just the letters, numbers, and characters on your keyboard. ASCII mail can't display any particular fonts or styles.
HTML mail	HyperText Markup Language mail. Messages sent as HTML mail can use different fonts, styles, sizes, and colors, plus inline graphics, just like what you see on Web pages.
IMAP	Interactive Message Access Protocol. IMAP is a method of retrieving e-mail that stores all of your messages on the IMAP server; you read and respond to temporary copies of messages downloaded to your Mac.
POP	Post Office Protocol. POP is a common method of retrieving Internet e-mail that by default downloads all your messages from the POP server to your Mac for reading and storage.
Web-based e-mail	Web-based e-mail lets you read your mail within a Web browser, rather than in a dedicated Macintosh e-mail program.

vides easy methods for checking only certain accounts, canceling automatic checks while you're using the Power-Book's battery, and managing mail left on the server.

Home, Home on the Web What if you don't own a PowerBook or don't want to lug it around? Set up an account with one of the large Web-mail providers, such as Microsoft's Hotmail (www.hotmail.com) or Yahoo Mail (mail.yahoo.com). You can access both from the Web while you're on the move and use them to read a small amount of mail from a POP account. When you're home, you can access Yahoo Mail with any standard POP-based e-mail program, and Hotmail with Outlook Express 5.0.

Web-based services such as ThatWeb (www.thatweb.com) let you access your existing POP or, less commonly, IMAP account via the Web, without the several-megabyte storage limitations of Yahoo Mail and Hotmail. If you have a POP account, you may find one of these services useful for checking in quickly (see www.emailaddresses.com for a list), though you won't have access to stored mail.

Keep in mind that you're essentially giving your e-mail password to the company running the Web-mail program, so make sure you're comfortable with its integrity and privacy policies.

THE TRAVELER'S IDEAL E-MAIL PROGRAM:
Cyrusoft's Mulberry 2.0 for IMAP users, Qualcomm's Eudora Pro 4.2.2 for POP users, and ThatWeb for Web-based POP access

The Traffic Cop

You're the one in the office who receives general e-mail and redirects it to the appropriate recipient. You may also receive automated messages from various Internet services or from monitored servers. Far from making you feel popular, the role of traffic cop can be utterly overwhelming, as you attempt to handle vast quantities of mail that isn't even addressed to you. Automated mail is even worse, since you can probably ignore most of it—but you can't afford to miss that one message that tells you the mission-critical server just blew a hard disk.

Your two top priorities are powerful filters that can redirect mail and easily accessed support for AppleScript, since you want to spend as little time as possible rerouting messages manually. Decent search capabilities also come in handy the day your boss asks exactly how many times the server has gone down.

The Right Route All of the more powerful programs, such as Eudora, PowerMail, and Outlook Express, can handle routing, but Mailsmith stands out with its excellent scripting support and flexible filters. Mailsmith lets you define more than two criteria (your limit with Eudora and PowerMail), and although Outlook Express offers additional criteria, Mailsmith's support for grep (an extremely powerful method of searching for text, using patterns) in filters and searches gives it the edge.

THE TRAFFIC COP'S IDEAL E-MAIL PROGRAM:
Bare Bones Software's Mailsmith 1.1.5

Making a Smooth Switch

THE MOST SIGNIFICANT OBSTACLE to switching from your current e-mail program to a new one is the threat of losing the vast amount of e-mail and addresses you've stored over the years. Luckily, methods exist for moving from almost any e-mail program to any other.

Some programs, such as Outlook Express, Mailsmith, and PowerMail, recognize that they've come late to the game and provide conversion capabilities, either internally or via AppleScript scripts. In other cases, you may have to use utility software. Refer to the table for hints on which formats different programs can import.

CONVERSION STEPS We can't provide conversion advice specific to *every* possible combination of programs, but if you follow these general steps, you'll find out whether you can move to a new program easily.

1. Visit the Web site for the program you're considering and download a demo. Every program mentioned here has an evaluation version.
2. Look in the file menu, in an included utilities folder, or within Netscape Communicator, in the hierarchical Tools menu under the Communicator menu, for menu items or utilities related to conversion. If you see a conversion option, use it.
3. If you can't find an appropriate conversion option (or the program converts messages but not addresses), visit www.emailman.com/conversion/ and see if any third-party utilities can help. In particular, check out Richard Shapiro's MailConverter and InterGuru's Email Address Conversions.
4. If no direct conversion path exists, see if you can convert the data from your program into Eudora format, then into your desired destination format. Since Eudora mailboxes and address books are just specially formatted text files, they often provide a useful interchange format.

CONVERSION ADVICE In general, make sure you have a current backup before starting, just in case. If you use AppleScript- or Apple event–based conversions, perform spot checks on the converted messages and addresses to make sure the conversion worked properly. And don't throw out your original data until you're positive the conversion was successful.

The E-mail Addict

You know who you are. You check e-mail as soon as you get up, before you go to bed, and every ten minutes the rest of the day. You receive hundreds of messages every day, you save almost everything you get, and you're not even sure how many mailing lists you subscribe to. If you're still in denial, do a Get Info on the folder that holds your e-mail and find out how large it is. See what I mean? Now that you've accepted your lot in life, how can you streamline your e-mail usage?

Eudora Euphoria Run, don't walk, to Qualcomm's Web site and get a copy of Eudora. In the next version (in beta release at press time), if you're willing to put up with an advertisement box, you can

use Eudora for free. You can also opt for a reduced feature set without ads or pay $50 for the full feature set without ads.

Proponents of other e-mail programs will no doubt scream about this choice for heavy e-mail users, but Eudora has the best combination of features and performance. Its filters are plenty powerful, even if they're not quite up to those in Mailsmith and Outlook Express. Searching in Eudora is fast and flexible. You can even save searches and run them later from the Find menu.

To help you avoid misspelling words when you write quickly, Eudora provides a spelling checker that marks mistakes as you type. Eudora's hierarchical menus (it also has a Mailbox window) are unusual, but they provide fast access to deeply nested mailboxes. More important is the fact that Eudora stores all of its messages in text format, an efficient and safe storage mechanism. Outlook Express, Mailsmith, and PowerMail all rely on a single mail database. This means if your hard disk becomes corrupted and that one file gets trashed, you lose everything. Stuffing all your messages into a huge database also means inefficient backups—and you can't afford to lose your precious stored mail.

Finally, Eudora has a vast number of hidden options and features you may find invaluable in specific situations. For example, you can set Eudora to open new Web browser windows in the background when you ⌘-click on URLs—it's a great way to load a bunch of Web pages while you keep reading e-mail. You can also set Eudora to save messages you're writing, an extremely welcome backup if your Mac crashes while you're composing an important message. See www.eudora.com/techsupport/mac/xsettings.html for more information and a downloadable list of settings.

THE E-MAIL ADDICT'S IDEAL E-MAIL PROGRAM:
Qualcomm's Eudora Pro 4.2.2

Macworld's Buying Advice

All of these programs provide at least the basics of reading and writing e-mail—the differences lie in the details, and one of the bunch almost certainly will meet your needs. If you can't decide which profile best describes you, Microsoft Outlook Express 5.0 is a good place to begin for those with relatively modest needs, and Eudora works well for beginners and those who need the utmost flexibility and power. These programs top our ratings, and both are available free in fully functional versions.

If your current e-mail program is getting on your nerves, rest assured—one of the many Macintosh e-mail programs *will* meet your needs. Just figure out what you want with the help of our profiles, make the switch, and enjoy the ease you'll gain from using the right tool for the job. **m**

ADAM C. ENGST is the publisher of the e-mail newsletter and Web site TidBits and the author of *Eudora 4.2 for Windows & Macintosh: Visual QuickStart Guide* (Peachpit Press, 1999).

11 E-mail Programs Compared

Company	Product	Mouse Rating	List Price	Contact	Imports From	Killer Features
America Online	AOL Mail 4.0	♦♦½	Free with AOL ($22 per month)	800/754-0403 www.aol.com	Nothing	Parental controls
Apple Computer	Emailer 2.0	♦♦♦	$49	800/692-7753 www.macemail.com /emailer/	Nothing	Reads AOL mail
Qualcomm	Eudora Pro 4.2.2	♦♦♦♦	$50 *	800/238-3672 www.eudora.com	Nothing **	Stationery, inline spelling checker, scheduled messages, search, customizability
eWare	Green 1.0	NA ***	Free (for individual use)	www.eware.fr	Eudora Light, Netscape Communicator, Outlook Express	Online documentation system
Bare Bones Software	Mailsmith 1.1.5	♦♦♦	$79	781/687-0700 www.barebones.com	Emailer, Eudora, Outlook Express	Text editing, search, scriptability
Cyrusoft	Mulberry 2.0	NA ***	$40	412/605-0499 www.cyrusoft.com	Other IMAP	Fast and powerful IMAP support
Sono Software	Musashi 3.1.1	♦♦♦	$33	www.sonosoft.com	Eudora, text only	Mailbox view options
Netscape Communications	Netscape Communicator 4.7	♦♦♦½	Free	650/254-1900 www.netscape.com	Eudora, text only	HTML mail, integrated with Web browser
Microsoft	Outlook Express 5.0	♦♦♦♦½	Free	800/426-9400 www.microsoft .com/mac/	Emailer, Eudora, Netscape Communicator, Outlook Express, text only	Import, filters, mailing-list manager, address book, scriptability
CTM Development	PowerMail 2.4	♦♦♦	$49	800/424-9933 www.ctmdev.com	Emailer, Eudora, Netscape Communicator, Outlook Express	Sherlock searching
CE Software	QuickMail Pro 2.0.1	♦♦♦	$40	800/523-7638 www.cesoft.com	Outlook Express Export File	Integration with QuickMail servers

** Eudora 4.3, which should be released by the time you read this, will also be available for free if you agree to see ads.* *** Qualcomm says Eudora 4.3 will import from Netscape Messenger and Outlook Express.* **** Not applicable; software available as public beta at press time.*

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"(The AsantéFast GigaNIC) is fast and well designed, and it includes features that may be useful in a multimedia environment."
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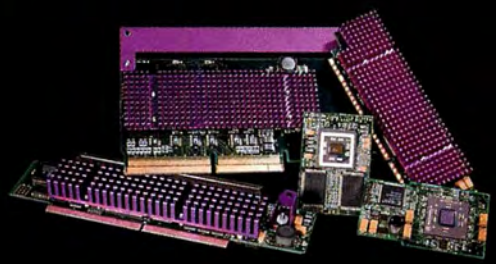


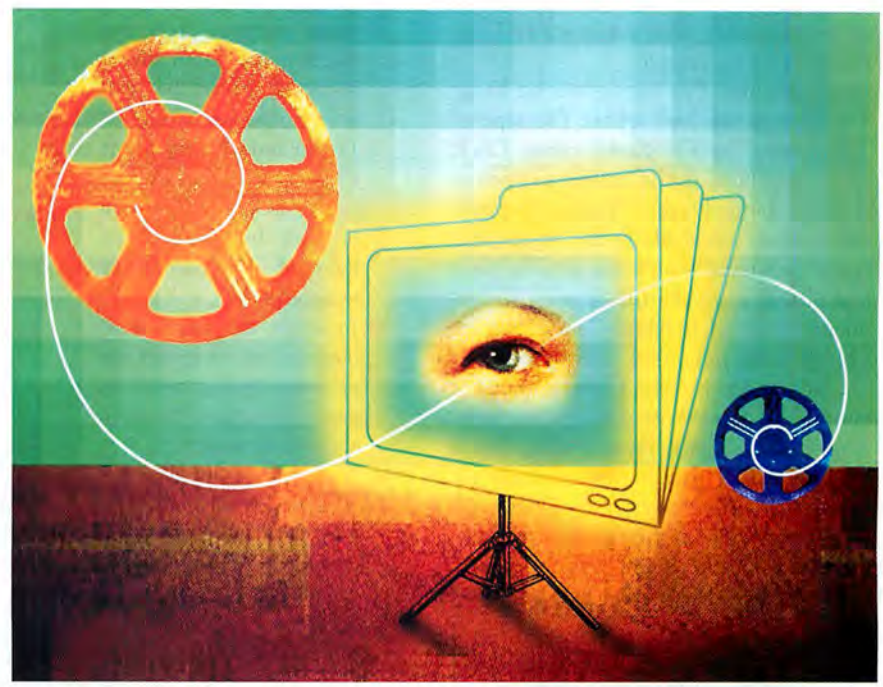
Circle 132 on card or go to www.macworld.com/getinfo

Secrets

The Desktop Multiplex

THE HIDDEN POWERS OF QUICKTIME PLAYER

by Joseph Schorr



OK, it's official: I now watch more movie trailers on the screen of my PowerBook than I do at my local multiplex. I blame this phenomenon not on a lack of self-control but on the irresistible lure of the Internet and QuickTime 4, which together allow those movie trailers to come streaming right to me over the phone line.

Most Mac movie watching these days happens in QuickTime Player, the movie-playing app that comes with every new Mac (those of you with older systems can download QuickTime 4 from www.apple.com/quicktime/). Unlike its predecessor, MoviePlayer 3.0, QuickTime Player doesn't just play movies; it also lets you bookmark favorites (both locally and online) for quick access and perform other movie-watching tricks.

QuickTime Player has a quirky, nonstandard Mac interface, but it's replete with timesaving shortcuts and hidden features. Read on to find the best of them. After all, if you're going to waste company time watching movie previews, you might as well do it with a pro's prowess.

Organize Your Drawer

One of QuickTime Player's most convenient features is the Favorites Drawer, where you can create links to QuickTime content on the Internet as well as to movies stored on your own computer or network. The drawer, which slides down from the bottom of the QuickTime Player window, comes with 15 preset URLs that link to sites such as HBO, NPR, and Apple's QuickTime Showcase (offering a link to popular movie trailers). Some presets open streaming video or audio directly in QuickTime Player. Others launch your browser and open Web pages from which you can access a variety of audio and video clips. Here are a few tips for managing your drawerful of movies:

- To open or close the Favorites Drawer, press ⌘–right bracket (]) or double-click on the grooved handle at the bottom center of the drawer. You can open the drawer as wide as you want by dragging its bottom edge.
- To add any movie currently open in QuickTime Player to the Favorites Drawer, press ⌘-D. (You can add only movies actually open in the player, not Web pages that contain movies. To save those pages, bookmark them in your browser.) To add movie files you've stored locally, drag and drop them onto an open slot in the drawer.
- To rearrange items in the drawer, drag their icons to different slots. It's best to drop the icons onto open slots, since dragging a new favorite to an occupied slot removes the old one. Changing the order of icons in the drawer also

continues

BRIAN STAUFFER

changes the order of items in the Favorites menu. Likewise, switching the order of links in the Favorites menu (via the Organize Favorites command) rearranges the items in the drawer.

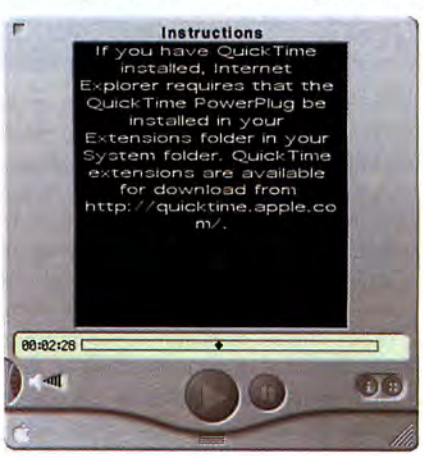
- To remove a link, drag its icon from the drawer to the Trash.
- You can create a Favorite Shortcut file—a stand-alone link to a movie—by dragging an icon from the Favorites Drawer to the desktop. The shortcut works like an alias; double-clicking on it opens the linked movie and creates an Internet connection if necessary.

The QuickTime TelePrompTer

The QuickTime Player application may seem like a one-trick pony. Its intended function, after all, is simply to play QuickTime movies. But lurking beneath that high-tech exterior are weird and wild functions—the automated TelePrompTer, for example.

Here's how this feature works: Drag a plain text file (one whose file type is TEXT) into the Favorites Drawer. Click on the file's icon in the drawer to open it in QuickTime Player. (This is the *only* way to open a text file in the player; the Open command won't work.) The first line of text from the file appears within the movie screen in white Geneva text on a black background (see "Easy Reader").

Now it gets bizarre. Click on the play button and the player displays the contents of the file one line at a time, like a TelePrompTer, spending two seconds on each line. You can't control scrolling speed (unless you click on the fast-forward button on the control panel), but you *can* start and stop the flow of text using standard playback commands. To make the text bigger, enlarge the QuickTime Player window by dragging its lower right corner; the text scales proportionally with the movie screen and remains readable. Granted, this oddball feature won't make you more productive at the office—but let's face it, neither will the latest streaming video from MTV. You want productivity? Launch Excel. **m**



Easy Reader Crack open a text file with QuickTime Player and it flashes the contents back to you in stark white on black, one line at a time.

Squander Time Efficiently

WITH ITS FUTURISTIC, SCULPTED 3-D LOOKS, QUICKTIME PLAYER IS SLICK—but at times all those buttons, indicators, and gizmos can be more hindrance than help. If you want to zip through movie trailers, MTV clips, and CNN news items at peak efficiency, there are keyboard equivalents for most QuickTime Player functions. (Many of these shortcuts also work with version 4.X of QuickTime Plugin, which can play QuickTime movies in Web pages from Microsoft Internet Explorer or Netscape Navigator.)

A To start playing a movie, click on the big round play button or simply double-click in the middle of the movie screen. From the keyboard, press the return key, the spacebar, or ⌘–right arrow. Press ⌘–left arrow to play a movie *backward* at normal speed.

B To stop a movie, click on the pause button; press the spacebar, the return key, or ⌘-period; or press the right- or left-arrow key once.

C To step through a movie one frame at a time without sound, click on the forward or back button or press the right- or left-arrow key repeatedly.

D To adjust the sound level, drag the volume-control dial or press the up arrow to increase volume or the down arrow to decrease it.

E To turn the sound off completely, click once on the white speaker icon near the volume-control dial or press option–down arrow. For maximum sound volume, press option–up arrow.

F To skip to the beginning or end of a movie, click on these buttons or press option–left arrow or option–right arrow.

G To open or close the Favorites Drawer, double-click on the drawer's grooved handle or press ⌘–right bracket (]).

H To expand or shrink the movie window proportionally, drag the resize handle at the bottom right. Shift-drag to scale the window nonproportionally.

I These fast-forward and rewind buttons have no keyboard equivalents, but they are useful for skipping through a movie at high speed with sound.

J To skip part of a movie, drag the diamond along the time bar. The counter at the left indicates the currently displayed minute, second, and frame.

K To get information about a movie's file size, length, and so on, click on the button with the lowercase *i* or press ⌘-I.

L To display or hide the dark-gray panel containing the navigation and sound controls, click on the button with four dots.

JOSEPH SCHORR wonders who will play him in the movie version of *Macworld Mac Secrets* (IDG Books Worldwide, 1999), the book he coauthored.

Tips, Tricks, and Shortcuts

by Lon Poole

Need to install software from a floppy to a Mac that lacks a floppy drive? Tired of inserting a CD to play a game or consult an encyclopedia? You can solve these problems with disk-image files. For example, when Stephen Taylor of Castro Valley, California, got a new G4 at work, he wanted to install QuarkXPress on it. His version of the software came on CD but required an installation floppy; of course, the G4 has no floppy drive. No problem: he inserted the installation floppy into an older Mac and made a disk image using the Disk Copy utility that comes with the Mac OS. (The latest version of Disk Copy is available from Apple's Software Library, http://asu.info.apple.com.) He then copied the disk-image file to the G4 via the local network. After mounting the disk-image file as a disk on the G4—again using Disk Copy—he was able to proceed with the installation.

If your new Mac isn't on a local network, you can make the disk-image file on an older Mac that has Internet access, then either e-mail the file to the new Mac or transfer the file via one of the free storage sites on the Web, such as www.freemacspace.com or www.aladdinsys.com/freedrive/.

Daniel Vanwie of Whittier, California, uses the $30 ShrinkWrap utility from Aladdin Systems (www.aladdinsys.com) to create compressed, unencrypted, self-mounting disk-image files (with the extension .smi) from CD-ROMs. He recommends placing the resulting image file in the same folder as the application that requires it.

To make the CD image really easy to use, just record a simple AppleScript program that mounts the CD image as a disk and launches the application with one double-click. Start by opening Script Editor, a utility that comes with the Mac OS, and clicking the Record button in a new script window. Switch to the Finder, open the CD image, and then open the application. Switch back to Script Editor and click the Stop button. The following is an example of a recorded script that mounts a SimCity 3000 CD image (SimCity3000.smi) and then opens the SimCity application (SC3 1):

GENE GREIF

```
tell application "Finder"
    activate
    select file "SimCity3000.smi" of folder "SimCity 3000" of folder "Applications" of startup disk
    open selection
    select file "SC3 1" of folder "SimCity 3000" of folder "Applications" of startup disk
    open selection
end tell
```

To turn the script into a program, choose Save As from the File menu; in the Save dialog box, set the Kind option to Application and turn on Never Show Startup Screen. To mount the CD image and start SimCity, double-click the icon that Script Editor creates.

Inbound from the Internet

Q. I use the gateway software IPNetRouter from Sustainable Softworks (www.sustworks.com) to share an Internet connection among the computers on my local network. The gateway also creates a firewall that prevents computers on the Internet from accessing computers on my local network. Is there a way to forward incoming packets to one computer on my local network so that it could, for example, serve Web pages?

DAVID KEPHART
Pittsburgh, Pennsylvania

A. Many Internet-sharing gateways can be configured to permit computers on the Internet to access a computer on your local network for a specific purpose, such as serving Web pages.

The sidebar "Inbound Port Mapping" illustrates the setup for IPNetRouter and another popular software gateway, Vicomsoft SoftRouter Plus (www.vicomsoft.com).

Set Modem Speaker Volume

Q. How can I edit a modem script to control the modem speaker volume? I'd like to have several uniquely named scripts that set the volume to off, maximum, and maybe a default level.

BUD WEBER
Kitchener-Waterloo, Ontario, Canada

A. You can edit modem scripts with any word processor or text editor, including SimpleText. A modem-script

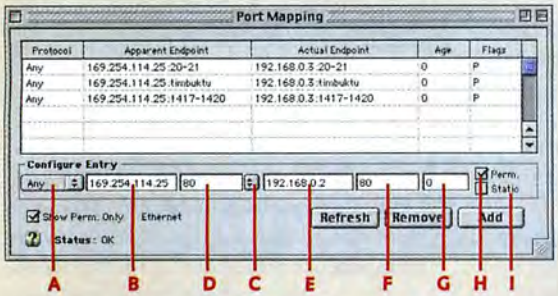
continues

Inbound Port Mapping

You can configure the Internet-sharing gateways IPNetRouter and Vicomsoft SoftRouter Plus to route specific types of incoming traffic to particular computers on a local network. Here, one computer (IP address 192.168.0.3) is set to get incoming FTP traffic (ports 20 and 21) and Timbuktu traffic (ports 407 and 1417 to 1420); another (IP address 192.168.0.2) is being set up to get Web server traffic (port 80).

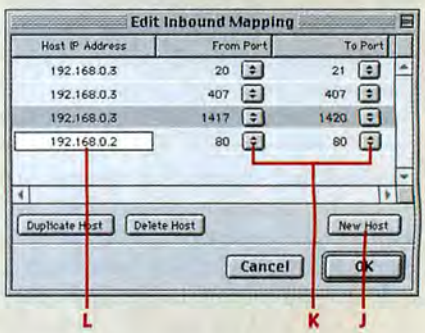
Configuring IPNetRouter

Choose Port Mapping from the Window menu. In the Configure Entry section of the Port Mapping window, leave the first pop-up menu set to Any (**A**) and leave the first IP address box (**B**) alone (it *should* contain the public IP address your ISP assigned). Use the second pop-up menu (**C**) to set the TCP (or other protocol) port for the service, or type the port number directly (**D**). For example, for a Web server, choose http from the menu or enter **80** in the text box. If the service uses a range of port numbers, such as 20 and 21 for FTP, type the first and last port numbers, separated by a hyphen. Next, select the second IP address box (**E**) and type the IP address of the local computer that will provide the service. Make sure its port number is correct (**F**); generally it should be the same as the port number to the right of the public IP address (**D**). You can ignore the entry box for Age (**G**), but leave the Perm. option (**H**) turned on to retain this mapping when you quit IPNetRouter. Don't turn on the Static option (**I**) unless your ISP has assigned you a static IP address. (You probably don't have a static IP address unless you connect via cable modem or DSL.) Click Add to add the port mapping to the table at the top of the window. When you've finished mapping ports, close the Port Mapping window.



Configuring Vicomsoft SoftRouter Plus

Choose Inbound Mapping from the Network menu. Click New Host (**J**) and type the IP address of the local computer that will provide the Internet service. Use the pop-up menus (**K**) to specify a range of TCP port numbers for the service, or enter the numbers directly (**L**). Click OK to finish.



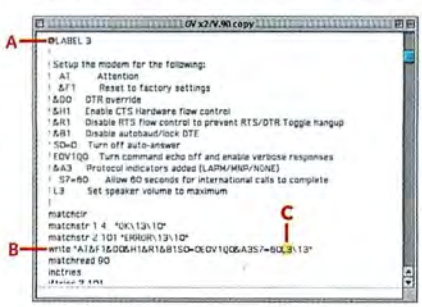
file contains plain text, though its type code is mlts, not TEXT. First make a copy of the script you want to modify. Then use a word processor or text editor that can open any type of file, such as the $119 BBEdit or free BBEdit Lite from Bare Bones Software (www.barebones.com). Or you can use a utility such as Daniel Azuma's $10 shareware FileTyper (http://www.ugcs.caltech.edu/~dazuma/) to change the file type code to TEXT (all caps), and then open the copy with any word processor or text editor.

Scroll through the script until you find the line **@LABEL 3**. Several lines below this, look for a line that begins **write "AT**, followed by a bunch of letters, numbers, and symbols. This is the modem-initialization string of commands (see "Edit Modem Scripts"). This string can go to the modem piecemeal, in which case the commands appear on several lines (making them easier to decipher). Lines that begin with an exclamation point, however, are not part of the initialization string. They are treated as comments, not as commands.

You don't need to know what all of the commands mean, but you can look them up in your modem's documentation.

To set the modem volume to maximum, insert the command **L3** just before **\13** at the end of the initialization string. To set the volume to medium, insert **L2**; for low volume, insert **L1**; and for lowest volume, insert **L0**. You could insert another modem command to control the speaker: **M0** to turn it off, **M1** to turn it on. However, it's easier to simply set the Sound option in the Modem control panel to On or Off. Another part of the modem script inspects this setting and issues an **M0** or **M1** command.

When you finish editing the initialization string, save and close the file. If you had to change the file's type code to TEXT to work with it, change it back to mlts (all lowercase) so the Modem control panel will recognize the file as a modem script. **m**



Edit Modem Scripts You can edit a modem script with a text editor such as SimpleText. The modem-initialization string comes several lines below **@LABEL 3** (**A**) and begins with the word *write*, not an exclamation point (**B**). Here, the command **L3** (**C**) sets the modem speaker volume to its maximum level.

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. He is a coauthor, with Todd Stauffer, of *Macworld Mac OS 9 Bible* (IDG Books Worldwide, 2000).

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Sharper Images in Photoshop

EVERY SCANNED IMAGE NEEDS SHARPENING: HERE'S HOW

by David Blatner

No matter how good your scanner or how crisp your original, you're certain to lose some sharpness when you digitize an image. Images from low-end flatbed scanners always need a considerable amount of sharpening. Even scans from high-end scanners need sharpening (though scanning software sometimes takes care of it on the fly). Images from digital cameras can also benefit from sharpening.

An image loses sharpness not only in the scanning process but also in the output process. Halftones (almost anything on a printing press) and dithered graphics (such as those printed on ink-jet printers) are the worst offenders. But even continuous-tone devices such as film recorders and dye-sublimation printers reduce sharpness.

Remember: You *cannot* solve the problem of blurry scans by scanning at a higher resolution. And while there's no way to bring an out-of-focus original back into focus, even a blurred original (such as a fast-moving subject) needs sharpening so it won't be blurred *and* soft.

To counteract the blurries in both the input and output stages, you need to sharpen your images. When it comes to sharpening, the key tool is Adobe Photoshop's Unsharp Mask filter, the master at making your images crisper (despite its counterintuitive name).

JOHN RITTER

The Unsharp Mask Filter

The reason you can see these printed words so clearly is that they have well-defined edges. Our eyes are extremely good at discerning edges—sharp lines between one color and another. The more marked the difference between two colors along an edge, the sharper an image and the faster we understand what we're looking at.

The Unsharp Mask filter (Filter: Sharpen) compares each pixel in your image to its neighboring pixels; the greater the contrast between two pixels, the more the program increases the contrast. This results in a halo effect around edges that appears to increase an image's sharpness (see the sidebar "Behind the Unsharp Mask Filter").

The Unsharp Mask filter can also have the undesirable effect of exaggerating texture in flat areas, noise introduced by a scanner, and artifacts from JPEG compression. Fortunately, the filter offers some controls to help you walk the fine line between sharp and ugly. The trick is to strike the right balance using the Amount, Radius, and Threshold controls in the Unsharp Mask dialog box (see the sidebar "The Simple Art of Sharpening").

The Whens and Hows

When sharpening, you need to think about restoring sharpness lost in the image-acquisition process and introducing extra sharpness to compensate for its loss during the output process. For the highest-quality image, you need to know where your image is going before you sharpen it. Sharpening an image destined for newsprint is a different game from sharpening for the Web. Printed images, especially those at low halftone-screen frequencies (such as newsprint images), require more sharpening because subtle edge halos get lost in the translation to halftone dots. On-screen images, however, often need just enough sharpening to offset blurriness acquired at scan time.

Note that you should usually use the Unsharp Mask filter near the end of

continues

Sharpening What You Want

Sure, I said every image needs sharpening, but that doesn't mean you want to sharpen every pixel in an image. If you examine the individual channels of most RGB scans, you'll find that often the blue channel is by far the noisiest of the three. It's also usually the one with the least-important details, so in most cases you can get away with sharpening only the red and green channels and perhaps using the Despeckle filter on the blue channel to even it out. This works best with lower Radius settings (1.4 and under). Some people convert the image to Lab mode and then sharpen the Lightness channel, even though the mode changes can cause minor degradation.

Another way to sharpen part of an image is to do it through a mask, as shown in the example here. For instance, you may want a little additional sharpening in and around the eyes in a portrait, or you might want to avoid sharpening a picture's background in order to focus attention on a foreground object. (See "Master Photoshop's Masking Tools," *Create*, June 1999, for an in-depth explanation.)

After duplicating the background layer and selecting what you *do* want to sharpen, click on the Add Layer Mask button in the Layers palette. Feel free to touch up this mask with black and white paint to fine-tune the selection.

Run the Unsharp Mask filter on the duplicate layer (the image, not the mask). Only the part that is not masked appears sharpened. If the mask's edge is too hard, the transition between sharpened and unsharpened pixels will be too obvious; you can use the Gaussian Blur filter on the layer mask to soften this transition.

Before applying the Gaussian Blur filter

To create a more severe contrast between foreground and background, I selected the background layer and softened it with the Gaussian Blur filter.

After applying the Gaussian Blur filter

the image-correction process (after color correction), but before you convert from RGB to CMYK or set your minimum highlight dots. If you sharpen afterward, the Unsharp Mask filter might create unwanted specular highlights—near-white pixels blown out to pure white.

Also, if you use the Image Size dialog box to reduce the size of your image by more than about ten percent, you'll probably need to run the Unsharp Mask filter again. That's because downsampling softens the contrast between pixels.

Look Sharp

The Unsharp Mask filter is a powerful tool. Used well, it can give your images an extra snap that makes them jump off the page. Used badly, it can produce an unpleasant high-contrast look. Applying the Unsharp Mask filter is definitely a skill that improves with experience. The more you experiment with the controls, the closer you'll bring your image to perfection. **m**

DAVID BLATNER is a coauthor of *Real World Photoshop 5* (Peachpit Press, 1999), including the 5.5 update at www.peachpit.com/photoshop/.

The Simple Art of Sharpening

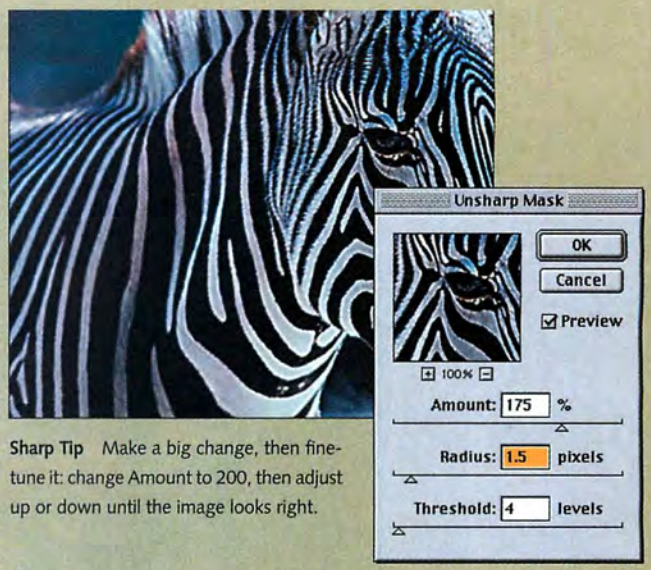
Many people get nervous when confronted with the Unsharp Mask filter for the first time. Don't worry—it's a simple three-step process. (But make sure to leave yourself an escape route by either working on a duplicate of your image or archiving the unsharpened version first.)

1. Open the Unsharp Mask filter's dialog box (Filter: Sharpen). I like to start with a significant change, so I set the Amount control (the strength of the sharpening effect) to 200 percent and the Radius control (the size of the sharpening halo) to my image's resolution divided by 200. For instance, with a 300-pixels-per-inch image, I'd start with a Radius setting of 1.5 (300 divided by 200). I set the last control—Threshold—to 4, which in effect tells Photoshop to ignore pixels that are less than 4 levels apart on the tonal scale.

If you select Preview mode, Photoshop shows you what your image is going to look like after you click on OK. It's important to view your image at 100% (Actual Pixels), since that's the most accurate view. The good news is, you don't have to close the dialog box to do so, because you can zoom in and out from within the dialog box.

2. Next, fine-tune the image. If it has a lot of detail (for example, a picture of bare tree limbs against the sky), you need to lower the Radius setting and increase the Amount setting. If it's an image with large objects that have slow color transitions—say, a portrait or a picture of a field of grass—increasing Radius and decreasing Amount will probably improve your image the most. These two settings usually work like a seesaw—as you adjust one up, you should send the other down.

The Unsharp Mask filter accentuates noise—whether it's from JPEG artifacts, your scanner, or a dirty original. You can control this to some degree by increasing the Threshold value. However, if you're using Thresholds higher than 8 or 10, you should probably start looking at other methods of controlling noise (see "Sharpening What You Want").



Sharp Tip Make a big change, then fine-tune it: change Amount to 200, then adjust up or down until the image looks right.

3. Finally, feel free to throw all these rules out the window and use the settings that work best for your image. Don't be afraid to use a Radius setting as small as 0.3 or so, especially if you're producing images for the Web. Making the image sharp enough on your screen will usually translate to a sharp image on the viewer's screen.

If you will be printing the image, in general the lower the halftone-screen frequency (or the lower the printer resolution), the larger you should make the radius. (If your halo is much smaller than your halftone dot, it will simply disappear, and so will your sharpening.) Note that there's really no way to get an accurate on-screen preview of how your sharpened image will look in print (the screen image is simply too different from the halftone output).

However, an image that's well sharpened for halftone output often appears decidedly oversharpened on a monitor. If you have doubts, it's better to err on the side of caution—most viewers find a soft image less disturbing than one that's too sharp.

Behind the Unsharp Mask Filter

The Unsharp Mask filter can't actually make an image sharper—it just makes the image *appear* sharper by intelligently enhancing the contrast between pixels. This filter accentuates the transition between light and dark pixels at edges: the dark side becomes darker and the light side becomes lighter, creating a halo effect around an object's edges. Because Photoshop has to look at every pixel, applying the Unsharp Mask filter can take a long time, especially with large images.

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Real-World Blends

CREATE MASTERFUL GRADIENTS IN ILLUSTRATOR 8

by Deke McClelland

PAUL ZWOLAK

Those of us who spend too much time staring at cathode-ray tubes can always benefit from an occasional glimpse of real life. So if you can bear to wrench your eyes away from this article, turn and look at the nearest wall—you may have to stand up and peer over your cubicle to find one. Chances are you'll see a single color of paint coating some portion of that wall. And yet you'll notice that the surface comprises a myriad of shades, with the brightest shades near the light source and the darkest ones far away. In the natural world, gradual color transitions are the norm; solid colors are something we never actually witness.

So it's hardly surprising that a solid color applied in Adobe Illustrator or a similar vector program looks altogether synthetic. Images need subtle variations of color to look natural. Illustrator's Gradient palette can spice things up by applying multiple shades and colors, but the resulting transitions are unnaturally regular and don't respond to an object's shape. A better solution is to create custom blends, gradual color transitions between two or more hand-drawn paths. Custom blends give you more control over the shape and speed of your gradients. When you're finished, place the blends inside a mask to adopt an object's shape, and you're on your way to photo-realistic art. (For tips on creating blends, see the sidebar "Perfect Blends.")

While custom blends have been possible for more than a decade—originally popping up in Illustrator's 1988 edition—Illustrator 8 greatly expanded their features. Blends are now live, updating dynamically when you edit the source paths. This ensures that you can edit a blend without having to start from scratch each time. You can blend three or more paths at a time, creating complex blends that taper gently at the beginning and end. For more-dramatic coloring, you can also blend paths that contain gradient fills, a perfect technique for simulating chrome and other complicated color transitions. Best of all, you can attach the blend to a curve, which means you can precisely mold a color transition to the surface of a rounded object.

For a different effect, Illustrator 8 also provides a Gradient Mesh tool that lets you add points of color inside a shape (see the sidebar "Working with the Gradient Mesh Tool"). Though ultimately less flexible than blending—it can't control the shape of a key color as a blend can, for example—the Gradient Mesh tool does offer the advantages of speed and ease of use.

Be forewarned—creating good, realistic blends is no piece of cake. Even with these added features, blends remain one of the trickiest members of Illustrator 8's arsenal. If you've never experimented with blends before, give yourself some latitude—like sketching with a pencil, getting shading exactly right takes time and patience. But if you're an experienced blender, get ready to take your skills to the next level. Illustrator 8 has the power to create color transitions once all but impossible within a vector-based drawing program. **m**

Contributing Editor DEKE McCLELLAND is the best-selling author of books on graphics applications, including *Real World Illustrator 8* (Peachpit Press, 1999) and *Photoshop 5 Bible, Gold Edition* (IDG Books Worldwide, 1999).

continues

Perfect Blends

ILLUSTRATOR 8'S BLEND FEATURE ALLOWS you to create gradients that conform to an object's exact contours. Although the concept is fairly straightforward—you essentially draw two paths marking the beginning and ending of the blend and then tell Illustrator to interpolate them—*perfecting* a blend is anything but simple. Blending is rife with parameters, so many that it's surprising when something *doesn't* go wrong. Fortunately, a little bit of blending theory goes a long way toward learning how to anticipate, decipher, and remedy problems.

Consider the example of the Ping-Pong paddle to the right. I've used automatic gradients to shade the handle, and custom blends to add shadows inside and behind the ball. In the following steps, I'll show you how to shade the paddle's red pad. I could apply a linear gradient, but a blend will result in a more naturalistic effect.

1 To begin, create the first (A) and last (B) paths in the blend and fill them as desired. As a general rule, paths should echo the contours of the shape you are filling. For best results, these two key paths should contain an equal number of points and should not be stroked. To blend them, select both paths and press ⌘-option-B (or under the Object menu, choose Blends and then Make).

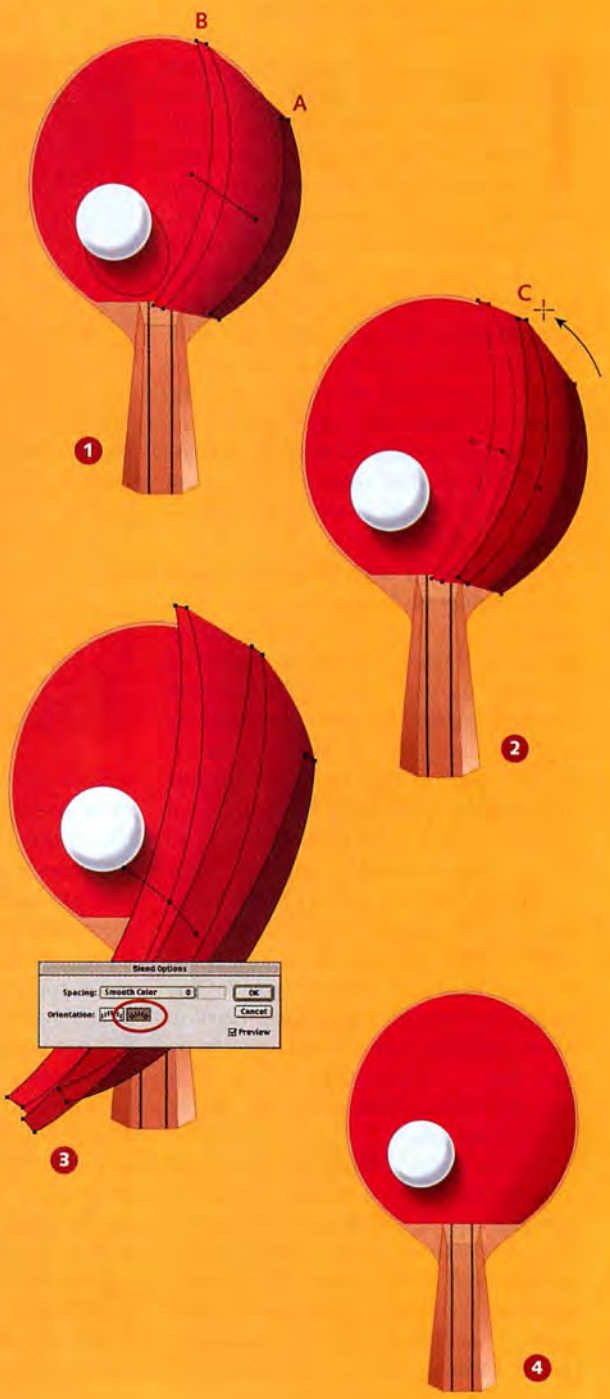
TIP: Notice that I've avoided overlapping the ball shadow (outlined in black) and the paddle blend. The effect may be less realistic than you'd like, but mixing blends requires so much effort and attention to minute detail that I avoid it at all costs.

2 The downside of Illustrator's blends is that you can't control their speed. The distribution of colors between two paths plods along uniformly from beginning to end. If you want to taper the gradient—say, fade it quickly at the outset and then more slowly toward the end—you have to add an intermediary path (C). The easiest way to do this is to clone one of the existing key paths. Because the stacking order of paths affects blending, always clone the path just behind the one you want to add. In this case I've cloned path A. Modify the fill of the new path to create the desired blend.

TIP: Illustrator creates an invisible path—called a spine—that runs perpendicular to the blend. (To see it, switch to Artwork mode by pressing ⌘-Y.) Each point in the spine controls the position of a path; adjusting the points repositions the corresponding paths. By default, the spine's segments are straight, which can make your blend look choppy. To smooth out transitions, use the Convert Point tool to convert the spine's corner points to smooth ones. This often has the added effect of making the blend more closely follow the contour of a path.

3 If you are still not satisfied with a blend's appearance, adjust the orientation of the paths along the spine. First make sure you've selected the blend; then go to the Blends submenu under the Object menu. Choose Blend Options and select the second orientation button. This spreads the paths along the spine as if they were slats in a fan. Oddly, the fan centers on the spine, so the blend has a tendency to pivot around the spine like a propeller. Taking this into account, I enlarged the paths and moved the spine to the bottom of the paddle.

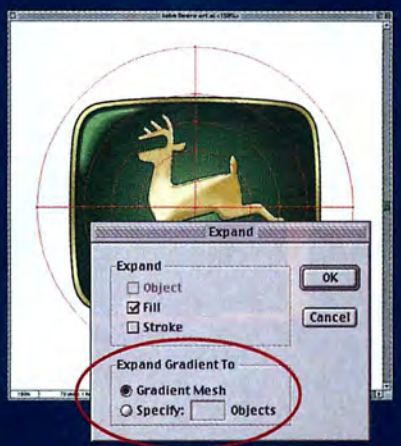
4 Now that you've created the blend, you need to apply it to the object: in this case, the paddle's red pad. To do this, select the shape and press ⌘-X to cut it. Then select the blend and press ⌘-F to paste the shape in front. While holding down the shift key, select both the shape and the blend and press ⌘-7 (or under the Object menu, select Masks and then Make) to mask the blend with the shape. Unfortunately, this has the added effect of removing the fill and stroke from the shape. To reinstate these attributes, select just the shape with the Direct Selection tool and reapply the desired settings.



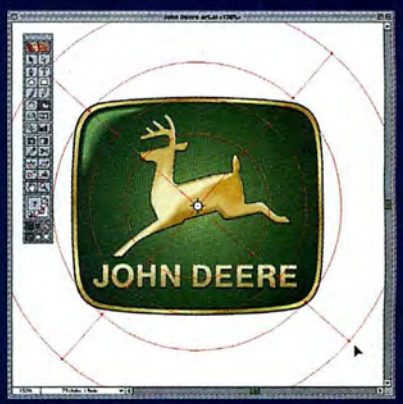
Working with the Gradient Mesh Tool

ILLUSTRATOR'S GRADIENT MESH TOOL LETS you add points of color to a fill, and then it blends them. While it provides no method for constructing specific shape blends, a gradient mesh comes in handy for adding indefinite highlights and shadows. For example, in his photo-realistic rendering of the John Deere logo, graphic artist Brad Neal relied on standard blends to shade the deer icon and the wedge-shaped highlight in the upper-left corner of the name plate. The rest of the name plate requires generalized color transitions, making a gradient mesh the perfect choice.

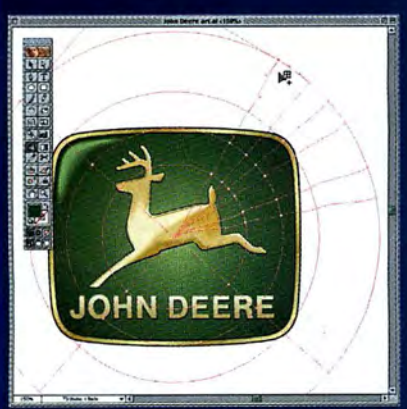
1 Neal started by selecting the name plate and filling it with a radial gradient. The gradient comprised four progressively darker shades of green, as seen in the Gradient palette on the right.



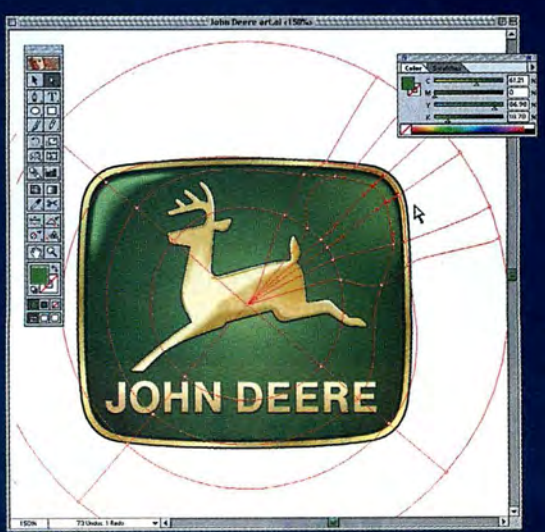
2 Next, Neal converted the radial gradient to a mesh by choosing the Expand command from the Object menu. To make sure he converted only the fill colors, he turned off the Stroke check box; then he selected the Gradient Mesh radio button. The result was a target of four concentric circles, each representing a ring of color in the radial gradient.



3 The Expand command placed the mesh target inside a mask, permitting Neal to modify the gradient independent of the name plate. Using the Direct Selection tool, he deselected the name plate and selected the gradient mesh target on its own. He then used the Rotate and Scale tools to transform and position the target to better suit his needs.



4 To add more points of color to the gradient, Neal selected the Gradient Mesh tool and clicked a total of five times along the upper-right perimeter of the target. Illustrator added a series of five lines to the target, radiating outward from the target's center. The five lines intersect the four concentric rings, resulting in 20 new points of color.



5 From there, it was just a matter of changing the colors of the points and moving them into position. Using the Direct Selection tool, Neal selected and dragged points within the mesh target. (These points and connecting segments behave just like standard paths—you can drag points and control handles, and you can even select multiple points by shift-clicking on them.) Once he'd selected the points, Neal changed their colors from the Color palette. With very little tweaking, he was able to add a credible highlight to the name plate's upper-right corner.

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Zap Common Browser Bugs

DON'T LET BROWSER IDIOSYNCRASIES RUIN YOUR WEB-PAGE DESIGNS

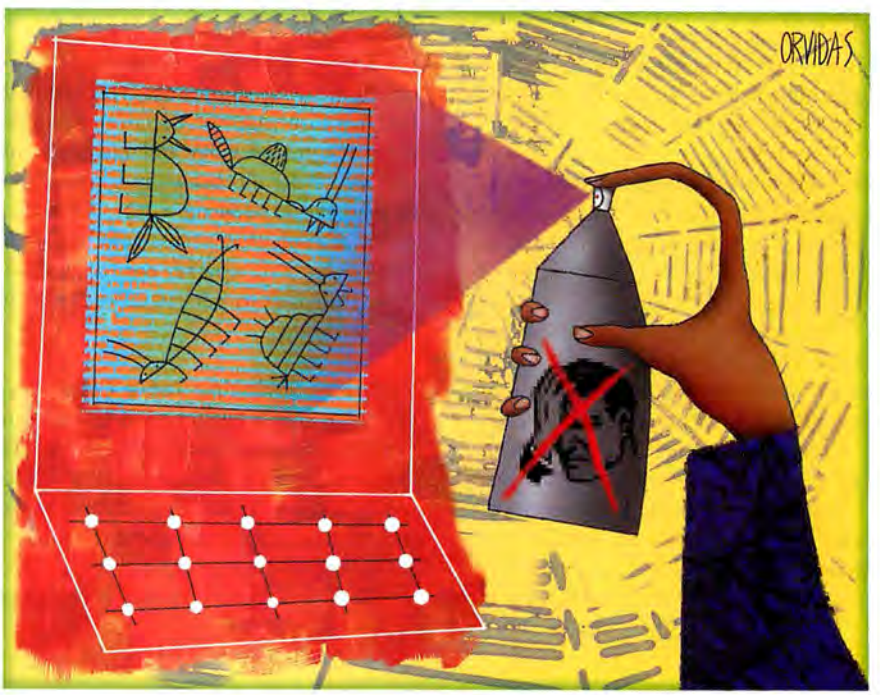
by Lisa Schmeiser

The last time I went on a picnic, I meticulously ant-proofed everything. But it didn't matter: those little buggers showed up everywhere. The same thing can happen to flawlessly written HTML code—even if you're sure your code is perfect, a browser can wreak havoc with your carefully created design.

There are all kinds of ways that bugs can creep into your Web pages. The small font that looks so clean on a PC may look tiny on a Mac. The spacer rows you added between a page's sections may disappear in Netscape Navigator. Or the precisely proportioned headlines and subheadlines on a page (such as **<font size=4>**, **<font size=3>**, or **<font size=2>**) might look different on different machines.

It's easy to assume that the cause lies in your HTML-writing skills—after all, who hasn't made a glaring mistake in their code at least once? But sometimes it's the browser's fault. Browsers process and read HTML differently, and that can affect the way your page renders. In addition, users may have adjusted their browsers' font settings—some people prefer to read everything in 16-point Courier—and that can throw your designs out-of-whack.

Web developers face the challenge of building pages that anyone, using any browser on any platform, can read. So how can you do that without driving *yourself* buggy? It's easy—remember what the biggest rendering bugs are and work around them. This article identifies some of the most common problems and shows how to write HTML around them. (I've included lines of HTML to illustrate my points, but if you want to see the complete code, go to www.macworld.com/2000/04/create/browserbugs.html.)



KEN ORVIDAS

Problem: Inconsistent Fonts

Users muck around with their browsers' font settings for a couple of reasons: legions of Web developers have fallen in love with small fonts, and Microsoft Internet Explorer has added the Larger and Smaller font buttons to the browser tool bar. As a result, plenty of Web visitors are undoing designers' itty-bitty font specifications by clicking on the Larger button until they can read the text. This can throw a layout horribly out of proportion, with bloated line spaces and badly broken subheadlines.

Solution: Use Flexible HTML Tags

The only way you can absolutely guarantee consistent text appearance in your visitors' browsers is to turn each page into one big GIF file—highly impractical. A more realistic solution is to prevent font mishaps by simplifying your HTML. If you want small text, use the **<small>** tag. A browser will then scale the text relative to a user's default font. For instance, if the default font is 12-point, the small font will be 10-point.

If you want to incorporate a variety of font sizes in a page, use the **<big>** and **<small>** tags as HTML headings. These varying sizes scale proportionally to the visitor's default browser settings, guaranteeing preservation of the general proportions of a layout no matter how large or small a visitor's font settings. Tags such as **<font size="+2">** and **<font size="-1">** don't scale nearly so elegantly.

Problem: Migrating Layout

In theory, the first element of a Web page—whether it's a table, a graphic, or

continues

something else—should use the upper-left corner of a browser window as the point of origin. That's true, but it's not exact. Browsers add space that makes your layout migrate several pixels away from the corner (see "Drifting Layout"). If it's important that your layout start in the corner, without any spaces above or to the left, this browser offset could throw your whole design off.

The amount of extra space a browser adds to your layout depends on the user's platform: on the Mac, whether you're viewing a page with Navigator or Internet Explorer, the layout will move 8 pixels down and 8 pixels to the right. PC users have it even worse: the offset in Internet Explorer for the PC is 10 pixels down and 15 to the right.

Drifting Layout To prevent browsers from shifting your layout several pixels down and over (right), add margin attributes (**marginwidth**, **marginheight**, **leftmargin**, **topmargin**) to your HTML code.

Solution: Add Margin Attributes

Browser offset is one of the easier design problems to work around—just add margin attributes to your **<body>** tag. You will need four of them.

marginwidth determines how many pixels of space are between the left edge of a browser window and the items within an HTML document's body.

marginheight sets the placement of items relative to the top of the browser.

leftmargin tells the browser the pixel width of the left margin (similar to the **marginwidth** attribute).

topmargin tells the browser the pixel width of the top margin (similar to the **marginheight** attribute).

Even though there seems to be duplication in the attribute tags, you need all four because Internet Explorer 3.0 supports the **marginwidth** and **marginheight** tags while the 4.0 browsers support the **leftmargin** and **topmargin** tags. Unfortunately, if your users access your site with Navigator 3.0, you're out of luck—there's no way to get rid of offset with that browser.

Problem: Shrinking Table Cells

HTML tables were designed to let Web developers format tabular data neatly; you aren't *really* supposed to use tables to control page layout. But that doesn't mean we can't complain about the misbehavior of our misused tables.

One of the most common complaints about tables is that table cells don't maintain their sizes. (This tends to affect Navigator viewers more often than their Internet Explorer counterparts.) When you write a table, you should set both the width of the table and the widths of its constituent cells; this helps the table render quickly, because the browser knows how wide every cell must be. Otherwise, it has to read the table contents and try to scale the cells proportionally.

But Navigator may still run into some problems with your tables, sometimes even shrinking cells. When a cell's content isn't as wide as the cell itself, the browser snaps the cell to the width of the content.

Solution 1: Make Cell Content the Right Size

One way to make sure a cell doesn't shrink is to fill it with content that will

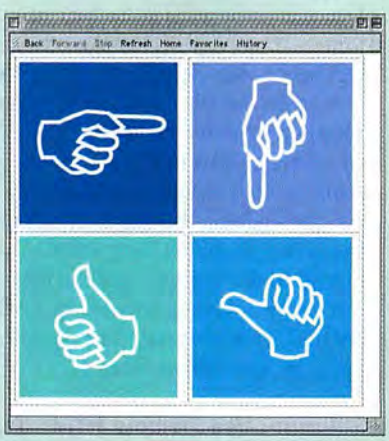
Malignant Alignment

To take out unwanted space between cell content, follow these steps (for the complete before-and-after HTML, go to www.macworld.com/2000/04/create/):

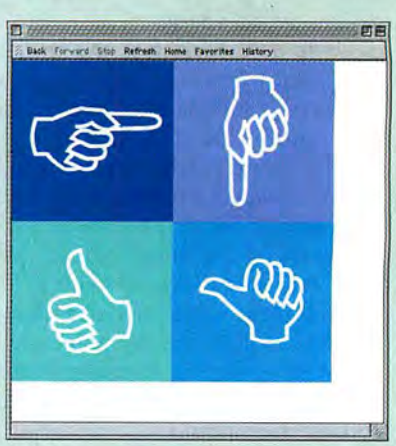
1. Change the table width to reflect the table's contents.
2. Move the **valign** attribute to the table row, since it's consistent for each cell, and set images in the top row to align vertically with the bottom of the row:

```
<table width="360" cellspacing="0"
    cellpadding="0" border="0">
<tr valign="bottom"> </tr>
<tr valign="top"> </tr>
</table>
```

3. Align the cells by pushing them to the right if they're on the left-hand side, and to the left if they're on the right-hand side.



Before



After

The Flexible Layout

MAKING SURE THAT VISITORS TO YOUR SITE SEE THE exact design you intended can be tricky. Sometimes creating a design that can change depending on who's visiting your site is easier. In the case of tables, one option is to make a row of cells that can shrink.

In this example, I wanted to have a table with white space on the left-hand side, so I formatted the left-hand column like this: **<td width="20"> </td>**. By writing the code like this, I built in flexibility: the column will either be 20 pixels wide or shrink to the size of its contents—one nonbreaking space (** **). The size of the nonbreaking space depends on the font-size settings on the user's browser.

Browsers that read and set cell sizes based on their specific width will set the column width to 20 pixels; browsers that render cell sizes based on the width of the cell content alone will shrink the column to the size of the nonbreaking space. Since the purpose of the column is to provide a buffer of white space on the left-hand side of the page, the page renders acceptably on any browser.

Outsmart the Browser Even a browser that shrinks the left column in this table won't ruin the layout. To make sure the column doesn't disappear, though, you need to insert a nonbreaking space.

force a cell to maintain its size, as in the sample cells following.

Sample 1: **<td width="20">   </td>**

Sample 2: **<td width="400"><img src='banner.gif' width="400"></td>**

The first sample shows how to use nonbreaking spaces (** **), which are handy if you're using a cell for space or for a margin. The second sample contains a graphic that's the same width as the cell.

Solution 2: Make Your Layout Flexible

The second way to step around the shrinking-cell problem is to modify your layout so that precise cell size doesn't matter. See "The Flexible Layout" for an example of a table that can expand and contract as needed.

Problem: Misaligned Cell Content

Another common complaint about tables is that the contents of a cell don't align as intended. For instance, you may want the contents of two cells to adjoin, but you end up with white space between cells.

Solution 1: Don't Settle for Default Table Attributes

Browsers default to the following attributes: **table cellpadding 1 pixel**, **table cellspacing 1 pixel**, **valign=top**, and **align=left**. These defaults can mess up a table's appearance, so it's up to you to specify the right values for your layout. See "Malignant Alignment" for an example of how to adjust attributes.

Solution 2: Compact Your Code

After you've tweaked your table attributes, the end result may work beautifully in Internet Explorer but still go awry in Navigator—because Navigator inserts extra white space at line breaks and hard returns.

You can eliminate this white space by compacting your code: eliminating extra line breaks, hard returns, and tabs. Compacting doesn't affect the format of text within **<body>** tags or **<table>** tags—it just cleans up the spaces between individual tags. Here's what compacted code looks like:

```
<! doctype html public "-//w3c//dtd
html 4.0 transitional//en" "http://
www.w3.org/tr/rec-html40/loose.dtd">
<html><head><title>table test #2
</title></head><body bgcolor=
"#FFFFFF" marginheight="0"
marginwidth="0" leftmargin="0"
topmargin="0"><table width="360"
cellspacing="0" cellpadding="0"
border="0"><tr valign="bottom">
<!--put table content here-->
</tr></table></body></html>
```

It's harder for people to read but much better for browsers. Tip: If you're using Bare Bones Software's BBEdit, you can use the Format Text option (under the Utilities menu) to compact code; otherwise, you'll have to wipe out white space on your own.

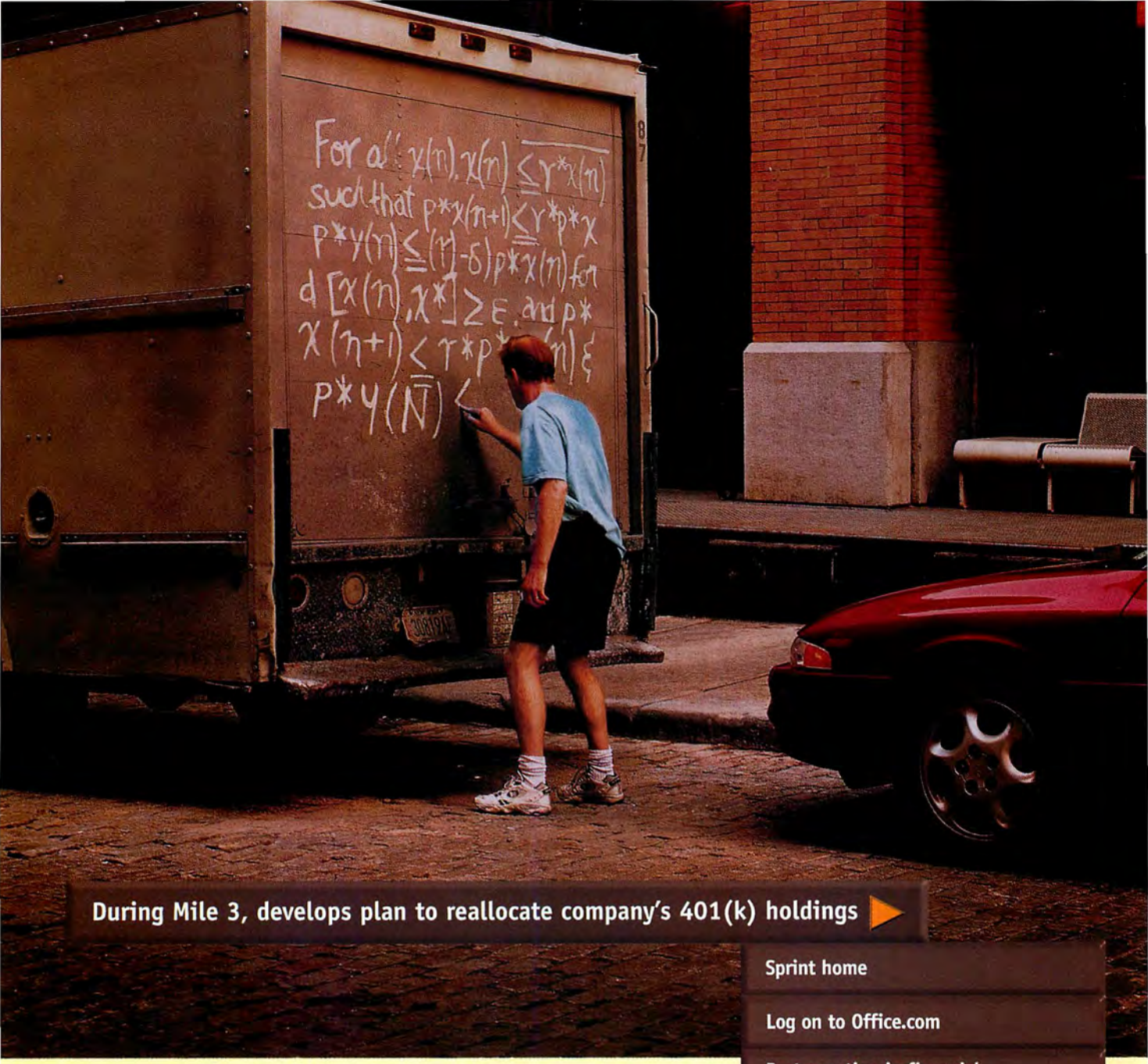
The Secret to Bug-Free Pages

The real secret to writing bug-free pages is simple: avoid building complicated pages. Using HTML as a design language to control the visual attributes of a page is a tricky proposition at best, and the more tricks you use, the more likely you are to encounter a bug.

This isn't meant to discourage you from pushing design limits with HTML. If you're truly committed to executing cutting-edge design online, however, you might want to consider using Macromedia Flash or some other technology that gives you a great deal of control over the visual appearance of your Web pages.

On the other hand, there's a certain Zen appeal in writing simple HTML: you can concentrate on making your pages look attractive and original—and rest assured that they'll look consistent across different browsers. **m**

Online Senior Editor LISA SCHMEISER prefers alfresco coding. She's the author of *The Web Design Templates Sourcebook* (New Riders, 1997) and *The Complete Website Upgrade & Maintenance Guide* (New Riders, 1998).



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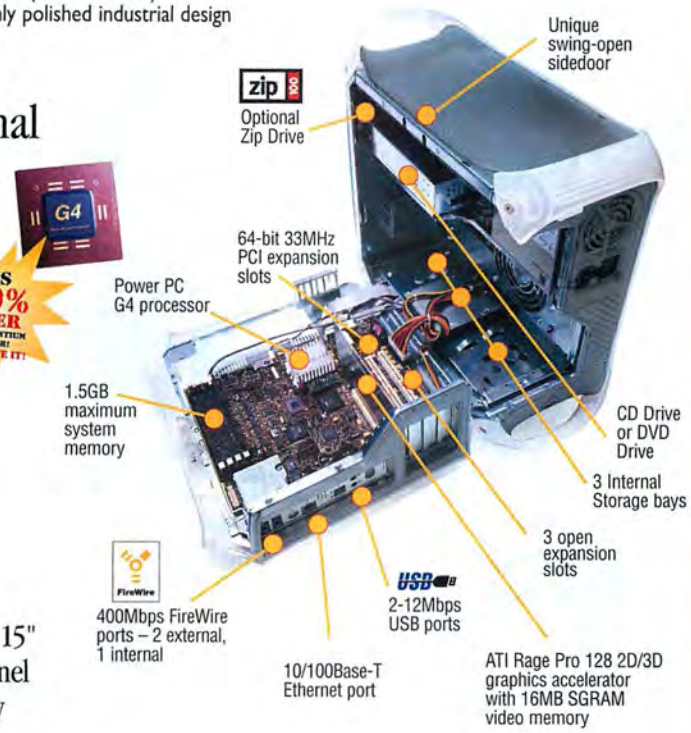

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Lime DV	400MHz	10.0GB	64MB	DVD	2 ports	2 ports	Yes	Yes	#112621	$1294.98	$46
Tangerine DV	400MHz	10.0GB	64MB	DVD	2 ports	2 ports	Yes	Yes	#112618	$1294.98	$46
Grape DV	400MHz	10.0GB	64MB	DVD	2 ports	2 ports	Yes	Yes	#112619	$1294.98	$46
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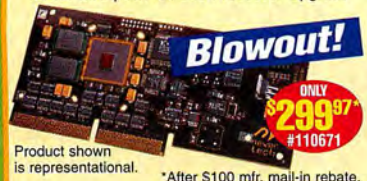

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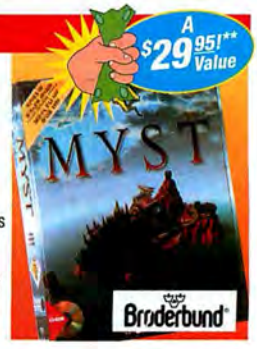

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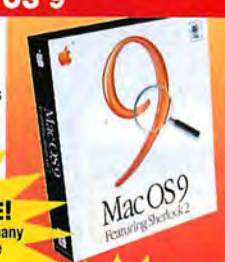

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IMATION

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TARGUS

- Two individual padded compartments that measure 11" x 13" x 2.5"

PowerBook G3 Battery

As low as $139.95! ACC3728

- Lithium-Ion

ACC3728 (fits new 1999 models), only $139.95
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333MHz POWERBOOK G3

- 333MHz PowerPC G3 processor
- 64MB SDRAM • 4.0GB IDE HD
- 24X max. variable CD-ROM
- 56K Modem • 14.1" Active-Matrix Display • 512K Backside Level 2 Cache

PowerBook G3 only $2499!
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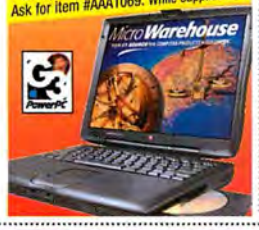

400MHz POWERBOOK G3

- 400MHz PowerPC G3 processor
- 64MB SDRAM • 6.0GB IDE HD
- DVD-ROM • 56K Modem
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- 1MB Backside Level 2 Cache

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- Speeds up to 11MB per second

AirPort Card for iBook only $99!
Item #DEC3878

AirPort Base Station for iBook (shown) #DEB2555 ..... $299

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Only $159! DRI3505

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Fits in CardBus slot

§ Leases are only available to business customers with approved credit on product orders where at least one product totals $750 or more. Lease payments are based on a 48-month Lease. Call today to see how you can qualify. Lease terms are subject to change.

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IMATION

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Apple 333MHz iMacs

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Apple iMac 350MHz

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- 56K modem • 15" monitor

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RECONDITIONED

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RECONDITIONED

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- 16MB RAM • 500MB HD
- 4X max. variable CD-ROM
- 3 PCI Slots

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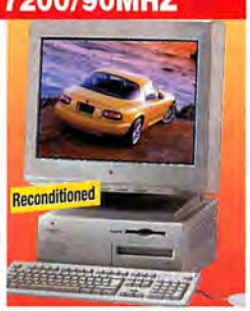

*Reconditioned system. Reconditioned computers may not include original application software. 90 day parts and labor warranty. All sales final. While supplies last. Monitor and keyboard not included.

POWER MAC G4/350MHZ

- 350MHz PowerPC G4 processor
- 64MB SDRAM • 10.0GB Ultra ATA/33 Hard Drive • 32X max. variable CD • 56K modem
- 1MB Backside Level 2 cache
- 2 USB ports • 2 FireWire ports

Only $1299!* Item #RCPU1513

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MITSUBISHI

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- 18" viewable size
- .25 aperture grille
- Manufacturer's 3-year warranty

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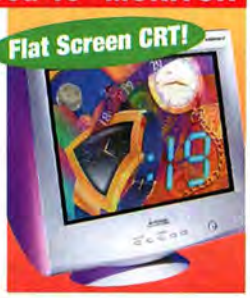

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ViewSonic on top

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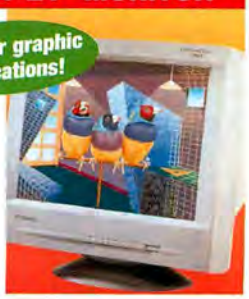

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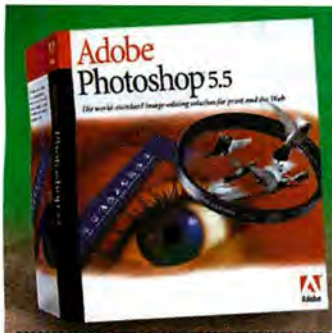

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Service you can depend on! Consult the chart below to see which warranty best fits your needs:

Cost of Computer and/or Peripherals	Warranty Price (36 months)	Ask for item #
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*Note: This promotion is not a service agreement, but an outline of coverage available through Service Net. Please call Micro Warehouse, Inc. for information and read the complete Service Agreement from Service Net, for exact coverages, terms, and conditions. Coverage begins after a manufacturer limits its warranty in any way. Plan not available on international orders.

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- Prevents computer disasters
- Optimizes hard disk performance
- Speeds recovery from emergencies

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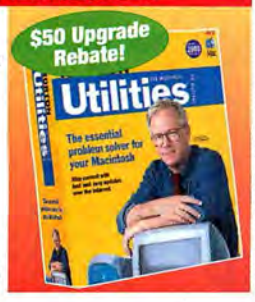
after $50 upgrade rebate. Item #UTI1546

*Price AFTER publisher's $50 mail-in upgrade rebate. Before rebate: $99.95. Rebate applies to owners of previous versions of Norton Utilities for Mac and Norton AntiVirus for Mac. Rebate coupon in box. Offer good through life of product.



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Processor and Memory
- 350 or 400MHz Power PC G3 Processor
- 512K backside level 2 cache on processor module
- 100MHz system bus
- 64 or 128MB of PC100 SDRAM; two SODIMM slots support up to 512MB
- 64-bit memory bus

Storage
- Internal 6, 10 or 13GB Ultra ATA hard disk drive
- Internal 24X (maximum) slot-loading CD-ROM drive or DVD-ROM Drive (DVD is in DV models only)

Communications
- Built-in 56K V.90 modem
- Built-in 10/100BASE-T ethernet
- AirPort wireless networking slot for optional AirPort card; runs at 11Mbps with 150 foot maximum range

Connectivity
- Two high speed Universal Serial Bus (USB) ports (12 Mbps), which support USB devices such as keyboard, mouse, printer, storage devices, and USB hubs
- Two 6-pin FireWire ports running at up to 400Mbps (DV models only)

Multimedia capabilities
- Built-in 15" shadow mask CRT (13.8-inch diagonal viewable image size), .28mm dot pitch
- Three crisp resolutions: 640 X 480 pixels at 117Hz; 800 X 600 pixels at 95Hz; 1024 X 768 pixels at 75Hz
- ATI RAGE 128 VR accelerated 2D/3D graphics controller with 8MB video memory and AGP 2X support
- 24-bit true color at all resolutions for displaying millions of colors
- Refresh rate of up to 117Hz

Outstanding Audio Features
- Integrated high-performance Odyssey audio system from Harman Kardon
- Built-in microphone for speech recognition and audio recording
- Front mounted, dual mini-headphone jacks
- Minijacks for 16-bit CD-quality stereo input/output; 44.1-kHz sampling rate
- Supports external USB audio devices

Video (DV models only)
- Standard VGA 15-pin mini D-sub output port
- Supports video mirroring (external devices display an image identical to that shown on the built-in display)

Software
- Mac OS pre-installed
- AppleWorks, Adobe PageMill, much more!

350MHz iMac

only $999

#56399 (Blueberry only)
64MB RAM; 6GB Hard Drive; 24X CD-ROM Drive; 56K modem

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iMovie software is pre-installed on all DV iMacs and allows you to rearrange scenes, cut out boring parts, cut and paste text and graphics and add sound and music! All you need to do is connect your camcorder to your iMac's built-in FireWire port and launch iMovie! Ready, set, action!

400MHz iMac DV Models

Want to play movies or even make some of your own? An iMac DV model is your personal theatre for viewing DVD movies. Simply connect your favorite DV camcorder to the FireWire port and use Apple's ground-breaking iMovie software to create your own digital movies. iMac DV models also include built-in video mirroring for making presentations!

All models include:
➤ 400MHz ➤ 64MB RAM ➤ 10GB HD
➤ 56K Modem ➤ 10/100BASE-T

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- #56402 Tangerine
- #56403 Strawberry
- #56404 Lime
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iMac DV Special Edition

For those who want a little more, there's the iMac DV Special Edition. It includes all the great features of the iMac DV models and it comes in a see-through graphite color. Plus, it has twice the standard RAM and a larger hard drive than the iMac DV models.

- 128MB of SDRAM; two SODIMM slots support up to 512MB
- Internal 13GB Ultra ATA hard disk drive

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G4s up to 4

How fast is the new G4? This fast: The Power Mac G4 is the fastest desktop computer ever built to run graphics applications like Photoshop, InDesign and QuarkXPress. The G4 is actually years ahead of its time thanks to new super-computing technologies like vector processing, data stream prefetching and 128-bit data paths. In fact, the 450MHz G4 is a stunning 2 to 3 faster than PCs based on the fastest Pentium III processor.

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The Fastest Desktop Ever!

Outrageous power
- PowerPC G4 processor running at 350, 400 or 450MHz
- Velocity Engine vector processing unit
- Full 128-bit internal memory data paths
- Powerful new floating point unit
- Data stream prefetching operations supporting four simultaneous 32-bit data streams
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- 100MHz system bus
- 64, 128 or 256MB RAM
- Supports up to 1.5GB of high performance PC100 SDRAM
- 10, 20 or 27GB Ultra ATA hard disk
- 32X CD-ROM drive, DVD-ROM drive or DVD-RAM drive
- 100MB Zip drive (some configurations)
- Built-in 10/100BASE-T Ethernet networking; optional Gigabit Ethernet

Advanced capabilities
- Two or three 400Mbps FireWire ports
- Two USB ports—up to 127 devices at once
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- Now enhanced for Adobe Photoshop
- Includes Mac OS 9

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- ATI RAGE 128 Graphics Accelerator with 16MB of SDRAM graphics memory
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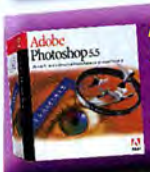

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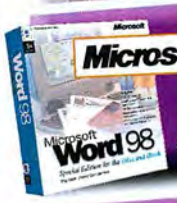

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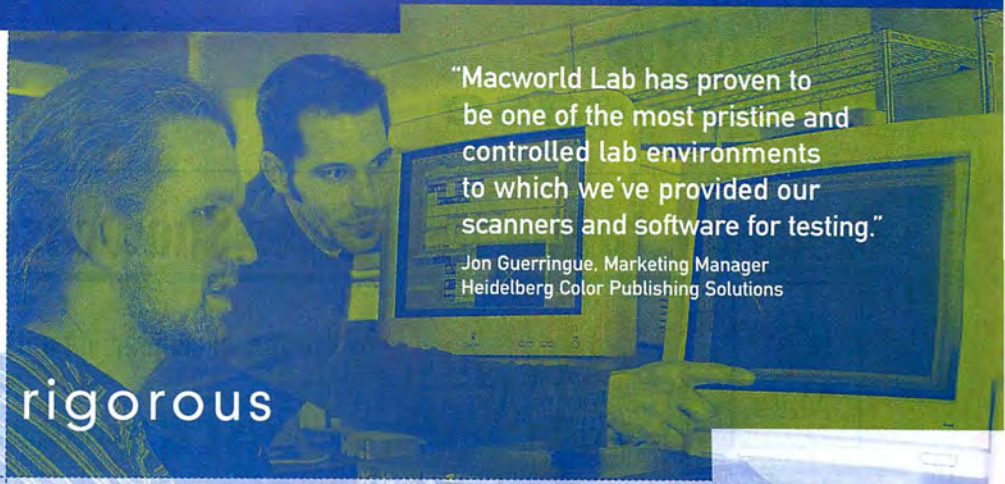

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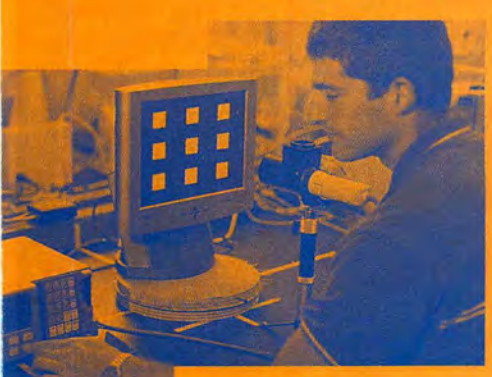

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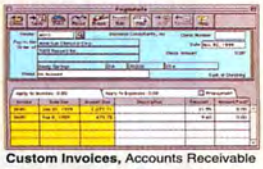

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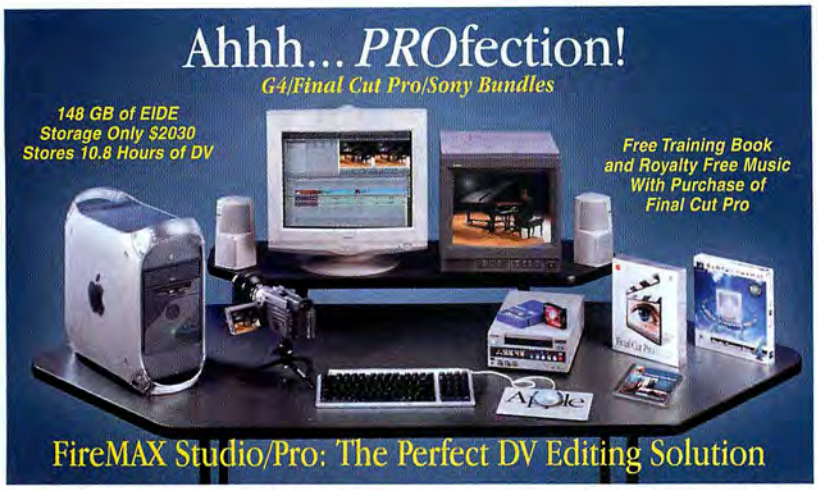

FireMAX Studio/Pro is a professional video editing system that delivers perfect digital video from start to finish via FireWire/1394 and includes Apple's Final Cut Pro v1.2.1 software and Sony peripherals. The system is greatly expandable with dozens of audio and video effects plug-ins. **FireMAX Studio/Pro** is capable of long form video editing and features time saving batch capture with time code, perfect audio sync, three point editing and more.

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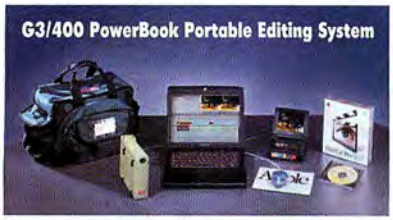
FireMAX Studio/Pro Core System: $5945
Power Macintosh - Graphite - G4/400 MT, 256 MB of RAM, ZIP, 19" RGB monitor, 37 GB EIDE drive with a TurboMAX PCI EIDE host adapter (163 minutes of video), Final Cut Pro, a four meter FireWire cable, powered speakers, 14" Sony studio monitor. System configured and tested. One year toll free system support.
Add an additional 163 minute 37.0 GB TurboMAX drive 475

FireMAX Studio/Pro Core System Plus a Sony DCR-TRV8 DV Camcorder: $7345
Includes **FireMAX Studio/Pro Core System** plus an easy to carry Sony DCR-TRV8, single CCD, camcorder with FireWire in/out, analog in/out (converts analog to DV), and a 3.5" LCD monitor.
If DCR-TRV900 - 3 CCD Camcorder - instead of TRV8 8245

FireMAX Studio/Pro Complete as Pictured Above With Sony DSR-PD100a: $12039
Includes **FireMAX Studio/Pro Core System** plus a DSR-PD100a three CCD Sony DVCAM camcorder, Sony DSR-20 DVCAM deck, Smart Sound Pro, and Media Cleaner Pro software for creating files capable of streaming on the web or CD-ROM. Our **FireMAX Studio/Pro Complete** is ready to use digital video editing solution.
If Canon XL1 - 3 CCD Camcorder - instead of a PD100a 13540



FireMAX Portable Studio/Pro

FireMAX Portable Studio/Pro Core System: $6495
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FireMAX Studio/iMacDV-SE

FireMAX Studio/iMacDV-SE Core System: $4375
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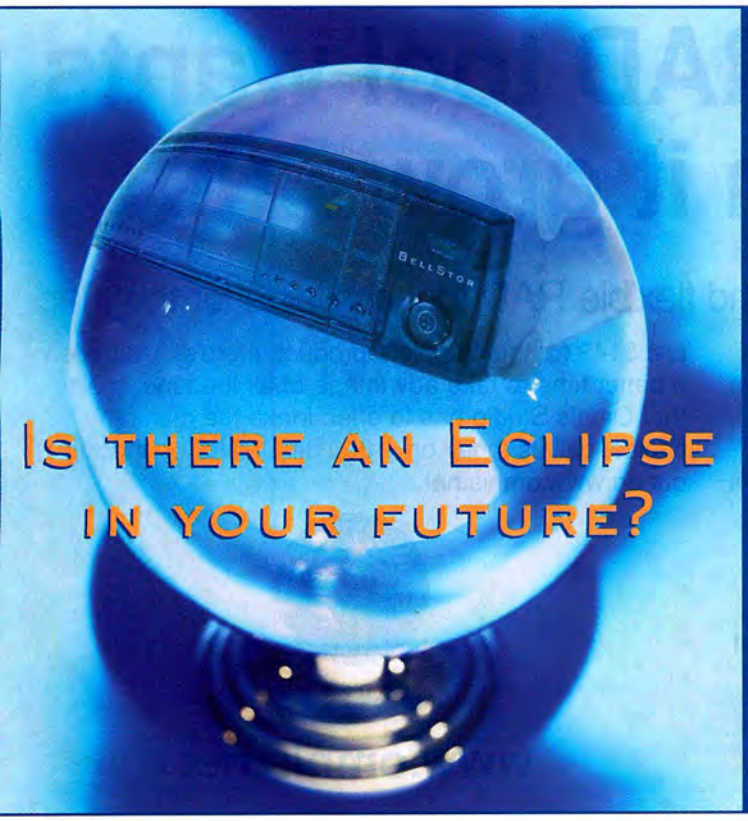

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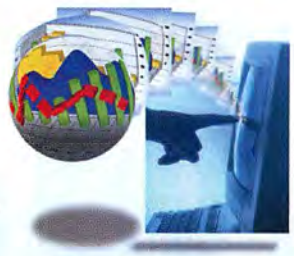

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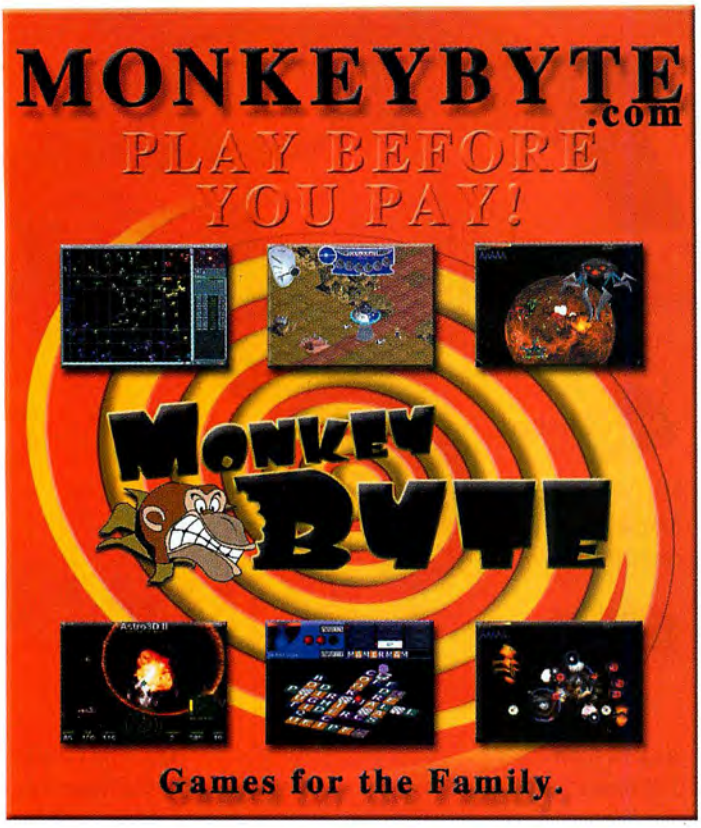

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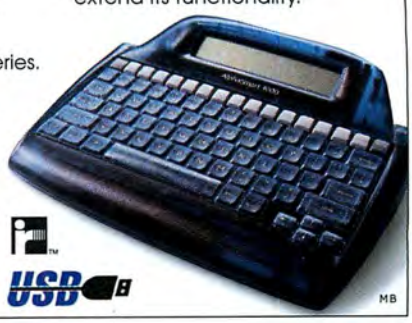

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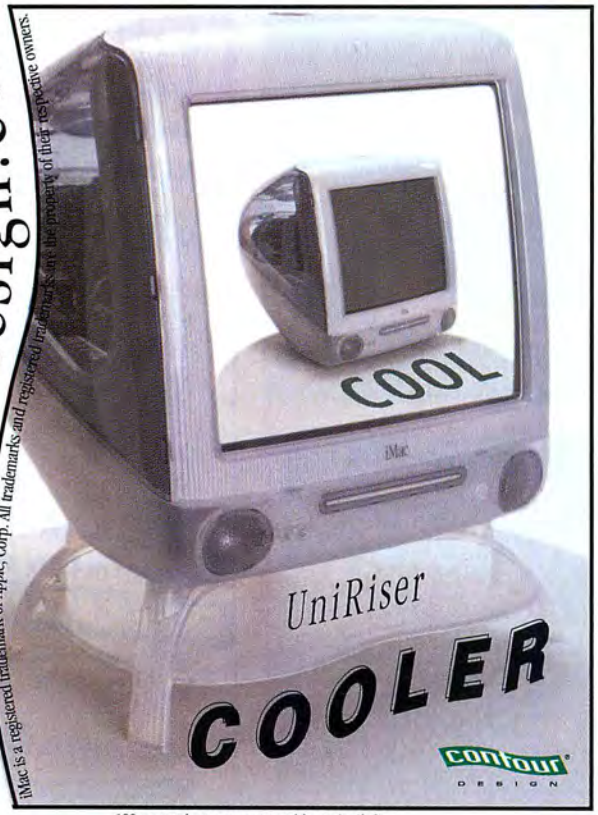

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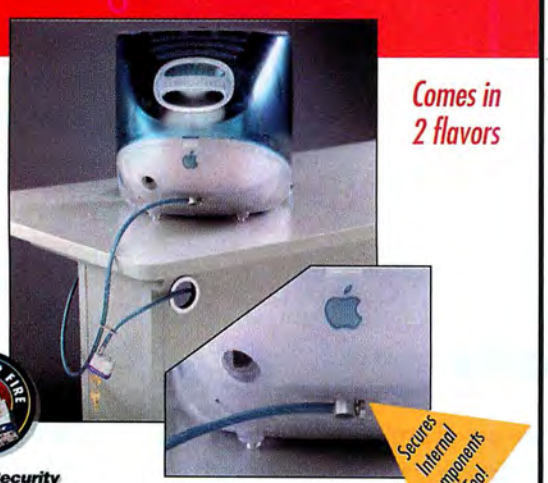

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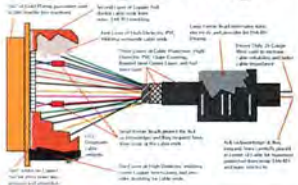

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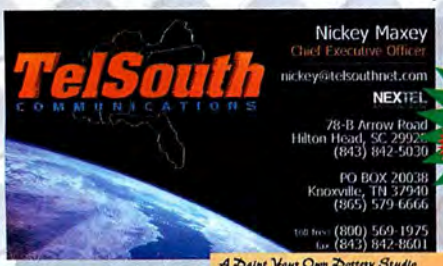

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The Economist

February 23, 1995: "Apple could hang on for years, gamely trying to slow the decline, but few expect it to make such a mistake. Instead it seems to have two options. The first is to break itself up, selling the hardware side. The second is to sell the company outright."

The Economist forgot the third option—recovering, just like any normal company in any normal slump.

The Financial Times

July 11, 1997: "Apple no longer plays a leading role in the $200 billion personal computer industry. 'The idea that they're going to go back to the past to hit a big home run . . . is delusional,' says Dave Winer, a software developer."

Let me see here. Just how many computer companies are rushing to make their computers look like Apple's? Dell, eOne, IBM, Gateway—that sure smells like a "leading role" to me. As for hitting a home run, unless *I'm* the delusional one, every model released since Steve Jobs returned has been a smash-hit best-seller.

Gaston Bastiaens, Former Apple VP

January 11, 1996: "Within the next two months, Sony will acquire Apple. At its current stock price (low 30s), it is a steal. Sony will be the white knight who will step into the picture."

A white knight? Why not? The notion of Sony buying Apple is definitely a fairy tale.

BusinessWeek

October 16, 1995: "Having underforecast demand, the company has a $1 billion–plus order backlog. . . . The only alternative: to merge with a company with the marketing and financial clout to help Apple survive the switch to a software-based company. The most likely candidate, many think, is IBM Corp."

What happened—did Sony back out?

The Good Guys

While I'm ordering the plaques for the Tech Journalism Hall of Shame, I hasten to mention that a few people made better stabs at predicting the future. In the thick of Apple's hard times, for example, Prince Walid of Saudi Arabia bought 5 percent of Apple, telling the *New York Times* that the company "is selling $8 billion worth of goods even in the midst of the confusion. This is a heck of a company."

Analyst Pieter Hartsook also stuck his neck out, telling the *Financial Times* that "the risk of Apple going out of business and leaving no one to support its products is almost zero." And the former occupant of this very *Macworld* page, Steven Levy, wrote in *Newsweek* in 1996 that "Apple is far from a lost cause. Surely something can be done with a company that rakes in $11 billion a year."

The most surprisingly clearheaded analysis of all, though, came from none other than Bill Gates in 1996. He said that Apple wasn't doomed, Apple just needed to "pick its markets and renew the innovation in the Macintosh."

And that, of course, is exactly how Steve Jobs saved Apple. He focused on specific markets, renewed innovation—and ignored the media. **m**

DAVID POGUE (www.davidpogue.com) is the author of *Mac OS 9: the Missing Manual* (Pogue Press/O'Reilly, 2000). Research assistance was provided by Asim Choudhri, Jay Datema, William Fraunfelder, Stephanie Lane, and Rebecca Luxford.

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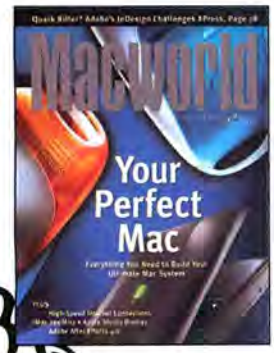

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The Desktop Critic

by David Pogue

Reality Check 2000

REPORTS OF APPLE'S DEATH, IT TURNS OUT, WERE GREATLY EXAGGERATED

A FRIEND RECENTLY e-mailed me a hilarious collection of technology predictions. *Popular Mechanics* in 1949: "Computers in the future may weigh no more than 1.5 tons." Western Union in 1876: "This 'telephone' has too many shortcomings to be seriously considered as a means of communication." And Bill Gates in 1981: "640K ought to be enough for anybody." The moral: If you think you can predict the future of technology, you're a fool.

Yet during Apple's business slump in the mid-1990s, an epidemic of Prediction Flu swept America. Most journalists and analysts were content to report what was actually *happening*, which was dramatic enough. But the following dime-store Nostradamuses felt moved to tell their readers what was *going* to happen. The resulting self-fulfilling effect made it even harder for Apple to recover.

I lost a lot of faith in the media during those dark days. In fact, I started working on this column back then. "If Apple ever comes back," I vowed through clenched teeth, "I'm going to come back to haunt these guys. I'm going dig up and reprint every one of their doomy predictions so readers will never again take these fortune crackers seriously."

Apple did come back, so here I am. If you're a Mac fan, forgive this unpleasant flashback to a nightmarish time. It's for a good cause.

Time
February 5, 1996: "One day Apple was a major technology company with assets to make any self respecting techno-conglomerate salivate. The next day Apple was a chaotic mess without a strategic vision and certainly no future."

The company with "no future" has since tripled its market share and is raking in $12 billion a year. (Bonus fact: The author, a venture capitalist, assesses companies' prospects for a living. Scary.)

The Boston Globe
May 14, 1998: "[The new iMac] might have done Apple a world of good if it had appeared a few years ago, when far fewer homes had PCs in them. Today, the iMac will only sell to some of the true believers. [It's] clean, elegant, floppy-free—and doomed."

You want doomed, buddy? Try your career as a psychic. Apple sold over *two million* iMacs in the machine's first year, making it the best-selling personal computer during most of its first 12 months.

Forrester Research
January 25, 1996: "Whether they stand alone or are acquired, Apple as we know it is cooked. It's so classic. It's so sad."

I'll tell you what's sad. This whopper got quoted in the *New York Times*.

Nathan Myhrvold, Microsoft Chief Technology Officer
June 1997: "The Next purchase is too little too late. Apple is already dead."

Hey, Nate, if Apple's dead, then Microsoft is decomposing. The Next purchase was a masterstroke, landing Apple great people such as Avie Tevanian and Steve Jobs, as well as the software that underlies Mac OS X.

Fortune
February 19, 1996: "Apple's erratic performance has given it the reputation on Wall Street of a stock a long-term investor would probably avoid."

Depends on what you mean by *long-term*. If you'd bought Apple stock the day *Fortune* published that column, you'd be up about 600 percent right about now.

And then this: "By the time you read this story, the quirky cult company . . . will end its wild ride as an independent enterprise."

For a magazine called *Fortune*, it was pretty lousy at reading Apple's palm.

Michael S. Malone, Author
March 1999 (in his book *Infinite Loop*): "Market share up, stock up, hot new products rolling out the door, customer pride once again strong, Steve Jobs had once again pulled off a miracle. . . . [But] for all of his success, all Steve Jobs had really accomplished was a temporary pause in Apple's long-term decline."

Poor Mike must have been looking at the graph upside down. Apple's financial, technological, and marketing positions have rocketed skyward every single quarter since he typed those goofy words.

Wired
June 1997 (from the article "101 Ways to Save Apple"): "1. Admit it. You're out of the hardware game."

Good thing editors don't run companies—what actually saved Apple was hardware, hardware, and hardware.

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