

APPLE CHALLENGES MICROSOFT

Apple's Safari and Keynote Take On Microsoft's Internet Explorer and PowerPoint, **page 18**

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The Mac Product Experts

March 2003

Macworld

EXPO
Complete
Coverage
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17-Inch PowerBook

Apple's Most Powerful
Portable Offers 1GHz G4

12-Inch PowerBook

G4 Power Arrives in
Lightest PowerBook Ever

Year of the Notebooks

Apple Introduces Two New Laptops

PLUS | AirPort Extreme In-Depth | OS X Scanners Reviewed | G4 Upgrades

LIVE THE iLIFE

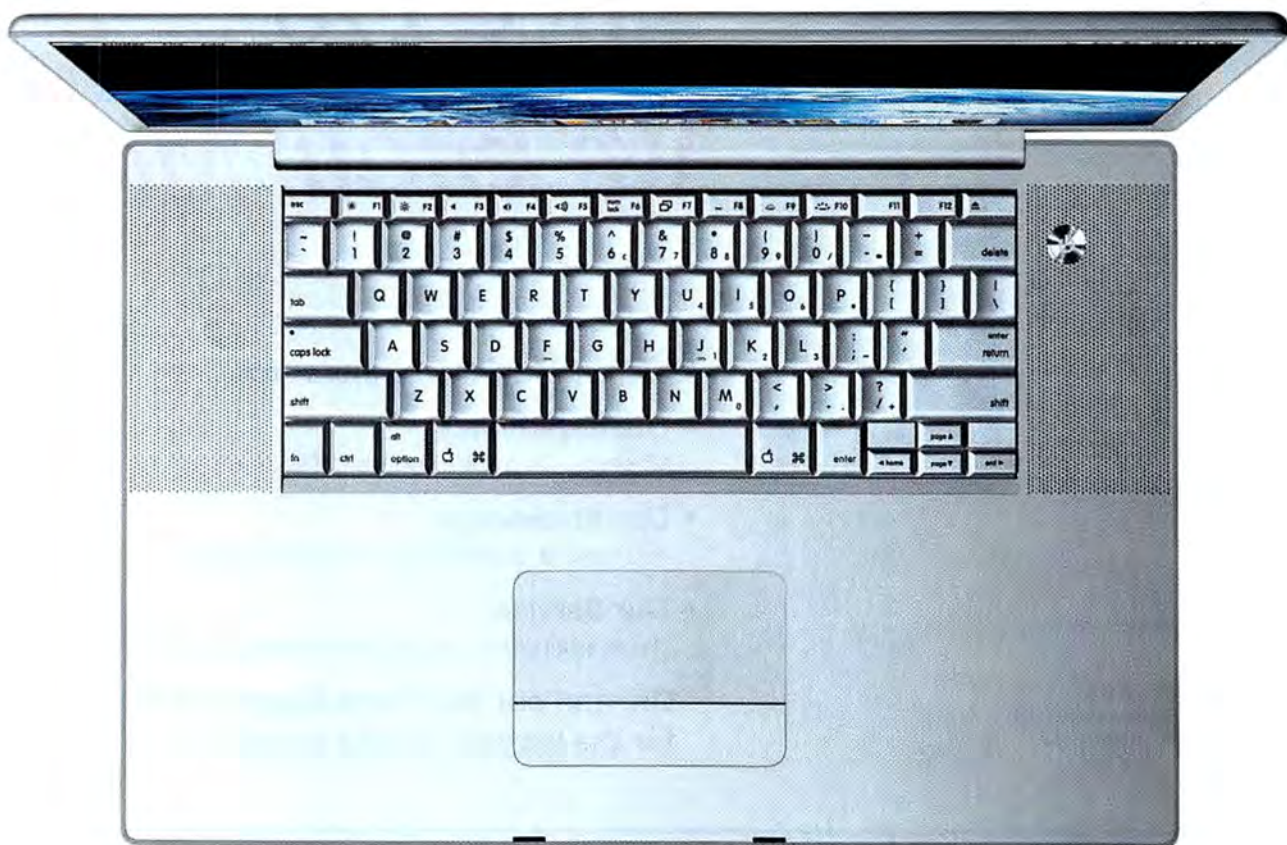
New Versions of iDVD, iMovie, and iPhoto Are
the Latest Updates to Apple's Digital Hub



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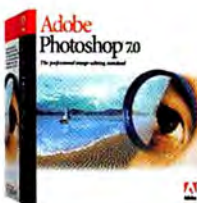
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PowerBooks photo, Peter Belanger;
Steve Jobs photo, Jim Dalrymple;
Photoshop artist, Stephen Sugg.

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Incorporating MacUser

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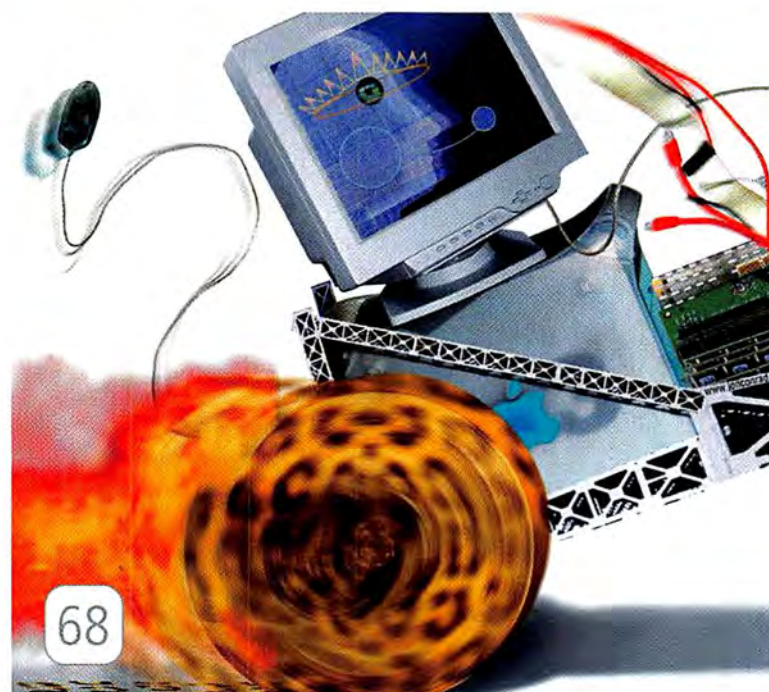
Several years ago, Apple brought easy-to-use wireless networking to the Mac with AirPort, but bigger and better things are on the way. We'll explain AirPort Extreme, give you a peek at what the future of wireless holds, and show you how to get more out of this technology.

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
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Apple Wasn't the Only Newsmaker at a Lively Macworld Expo

Melting Pot



THE JANUARY MACWORLD CONFERENCE & EXPO, HELD annually in San Francisco, is a bellwether of the mood and vibrancy of the Mac market, and its spirit hangs over us all through the winter and into the spring. At last year's show, Apple introduced the flat-screen iMac and cranked up the heat on the Mac OS X transition. Both of these announcements were huge, but they had the overall effect of sucking the oxygen out of the show: the only thing anyone was really talking about was Apple, and Mac developers had a hard time being heard above the static.

This year's show had a much different vibe to it. While Apple had a pack of exciting announcements, which ran the gamut from simple software updates to new portables, it didn't dominate the show. There were plenty of other companies, small and large, with news and products to sell, and the mood of Expo attendees was good. After what I saw and heard, I'd say that we're in for a fun ride over the next few months.

Looking for the Sweet Spots

As always, Apple led the charge with Expo-related announcements. But unlike last year's iMac-focused announcements, this year's Steve Jobs keynote contained something to make most Mac owners happy. The new 12-inch PowerBook looks to be a sweet machine for travelers, especially for people like me, who still pine for the old PowerBook Duo every time they lug a backpack onto an airplane.

The 17-inch PowerBook, on the other hand, is pretty darned expensive, but when I picked one up and toted it around, it didn't *feel* as huge as I thought it would. The large screen is nothing short of stunning, and the little touches in that big box—the lighted keyboard, the bigger speakers, the counter-balanced lid—should make it the most-desired Mac we've seen in a long time.

Apple's other announcements at the show, detailed in this issue's Expo coverage (see *Mac Beat*), were pretty wide-ranging. What really surprised me, though, was how little complaining I heard about Apple. It's a favorite sport of Expo participants, but most of the people I spoke to (attendees and vendors alike) felt that Apple was doing a good job right now.

Leaving Room for Developers

However, my favorite trend at the show wasn't what Apple was doing; it was what developers were doing. There were longtime Next developers such as Black-

smith (www.blacksmith.com), who was showing Chartsmith, a slick-looking charting application, and newcomers such as Slim Devices (www.slimdevices.com), whose booth was jammed with people looking to buy a SLiMP3 Ethernet audio player.

Some companies, such as Extensis (www.extensis.com) and Intuit (www.intuit.com), were showing reborn versions of dormant products—in those cases, Mask Pro and QuickBooks Pro. In fact, the biggest controversy at the show was Apple's inclusion of QuickBooks with the new PowerBooks; many people commented on how this deal seemed to be a slap in the face to longtime OS X standard-bearer MYOB (www.myob.com).

This Expo also showed an abundance of niches for utilities and smaller-scale products. For example, font management—a feature that Apple once suggested would be built into OS X and therefore a nonissue—was thriving, at least on the show floor. Extensis and DiamondSoft (www.fontreserve.com) were offering new versions of Suitcase and Font Reserve, respectively, and Insider Software (www.insidersoftware.com) was showing off an update to FontAgent Pro. Even Alsoft (www.alsoft.com) got into the act, with an impressive new version of MasterJuggler Pro with an iTunes-style interface.

You could go to just about any corner of the Expo floor and see vitality—except, perhaps, at the Internal Revenue Service booth. When I walked off the show floor for the last time, I felt pretty good about things. We seem to be past the worst part of the OS X transition, something especially evident from the products I saw at the show. A colleague in the mainstream press remarked at length about how much energy there was at Macworld Expo, something neither of us had seen at last year's "big" trade shows, such as Comdex and PC Expo. For all the complaints about the small size of the Mac market, it sure seems like a good place to be right now. □

We're in for a fun ride over the next few months.

What did you think about Apple's Macworld Expo announcements? Do you have to have the 17-inch PowerBook, even if that means selling family heirlooms on eBay so you can buy one? Drop me a line about these topics, what you're looking for from *Macworld*, or anything else related to the Mac. I can be reached by e-mail, at rick_lepage@macworld.com, or you can join in the discussion forums at www.macworld.com.

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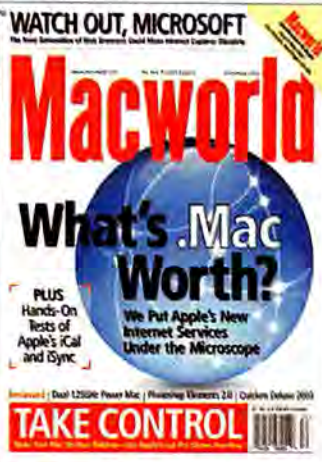
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FEEDBACK

Look Out! Ol' .Mac Is Back.

In our December 2002 issue, we asked, "What's .Mac worth?" As it turns out, it's worth an avalanche of letters. Readers seemed to think that our article—which concluded that .Mac was "a solid value" for many users—was worthwhile. The bad news for Apple is, many former users of the free iTools service felt that the article was more valuable than .Mac itself. Another hot topic among readers was our comparison of Web browsers, each of which has its own vocal contingent of fans. We can certainly understand how someone could come to feel strongly about a free product—just ask all those iTools users. □

For What It's Worth . . .

C. D. TAVARES

"What's .Mac worth?" (December 2002) isn't the important question: .Mac is worth only what enough people will pay for it. More disturbing is how Apple so glibly reneged on its promise that this service would be free for life. The question Mac loyalists need a more satisfying answer to is "What's Apple's word worth?"

JAY GOLDEN

I thought Adam C. Engst's article was thoughtful and well written. He covered the pros and cons impartially and presented a good case for purchasing .Mac, as well as viable alternatives. However, the letters in *Feedback* complaining about .Mac were pitiful. Apple is in business to make money. Apple offered a great free service to its customers. To do so, it had to build and maintain a large network. With its success, iTools became a strain on the balance sheet or an attractive profit center. Either way, the free ride is over.

SHAWN O'LAUGHLIN

I was flabbergasted that there wasn't a peep about how slow Virex 7.1 is. I have a 400MHz G4 with two internal hard drives—a 60GB drive running Jaguar on one partition and Mac OS 9.2 on the other, and a 20GB drive with OS 9.1 and Virex 6. Virex 6 takes only a few minutes to scan all three of my virtual drives. However, Virex 7 running in OS X takes approximately six to eight hours to scan only my OS X partition. One of the reasons I purchased a .Mac subscription was that I thought I was getting two valuable pieces of software: Backup and Virex. But the OS X version of Virex is practically useless to me.

SCOTT MURRAY

I paid for .Mac because I couldn't pass up the e-mail account's tight integration with OS X's Mail app. Who could have imagined my work and personal accounts working side-by-side? But my favorite .Mac feature is iDisk, which I use primarily as Web space. At first, like many others, I was miffed by its lack of FTP support. Now I use GoLive's Site Window to publish to my iDisk as though it were a WebDAV server, which, in effect, it is. GoLive does all the work, and I get even more convenience and system integration. Thanks for your helpful review of the .Mac services. They may not be for everyone, but I think they're pretty darn slick.

FRANK DOBBELAERE

While I like the .Mac review in general, I want to point out a huge sore spot. Apple promises that communications on its members-only discussion board will be monitored by Apple to ensure that questions are replied to within one business day. I've been wondering who monitors and helps .Mac members and who supervises the one-day policy. They both need to be fired on the spot for not doing their jobs. Questions go unanswered for weeks. If Apple expects to get away with this kind of treatment of paid members, it's in for a surprise.

MELONIE JACKSON

Your article provides an honest look at .Mac. It's actually fairly critical until the last sentence, which seems to have been added to soften the truth about .Mac's failure to be good enough to warrant its expense: "Ultimately, .Mac may prove to be just like the Macintosh—it's a little more expensive, but what you get is worth the extra money." I think the key word there is *may*.

Golden Apple

PAUL KENT

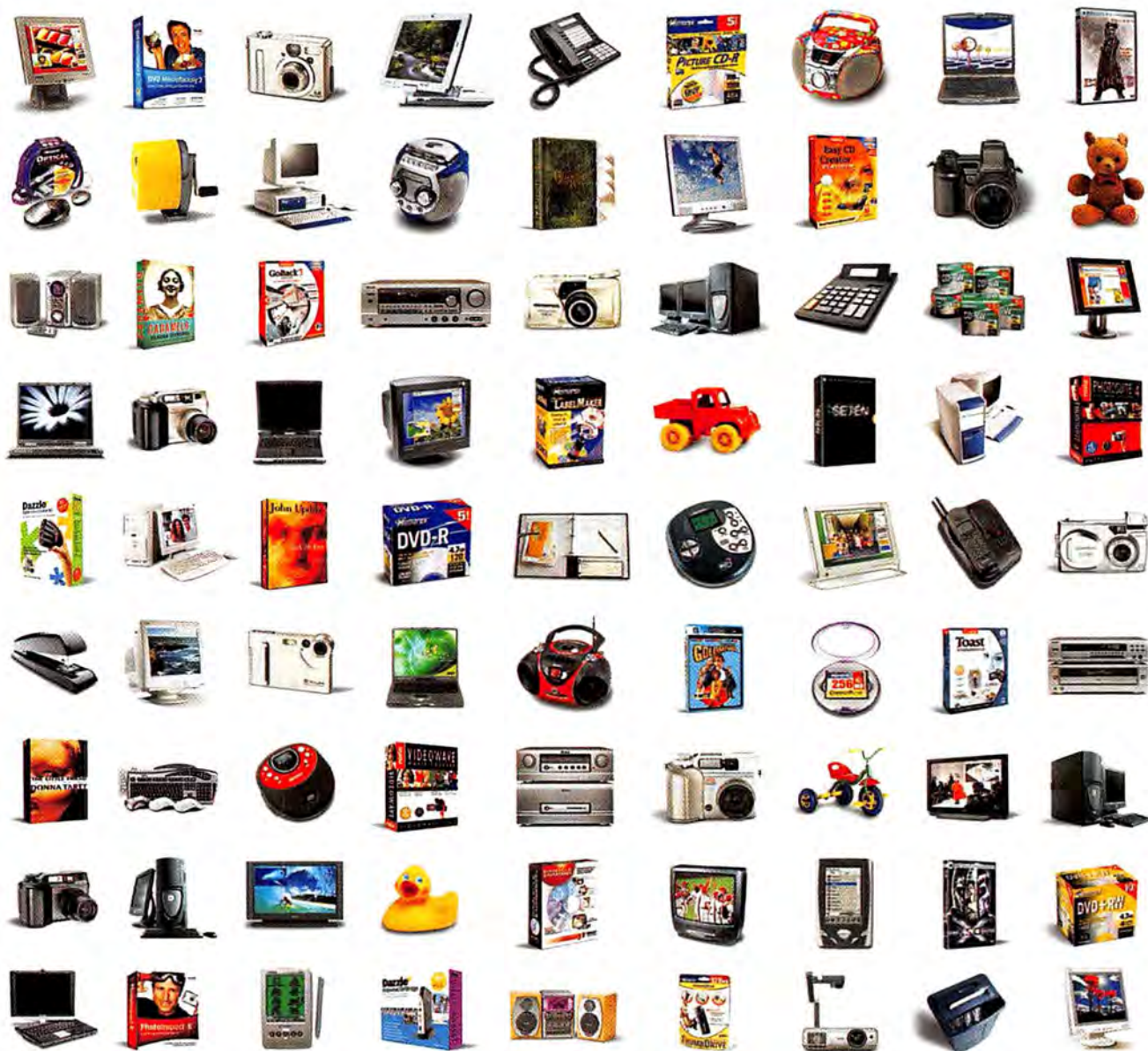
After reading all the letters that slammed Apple (*Feedback*, December 2002), I want to defend the company. OS X 10.2 is worth its upgrade price. If Apple had called it "OS 11," there would probably be a lot less complaining. It's a significant upgrade, and I will now make the move from OS 9.

Browser Preferences

STEVEN B. LEWIS

I was intrigued by "Battle of the Browsers" (December 2002), but I think you were a little off the mark. Jeff Carlson asks, "Does the browser render content correctly and support Web standards?" It's misleading to ask these questions together. I ran each of the test pages through the World Wide Web Consortium's HTML validator. Only one validated—not surprisingly, it was the Web Standards Project page. Note that the site coded to standards seemed to have the least trouble across all browsers. Your evaluation of rendering fidelity concentrated on two sites that didn't contain valid HTML. Blaming the browser is the equivalent of vacationing in Italy and blaming Italians for not understanding your faux-Italian gibberish put together from watching *Godfather* movies.

You also complained about the spotty JavaScript support in various browsers. Did you check the pages to make sure they not only coded to just one browser but also interfaced to the W3C-standard DOM? For the last several years, we Web designers have had two choices: code to browsers or code to standards. We should call to task those Web sites that disregard standards. That would make browsing in any browser an easier proposition.



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an e-mail from an EyeTV user, who wrote, "EyeTV lets me watch TV wherever I go. I've even watched TV while going to the bathroom." We'd also like to thank the many *Macworld* readers who wrote to compliment us on the ad.

It's Still 9's Time

KEVIN WARREN

Regarding "9 Questions: What's Ahead for Mac OS" (*Mac Beat*, December 2002): it seems Apple has forgotten that my printer still doesn't have the same functionality in OS X as it does in OS 9. My scanner drivers stopped working with the 10.2 upgrade. My trackball still doesn't have the same functionality it does in OS 9. Apple should realize that many of us still need OS 9.

Server with a Smile?

JOSEPH O'BRIEN

I enjoyed Mark H. Anbinder's review of Mac OS X Server 10.2 (December 2002). While I agree that the software is powerful and feature-rich, its drawbacks include more than just quirky SMB connections. Files modified or written to the server by Jaguar clients do not inherit the parent folder's ownership or permissions. Ownership is assumed by the Jaguar user, and the file becomes read-only to the group. Imagine this scenario in an environment where files need to be edited by several users before publication. A server administrator would have to manually override the file's permissions from the server. Picture that if dozens of files are being edited every hour. Apple responds to this by saying that this is a security feature. Nonsense. A file server is supposed to serve up files that can be shared by a group of users. This "feature" prevents my organization from upgrading any more users to Jaguar.

My tests confirm that such a file is written with the user as owner and is set to read-only for the group. No one else can save a change, so this is indeed a bug. But at this point, some applications will ask if you want to overwrite. Choosing Yes works.—Mark H. Anbinder

No Office SOS

BRIAN A. PEAT

When I read Tom Cavanaugh's letter (*Feedback*, December 2002), I just had to laugh.

Microsoft saved Apple? People would stop buying Macs if Microsoft stopped selling Office? When Apple's sales took a nosedive, it was because the products were lousy, not because Office was lousy. If Microsoft stopped selling Office, some smart Unix-based software company would step in and create a better alternative, or Apple would beef up AppleWorks. Sure, Apple might lose a few possible new switchers, but would it go under? Not on your life.

The Cost of Music

ERNIE MANSFIELD

Ivan Beeckmans's calculations of the "legitimate" cost of a music CD (*Feedback*, December 2002) were woefully inaccurate. He guesses that the production cost of a music CD is \$2 to \$3, including the raw-materials cost of the CD plastic. Typically, a musical artist will spend anywhere from \$10,000 to \$100,000 on recording studios, session musicians, artwork, and copyright fees. Then there are promotional costs, which can easily equal or exceed the recording budget. The artists and record producers are hoping to make a profit after all these expenses are met. Out of the thousands of CDs released, only a few will bring in enough profit to subsidize the CDs that lose money. Given this reality, I don't see why people would prefer sharing music to paying \$12 to \$15 for a legitimately purchased CD.

Not the Debating Type

DAVID DUENAS

Why does there have to be a heated debate about Quark versus InDesign in every issue (*Feedback*, November 2002)? If you were or are a QuarkXPress user and you've tried InDesign and like it, hooray for you. If you don't try it, I'm sure you'll just keep using QuarkXPress. So everybody is happy. The people who won't be happy are InDesign 1.5 users who upgrade to version 2, open their 1.5 documents, and see that all their text has reflowed. This has to do with InDesign's type engine. InDesign has a feature that is supposed to resolve this, but it doesn't work.

Adobe says that text should reflow only when you start making text edits or other changes that affect the text, not when you open up an InDesign 1.5 document in InDesign 2. If

you're seeing different behavior, you should contact Adobe's technical support. An upgrade entitles customers to 30 days of free support, starting at the first incident, not the purchase date.—Ed.

Best Face Forward

PAUL A. COLLINS

"Jaguar's Interface Face-Off" (*Mac Beat*, December 2002) says, "Apple remains firm in its refusal to offer a supported system for creating menu-bar applets." Apple *does* support them in OS X 10.1 and Jaguar. It's called `NSStatusBar`, and Apple not only approves and supports it, but also has a whole how-to article about it. Developers who used private Apple APIs to create system menus before `NSStatusBar` or to add nonpublic features such as `#-draggable` menus may have found their menus broken when OS X was upgraded. But private APIs are private for good reasons. As a third-party developer, I appreciate that Apple went to the trouble of providing system-menu capability.

While Apple does provide a Status Bar API, it doesn't allow developers to create full-fledged Menu Extras. With Jaguar, Apple actively prevents third-party Menu Extras with the `canLoadClass` function, which forces developers to come up with workarounds.—Stephan Somogyi

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CORRECTIONS

In our review of Sciral's Consistency 1.0 (*Reviews in Brief*, January 2003), we printed an incorrect price. The product costs \$25.

In "Director Takes Action" (*Mac Beat*, January 2003), we incorrectly reported on a Director MX feature. Content created in Director MX can be played back either natively in OS X or in OS X's Classic mode.

JAMES STRICKLAND

It felt as if Jeff Carlson were more interested in telling us how the other browsers were not as good as Internet Explorer (IE). He made it clear that IE offered great standards support. This is true—if those standards were created by Microsoft. That has been one of the greatest obstacles for challengers. Too often, the problems other browsers face have to do with Web sites optimized for IE instead of built to conform to W3C standards. In fact, W3C standards compliance has always been at the heart of the Mozilla project, upon which Mozilla, Netscape, and Navigator (Chimera) are based. Just about every site that creates problems for these browsers was optimized for IE. You also gave some conflicting information about Netscape and Mozilla. Both contain an e-mail client. They're essentially the same program, with the exception of a few bells and whistles and mostly minor programming changes in Netscape. You mentioned the lack of tabbed windows as a con for Netscape. Netscape 7 does have tabbed windows.

I agree that making Web pages support standards is a worthy goal for all Web designers. But the focus of this article was on browser users, who simply expect Web sites to display properly. Strickland is right about Mozilla's e-mail client and Netscape 7's tabbed windows; we had to hastily revise our article when version 7 came out, and we failed to update the accompanying table. As for IE, its faults have more to do with its support of recent standards such as CSS-2. The Web Standards Project has praised IE's standards support. Unfortunately, this is a catch-22—until more designers support W3C Web standards, Microsoft won't be as compelled to be more standards-compliant, and designers will continue to create pages that look best in the dominant browser.—Jeff Carlson

Sound and Fury

J. D. MILLS

Your review of the new mirrored-door Power Mac G4 (December 2002) makes it sound like a dream machine. Unfortunately, that isn't the case for hundreds of very loyal Apple customers, including me. Visit the Apple Discussion Boards, and

you'll be hard-pressed to find a single positive word about the new machines.

WILL RUGGLES

When I fired up my spanking-new dual-867MHz Power Mac G4, I was utterly amazed and sickened by the abrasive noise it made. There are two always-on, horrible little fans that cool the power supply, and one big blower for the heat sink on the processors. The power supply makes a particularly grating electronic noise that can be heard in adjacent rooms. And then there's the hard drive—the loudest I've owned, hands down. I would never have bought this machine had I known how irritating it would be to use, and now I'm stuck with it.

El Gato's Ad

VICTOR NEMECHEK (EL GATO SOFTWARE)

El Gato would like to apologize to *Macworld* readers who were offended by our EyeTV ad (December 2002). Our intention was to show a humorous glimpse of a real-life scenario, not to offend. This ad was based on

continues



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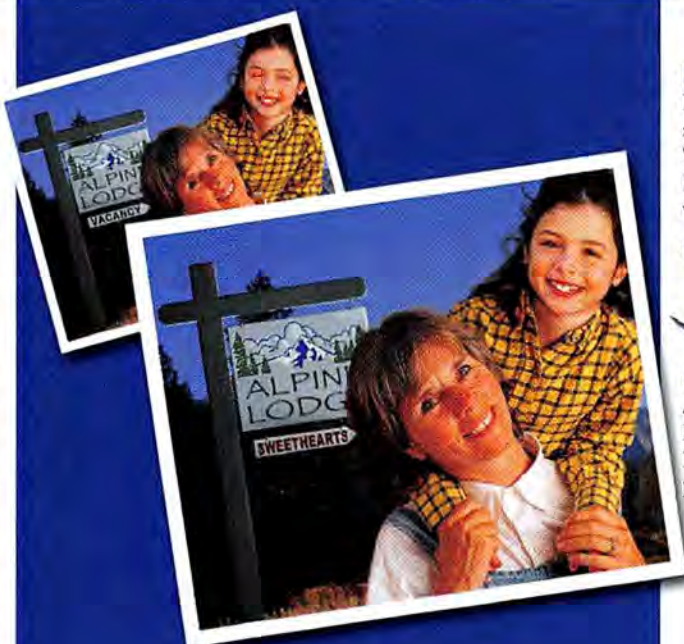
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APPLE ADDS 17-INCH AND 12-INCH MODELS TO ITS POWERBOOK G4 LINE

More Sizes Fit All

Compared side by side, the two newest PowerBooks don't appear to have much in common, apart from a brand name and a metallic shell. One sports a wide-screen 17-inch display like the one found on Apple's flat-panel iMac. The other is the smallest portable ever designed by Apple and seems to have more in common with the iBook than with the other PowerBook offerings. But both of these new PowerBook G4s stem from a key Apple philosophy: Mac users are increasingly choosing laptops over desktops.

According to Apple, 20 percent of the computers it sold in 2000 were laptops. The company expects that number to increase to 35 percent this year. As the ranks of Mac laptop users swell, those users will demand more options from Apple—hence the introduction of high-end

features such as DVD-burning capabilities to the PowerBook line (see "One for the Books," *Mac Beat*, January 2003).

At the top of the newly expanded PowerBook line, the 17-inch model gives laptop users the same kind of large display they'd traditionally get from a desktop Mac. And on the opposite end, the 12-inch PowerBook squeezes the high-performance capabilities of Apple's professional laptop line into a more compact frame. Add the existing 15-inch Titanium PowerBooks and the three editions of the iBook into the equation, and Apple's got laptops ranging in price from \$999 to \$3,299.

Big-Screen Idol

There's no mistaking the most eye-catching feature on the 17-inch

PowerBook—the wide-screen display, with its 1,440-by-900-pixel resolution. Some changes had to be made to the PowerBook's dimensions to fit the wider screen—it's two inches wider and nearly an inch deeper than the 15-inch Titanium PowerBook. But Apple's engineers managed to retain the 1-inch height while keeping the 17-inch model's weight under 7 pounds.

Just as eye-catching as the display is the 17-inch PowerBook's keyboard—at least after the lights go out. Apple equipped the laptop with ambient-light sensors; as the surrounding light dims, the PowerBook automatically decreases the brightness of its display while turning on fiber-optic lighting hidden under the keyboard. The light shines up through the tops of the keys, which have been painted and then laser-etched so light can shine through the key labels.

But Apple has changed more than just the PowerBook's exterior. The two new models are the first Apple laptops to ship with DDR (Double Data Rate) RAM. Unlike the PC133 SDRAM in the 15-inch PowerBooks, DDR RAM sends data on the rise and the fall of the clock signal, doubling potential bandwidth. The 17-inch PowerBook also features a 167MHz system bus—a PowerBook record.

Like the PowerBook models introduced in 2002, the 17-inch version ships with 1MB of Level 3 cache, which improves system performance by providing quick access to data on its way to the processor.

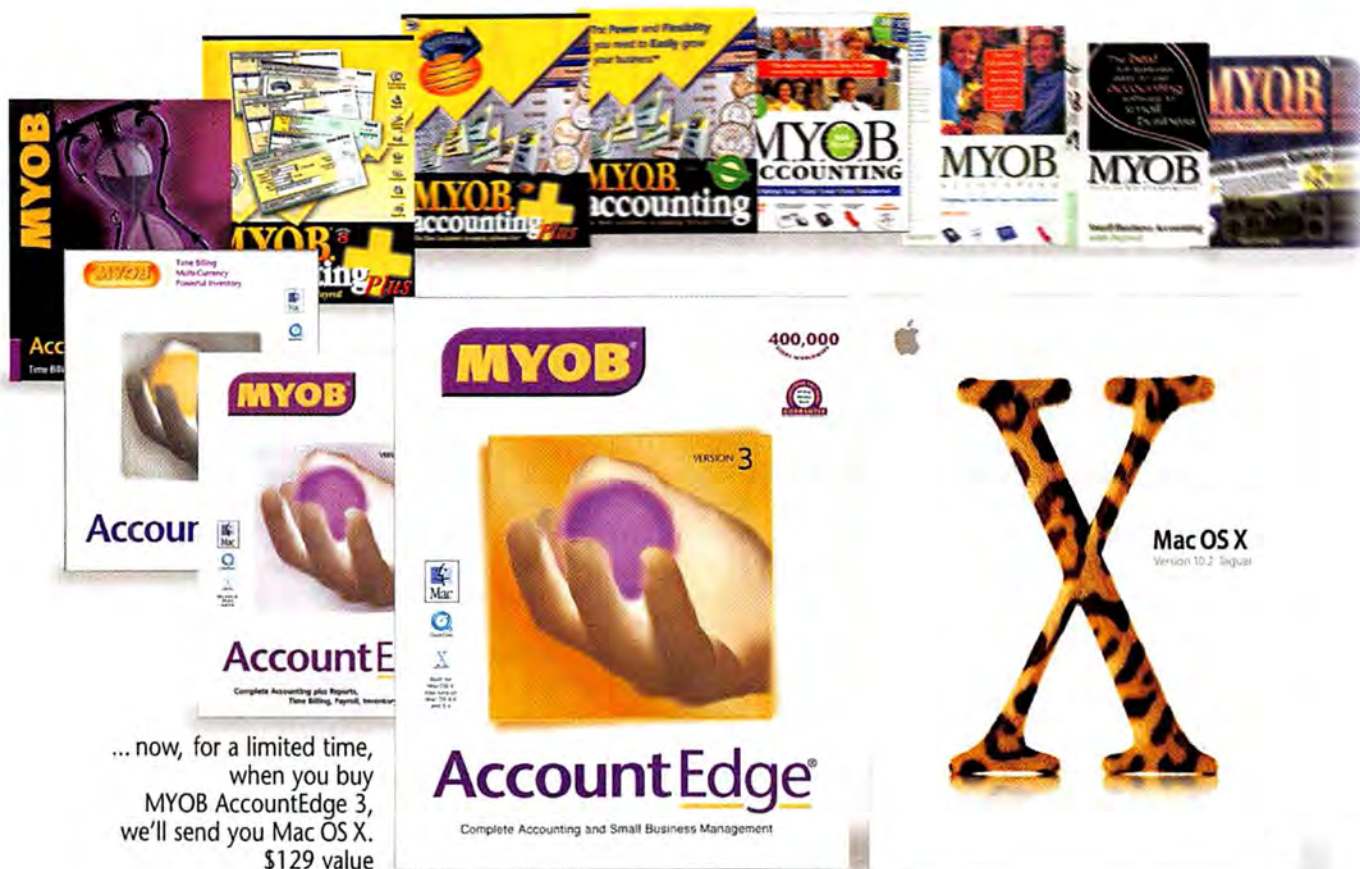
WHAT'S NEXT

The cream of the imaging-industry crop heads to Los Angeles for PhotoshopWorld. The conference runs February 19 through 21.



PETER BELANGER

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UPDATED DIGITAL-HUB APPS BUNDLED INTO ONE INTEGRATED PACKAGE

iPhoto, iMovie, iDVD, iTunes Evolve into iLife

There's really no point in a digital hub if all its parts don't work together. So after rolling out a series of free applications that have helped Mac users connect their computers to digital devices such as cameras and DVD players, Apple has updated four of the programs and integrated them more seamlessly with one another. These programs will be available as a \$49 boxed bundle dubbed iLife.

Three of these programs—iPhoto 2, iMovie 3, and iTunes 3—will continue to be available as free downloads from Apple.com. iDVD 3 will be sold only as a part of this package.

iTunes 3 Apple actually rolled out the first update to its iLife package last summer, when it released iTunes 3. But many of the improvements to the MP3 player are just now coming to light, since they involve integration with other iLife updates.

iMovie 3 Perhaps the most impressive update in the suite, iMovie 3 eliminates the program's single-window design, letting users with large screens stretch the iMovie interface as much as they like. An updated timeline window lets you modify the audio throughout clips, letting you increase and decrease the volume at specific points—a great benefit if you need to turn down your background music when someone speaks on your video track.

iMovie's redesigned media bin features seven tabs for accessing movie clips, photos from iPhoto 2, sound effects and iTunes



New Image In iPhoto 2, photo-sharing features and iDVD integration are part of the Organize tab.

audio tracks, titles, transitions, and effects. An iDVD tab lets you quickly send your iMovie project to iDVD—much easier than using the Export command in iMovie 2. Other new features include built-in support for creating panning and zooming effects on still photos (an effect Apple named after *Civil War* documentarian Ken Burns); a collection of sound effects created by Oscar-winning sound editor Gary Rydstrom; and support for DVD chapter marks, which let you quickly jump to scenes within long movies.

iPhoto 2 The major new feature in Apple's photo-library software lets you share your photos with the other iLife applications. Other new features include one-click photo enhancement, a Retouch tool that can remove blemishes from your images, and AppleScript support. If your hard drive is getting bogged down with massive amounts of photos, you can use iPhoto to export part of your photo library to a CD or DVD.

iDVD 3 Apple's DVD-burning software gets a solid set of new features, including chapters within movies and animated themes with "drop zones" where you can integrate your own still photos or video clips within the Apple-supplied themes. Apple is selling iDVD for the first time to the general public, but it still works only with internal SuperDrives; FireWire-based external DVD burners are still not supported.—JASON SNELL

KEYNOTE DID THE JOB FOR JOBS; NOW IT'S READY FOR OTHER MAC USERS

It's All in the Presentation

No matter what you think of Keynote, Apple's new presentation software, there's one thing that no one will dispute—the application was tested by a pretty demanding user.

As Apple developed Keynote, CEO Steve Jobs put the application to the test, using it to develop all of his 2002 keynote addresses. To Apple, this is ample proof that Keynote is powerful enough to be used for the most-important presentations.

Looks matter in Keynote. The program comes with a library of 100 images you can use in your presentation. Apple also designed 12 presentation themes—similar to menu themes in iDVD—complete with coordinated backgrounds, fonts, colors, bullets, tables, and charts. You can modify the supplied themes or

create one of your own. Similarly, Keynote ships with eight chart types for creating graphs and tables. Dynamic alignment guides and rulers let you place every element precisely. Mac OS X 10.2's graphics technologies allow for professional-quality transitions between slides, as well as real-time graphics resizing.

Keynote's slide navigator gives you a thumbnail view of all your slides so you can organize your presentation, and an Inspector panel lets you control text, graphics, tables, and transitions. You can import QuickTime movies and Adobe Acrobat PDF files into the presentation app and export Keynote content into those two programs. Keynote also opens Microsoft PowerPoint documents and lets you export files into PowerPoint.



Thematic Unity Parchment is one of Keynote's 12 themes.

But Apple's concern about PowerPoint goes beyond compatibility—as the preeminent presentation program, it poses the biggest obstacle to Keynote's success. Still, an Apple-built app available for \$99—compared with \$399 for the stand-alone version of PowerPoint X—may convince Mac users to try out a program that's good enough for Steve Jobs.—PHILIP MICHAELS

Fast Times for FireWire

The news is easy to overlook amid the rush of product releases from Apple, but a single port on the side of the new 17-inch PowerBook will have major ramifications for all Mac users. It's the new FireWire 800 port, the second generation of the high-speed connection technology first added to the Mac in 1999 and standard on all models since 2000.

Also known by the technical name 1394b, FireWire 800 offers twice the maximum data speed of the original FireWire: 800 Mbps. With a theoretical future maximum speed of a staggering 3,200 Mbps, the technology can also be carried over lengths as great as 100 meters when fiber-optic cabling is used.

Just like the original FireWire (now called FireWire 400 by Apple), the new FireWire 800 is a plug-and-play technology that can connect as many as 63 computers and peripherals on a single bus.

The 17-inch PowerBook's FireWire 800 port doesn't bear the familiar asymmetrical shape of FireWire 400; however, the port is backward-compatible with FireWire 400 hardware through the use of an adapter cable. FireWire 400 devices won't benefit from FireWire 800's extra speed, though.

Apple may have felt threatened by the emerging USB 2.0 standard, which offered top speeds that eclipsed those of FireWire 400. With the new FireWire 800, Apple's technology has roared back into the lead in the race for faster peripheral speeds. —JASON SNELL

Along with a 1GHz G4 processor, the 17-inch PowerBook includes 512MB of memory, a 60GB hard drive, and an Nvidia GeForce4 440 Go graphics processor with AGP 4x support and 64MB of DDR video memory. The \$3,299 machine, which should reach stores in February, also ships with a SuperDrive capable of burning CDs and DVDs. But it's different than the one added to the PowerBook line last year—this one writes DVDs at 2x instead of 1x.

iBook Inspired

Both the 17-inch and the 12-inch PowerBooks incorporate several features from Apple's iBook design. Start with the hinge for the display—as with the iBook, when you open a new PowerBook, the display goes back and down to save space. Apple has also removed the ports from behind a flip-down door at the rear of the machine. Ports now run along the side of the laptop—on the 17-inch PowerBook, you'll find ports on both sides.

The left side of the 17-inch PowerBook features a security slot, jacks for the power adapter and built-in modem, a USB port, a PC Card slot, and jacks for audio input and

headphones. On the machine's right side, you'll find video-out ports (both S-Video and DVI, with adapters available for VGA and ADC support), a 10/100/1000BaseT Ethernet port, a second USB port, and two ports for FireWire devices. One of the FireWire ports is of the new FireWire 800 variety (see "Fast Times for FireWire").

Apple also drew on the iBook for inspiration in solving an ongoing headache for PowerBook users—reliable wireless connectivity. AirPort antennas, which are on the side of earlier PowerBooks, have been moved back into the display to improve reception. Both new PowerBooks add support for AirPort Extreme, Apple's name for the speedier, 802.11g wireless standard. (For more on 802.11g, see "The Way to Wireless," elsewhere in this issue.) The 17-inch PowerBook comes with an AirPort Extreme card preinstalled.

Big Features, Little Package

Though it sports the same durable aluminum-alloy casing as the 17-inch model, the 12-inch PowerBook shares more design similarities with the iBook, due to its small shape. The PowerBook is actually slightly smaller and lighter—1.2 by 10.9 by 8.6 inches and 4.6 pounds,

compared with the iBook's 1.3 by 11.2 by 9.1 inches and 4.9 pounds.

Its stripped-down size (and its accompanying \$1,799 price, the lowest in the PowerBook line) means that the 12-inch PowerBook doesn't have all the features the larger models do. The 12-inch model's G4 processor runs at 867MHz—the base processor speed of the slowest Titanium PowerBook, but faster than the 800MHz G3 chip in the fastest iBook. An Nvidia GeForce4 420 Go with AGP 4x support and 32MB of memory actually provides more graphics processing power than you'll find in the Titanium models. Although a slot-loading DVD-ROM/CD-RW optical drive is standard issue for the 12-inch PowerBook, you can pay an extra \$200 to get a SuperDrive instead (one that burns DVDs at 1x speeds, like the 15-inch PowerBook).

There's no Level 3 cache in the 12-inch PowerBook, though the machine sports 256K of backside Level 2 cache. The 12-inch model lacks the digital-video-out support that all other PowerBooks offer—it's got only the iBook's Mini VGA port, rather than a DVI port. But unlike the iBook, the 12-inch PowerBook can drive a nonmirrored external monitor via that VGA port, to resolutions as high as 1,600 by 1,200 pixels. And while the keyboard in the 12-inch version doesn't have the same unearthly glow in low light as the 17-inch PowerBook, both new PowerBooks feature a keyboard that feels a lot less spongy, mostly because it doesn't flip up for installation of RAM or an AirPort card. Instead, you install those add-ons from the bottom of the laptop.

The Last Word

The two new additions to the PowerBook line act as bookends to the updated 15-inch models from late last year. Apple has cut the price of its 15-inch 1GHz PowerBook by \$200, to \$2,799. The price of the 15-inch 867MHz PowerBook remains \$2,299.

Apple's four PowerBook and three iBook offerings meet a variety of user needs. This is a smart move by Apple: if the number of Mac users who want laptops keeps growing, the number of options must keep pace. And now, from the 17-inch titan to the 12-inch lightweight, Apple can please laptop users in seven different ways. —PHILIP MICHAELS

Bookmobile

MODEL	PRICE	PROCESSOR	MEMORY	HARD DRIVE	L3 CACHE	OPTICAL DRIVE	GRAPHICS PROCESSOR
PowerBook (12-inch)	\$1,799	867MHz G4	256MB DDR SDRAM	40GB	none	Combo drive	Nvidia GeForce4 420 Go
PowerBook (15-inch)	\$2,299	867MHz G4	256MB SDRAM	40GB	1MB	Combo drive	ATI Mobility Radeon 9000
PowerBook (15-inch)	\$2,799	1GHz G4	512MB SDRAM	60GB	1MB	SuperDrive	ATI Mobility Radeon 9000
PowerBook (17-inch)	\$3,299	1GHz G4	512MB DDR SDRAM	60GB	1MB	SuperDrive	Nvidia GeForce4 440 Go

GAME
BEAT

Software

Conquest of Elysium II, from Illwinter Game Design (www.illwinter.com): The fantasy strategy game for OS X supports as many as eight players, who take roles as warlords and wizards in a struggle against one another and various fantastic monsters (\$17).

Lux 1.2, from Sillysoft (www.sillysoft.net): Inspired by Risk, this game of world domination offers millions of different world-map combinations for varied game play with as many as ten computer-generated players (\$10).

Spaceward Ho 5, from Delta Tao Software (800/827-9316, www.deltatao.com): This major update to the Mac-only strategy game runs natively in OS X. It also features free Internet-based play on Delta Tao's own spacewardho.net server, a new interface, and several new battle options (\$40; upgrade from previous versions, \$30).

Super Collapse, from GameHouse (www.gamehouse.com): Tetris and Bejeweled collide in this arcade-style puzzle game (\$20).

Tony Hawk's Pro Skater 3, from Aspyr Media (888/212-7797, www.aspyr.com): The Mac port of the PC game includes online and multiplayer modes, new levels, new tricks, and an enhanced Create-A-Skater feature (\$40). Also from Aspyr, **NASCAR Racing 2002 Season** is a stock-car-racing game featuring 2002 NASCAR drivers, cars, sponsors, and tracks. The game supports races featuring as many as 43 networked players (\$40).—COMPILED BY JASON SNELL

EDUCATION
BEAT

Software

Data Analysis

Neural Networks, from Wolfram Research (800/965-3726, www.wolfram.com): This program uses the computational prowess of Wolfram's Mathematica to let users test and explore neural-network models for use in engineering, science, and finance. It requires Mathematica 4 and runs in OS 8.1 and later, including OS X (\$895).

Reference

World Book 2003 Mac OS X—Jaguar Edition, from World Book (800/967-5325, www.worldbook.com): The updated electronic encyclopedia supports Rendezvous, Apple's networking technology. It also has new media elements and an enhanced Notepad. The latest version requires Mac OS X 10.2 (\$68; upgrade, \$40).—COMPILED BY PHILIP MICHAELS

NEW WEB BROWSER HAS OPEN-SOURCE ROOTS—AND COMES FROM CUPERTINO

Exploring Apple's Safari

As Web browsers Chimera, Opera, and OmniWeb threaten to seriously challenge Internet Explorer's dominance (see "Battle of the Browsers," December 2002), a new player is poised to become the de facto standard for Mac OS X Web browsing—and it's made by Apple.

Apple Safari, introduced as a beta in January, has a fairly spartan toolbar that features four buttons (there are also three optional buttons you can add), a Web-address field, and a search bar that lets you perform Google searches without loading the Google home page. Safari's unique orange SnapBack button, which appears in both the Google and URL windows, takes you back to the original search-results page, so you don't have to repeatedly click on the Back button.

Like most other browsers, Safari features a row of bookmarks below its toolbar. At the far left of this Bookmark bar is an icon that, when clicked on, displays a bookmark-organization interface, which you use to sort, edit, and delete bookmarks.

Even though it was designed by Apple, Safari isn't an entirely homegrown product. Rather, it's based in part on an open-source browser—but not Mozilla, which



In Search Of Safari's Google search bar in the upper right corner of the toolbar lets you easily scour the Web.

Netscape Navigator and Chimera are based on. Instead, Apple based Safari on the Linux browser Konqueror (www.konqueror.org). Konqueror's rendering engine, KHTML, will soon be available as an OS X Framework, allowing other Mac developers to integrate Safari's HTML-rendering capabilities into their programs.

While an Apple application should mean stiffer competition for other browsers, Safari doesn't offer some features that the others do, such as tabbed browsing and integrated Keychain support for Web forms. But for casual Web surfing, many OS X users may soon embark on an Apple-sponsored Safari.—JASON SNELL

APPLE PARES DOWN PRO VERSION, FOR MORE-AFFORDABLE VIDEO-EDITING APP

Final Cut for the Rest of Us



For digital-video enthusiasts who want a more powerful editing program than iMovie but something less expensive than the \$999 Final Cut Pro, there's been a serious gap in Apple's offerings. To fill it, Apple rolled out Final Cut Express. The \$299 program offers the same user interface and some of the same features as its pricier parent app—most notably, titling, compositing, and effects capabilities.

Still, as you'd expect from a program that costs a third of what you'd pay for the original, Express doesn't have some of Final Cut Pro's features. Express—like Adobe Premiere and Avid XpressDV—works only with DV-format (MiniDV and DVCAM) video, while Final Cut Pro can work with SD and HD video in addition to DV. High-end features—such as EDLs, 24-frame editing, and interaction with Apple's Cinema Tools—don't ship with Final Cut Express.

You'll find color correction tools in Express, but only two-way correction and not secondary color picking. Color correction in Express doesn't happen in real time, though. Express does have many of the real-time effects and transitions of Final Cut Pro. Unlike Final Cut Pro, which runs in OS 9 and X, Express requires OS X 10.2.—JONATHAN SEFF



CREATIVE BEAT

Software

Design

Mac FlipAlbum 3, from E-Book Systems (866/532-8080, www.flipalbum.com): The Mac version of the Windows application lets users organize and display photos in a digital photo album complete with turning pages and music. It's expected to ship in February (\$40).

Illustration

Eazy Draw 1.0, from Eazy Draw (608/635-7972, www.eazydraw.com): The vector-based illustration software features support for layers, Bézier curves, advanced text controls, and gradients. The program saves to many file formats, including TIFF, JPEG, and PDF. Viewing vector output requires a free reader (\$95).

SketchUp 2.2, from @Last Software (303/245-0086, www.sketchup.com): This upgrade to the 3-D-modeling software includes a new Texture Palettes Picker for managing and creating textures, drag-and-drop support for raster images, the ability to apply colors by layers, and new export options including the RIB file format (\$495; upgrade from version 2.1, free).

Plug-In

Mask Pro 3, from Extensis (800/796-9798, www.extensis.com): This upgraded Photoshop plug-in for masking difficult objects—including those with hair and semitransparency—has been completely rewritten. The new version, which runs on OS X, includes a Color Decontamination tool for better edge transparency, new tools for defining which areas you want to keep or remove, enhanced touch-up control, and a new Options palette. It will ship in February (\$199; upgrade, \$100).

PDF

StampInStone, from Stone Design (505/345-4800, www.stone.com): The PDF-watermarking program creates a watermark, or stamp, that consists of words or an image. You can control the text's size, font, and color, and include dates and times that update automatically. You can place the stamp on top of or underneath the original PDF's content. StampInStone can also watermark a batch of PDF files (\$49).—COMPILED BY KELLY LUNSFORD AND TERRI STONE



HARDWARE BEAT

Displays

Two monitors from LaCie (503/844-4500, www.lacie.com): The **photon20vision** (\$1,500 to \$2,000, final pricing yet to be determined) is a 20-inch LCD monitor with a native resolution of 1,600 by 1,200 pixels. It supports VGA, DVI, and ADC connections. The monitor, which should ship in February, is VESA 100-compliant, so it can

be removed from its base and attached to the included desk clamp and extendable arm, to free up desk space. The **electron22blue IV** (\$899) is a 22-inch CRT monitor with a naturally flat aperture-grille CRT and a maximum resolution of 2,048 by 1,536 pixels.

Printers

Three monochrome laser printers from Brother (800/284-4357, www.brother.com): The **HL-5040** (\$299), **HL-5050** (\$349), and **HL-5070N** (\$499) all print as many as 17 pages per minute at a maximum resolution of 2,400 by 600 dpi. The HL-5040 includes 8MB of RAM. The HL-5050 and HL-5070N offer 16MB of RAM. The HL-5070N also offers Ethernet networking and Rendezvous support.

Two multifunction devices from Hewlett-Packard (800/527-3753, www.hp.com): The **OfficeJet 5110** (\$199) and **OfficeJet 6110** (\$299) offer printing, scanning, copying, and faxing. The 5110 prints as many as 12 black-and-white pages or 10 color pages per minute and includes a 20-page document feeder. The 6110 can print as many as 19 black-and-white pages or 15 color pages per minute; it also includes a 35-page document feeder, and an optional six-color ink cartridge is available.

A color laser printer from Minolta QMS (800/523-2696, www.minolta-qms.com): The **magicolor 2350 EN** (\$1,099) prints as many as 4 color or 18 monochrome pages per minute, offers a maximum resolution of 9,600 by 600 dpi, and comes with 128MB of RAM, Ethernet, and PostScript 3 support.—COMPILED BY JAMES GALBRAITH AND KELLY LUNSFORD



MULTIMEDIA BEAT

Hardware

Audio

A 4.1-channel multimedia speaker system from Harman Multimedia (877/266-6202, www.harman-multimedia.com): The **JBL Invader** (\$180) has a 32-watt subwoofer and four 12-watt speakers for gaming, music, and movies (when used with a multichannel audio card).

Two multichannel sound products from M-Audio (626/445-2842, www.m-audio.com): The **Revolution 7.1** (\$100) PCI card provides as many as eight channels of 24-bit, 192kHz audio while the **Sonica Theater** (\$100) offers eight channels of 24-bit, 96kHz audio via USB.

A four-track recorder and MIDI arranger with sound module from Tascam (323/278-8584, www.tascam.com): The **PocketStudio 5** (\$499) can record four tracks of audio on CompactFlash media. It connects via USB to Macs running OS X 10.1 and higher.

Software

Audio

Piano & Keyboard Method, from eMedia Music (206/329-5657, www.emediamusic.com): This piano instruction CD uses variable-speed MIDI tracks for easier learning and should ship before the end of March (\$60).—COMPILED BY JONATHAN SEFF

MACWORLD CONFERENCE & EXPO: BEST OF SHOW

During each Macworld Conference & Expo trade show, the editors of *Macworld* and MacCentral.com evaluate the new hardware and software products that debut at the event, selecting the most exciting ones to receive Best of Show honors. These awards are based on noteworthiness and interest at the show, so final versions of some winners have not been released. Here are our picks from January's event in San Francisco:

- ★ **4D** (408/557-4649, www.4d.com): 4th Dimension 2003
- ★ **Apple** (800/692-7753, www.apple.com): 12-inch and 17-inch PowerBook G4s, AirPort Extreme
- ★ **Digidesign** (800/333-2137, www.protools.com): Pro Tools 6.0 for Mac OS X
- ★ **Dr. Bott** (877/611-2688, www.drbott.com): ExtendAir
- ★ **Hewlett-Packard** (800/527-3753, www.hp.com): 6127 Printer
- ★ **LaCie** (503/844-4500, www.lacie.com): Big Disk and Data Bank
- ★ **M-Audio** (626/445-2842, www.m-audio.com): Revolution 7.1
- ★ **MacSoft** (763/249-7600, www.wizworks.com/macsoft): Unreal Tournament 2003
- ★ **MasterWriter** (866/848-8484, www.masterwriter.com): MasterWriter 1.0
- ★ **Pixion** (925/467-5300, www.pixion.com): PictureTalk 4.0
- ★ **Sorenson** (801/287-9400, www.sorenson.com): Squeeze 3 Compression Suite



STORAGE BEAT

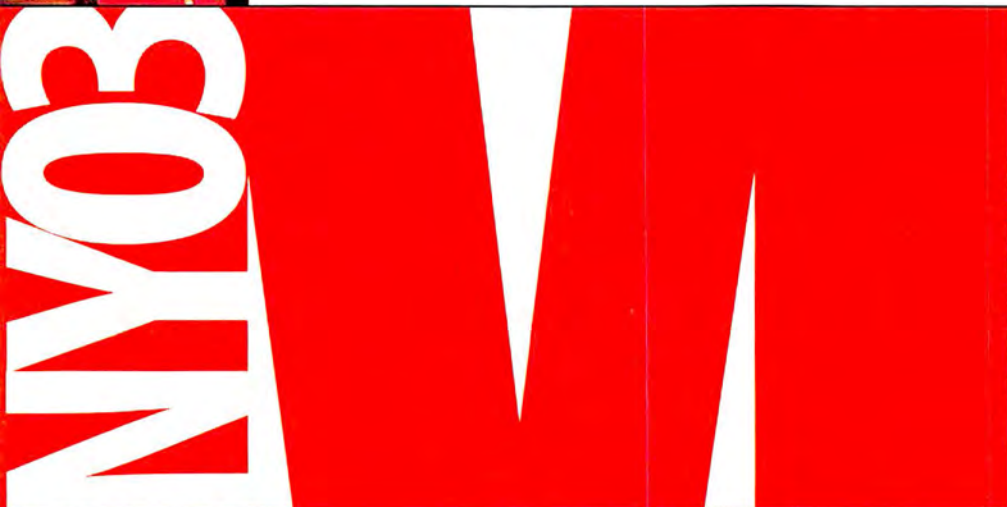
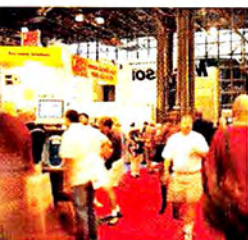
Hardware

Optical Drives

Optical-drive upgrades from MCE Technologies (949/458-0800, www.mctech.com): The **MCE SuperDrive Upgrade** (\$449) is a user-installed internal DVD-RW drive for PowerBook G4s that can burn DVDs at 2x, DVD-RWs at 1x, CD-Rs at 16x, and CD-RWs at 8x. It can read CDs at 24x. The **iMac CD-RW/DVD Combo Drive** (\$349) will allow owners of slot-loading iMacs to upgrade their internal CD drives to read DVDs and burn CDs. The **MCE Xcaret Pro** (\$349) lets owners of Lombard and Pismo PowerBook G3s install a Combo drive into their expansion bays. Both Combo-drive upgrades will burn CDs and CD-RWs at 8x. Each can read CDs at 24x and DVDs at 8x.—COMPILED BY JAMES GALBRAITH

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PUBLISHING PRO

As president of Seybold Seminars and Publications, Gene Gable had the job of introducing keynote speakers such as Apple's Steve Jobs and Adobe's John Warnock. But Gable is more than just a master of ceremonies—he's a knowledgeable observer of the publishing industry. "We are at [a] significant intersection as an industry," Gable, who recently stepped down from his Seybold post, says, "and everyone is going to have to adapt and change once more." —ERIC J. ADAMS



AT A GLANCE

GENE GABLE: President, Gene Gable Industries

MAC: 500MHz Power Mac G4

SOFTWARE: QuarkXPress, Adobe InDesign, Strider TypeStyler

What are your thoughts on Adobe, Apple, Macromedia, Microsoft, and Quark?

All of the companies that were once satisfied with being primarily a graphics company are trying to break out of that image and expand more into either consumer or corporate products. Apple certainly is; Adobe is, big time; Macromedia is. I suppose Quark is one of the few companies that aren't talking about new markets. Of course, whenever a company moves into new territory, it becomes vulnerable, and since everyone is looking for growth, they run up against each other even more. If you think of it, Apple is potentially one of Adobe's biggest competitors. Final Cut Pro has made a huge dent in the sales of Premiere, and programs like iPhoto may seem innocent enough, but with a few more features, it's a free version of Photoshop. So Adobe has to play it very smart and not be too greedy—so far, I think they're doing a good job of positioning products like Acrobat as complements to existing IT structures, not as direct competitors to entrenched products. . . . Macromedia has done a terrific job with the new MX product line—it took some time to integrate with Allaire, but the results are great. It's clearly become the Web-production products company. . . . Quark is the wild card for the near term. It's become a very fragmented company. It's unusual for a company with such a dominant product to still be privately held, but you have to respect Quark for not wavering from its mission. Everyone talks about the impact InDesign is having, but in the trenches out there, QuarkXPress is still the product of choice, and I don't see that changing as long as it continues to work well and is supported by third-party integrators. I think the lack of OS X support is more emotional than real—not that many large publishing companies are rushing to adopt OS X. It may seem late to the Mac faithful, but Quark will be okay if it releases that product in the next six to eight months.

More Info:

www.creativepro.com/story/feature/18378.html

Find out what else Gene Gable had to say about the publishing industry at creativepro.com, where this interview originally appeared.

FORCE FEEDBACK ADDS SENSE OF TOUCH TO COMPUTING

Macs Get Ready to Rumble

Pretty soon, Mac gamers will be able to feel the rumble of an explosion, the bumps in a road, and the jarring impact of a collision. Force feedback—a favorite request of Mac game enthusiasts over the years—has come to the Mac, courtesy of Apple and Immersion (408/467-1900, www.immersion.com), the leading maker of force-feedback technology for the PC.

A staple of game controllers on video-game consoles, force feedback has gained popularity on PC gaming peripherals. By rumbling and shaking in time with explosions and impacts in your favorite games, game pads and joysticks engage your sense of touch, which otherwise stays largely dormant when you're in front of the computer.

Apple has announced it is backing Immersion's TouchSense technology, which will allow Mac OS X software developers and peripheral makers to add support for force-feedback controllers to their products. If you have a USB-equipped Mac with OS X 10.2.3 or later, you already have what you need to enjoy force-feedback-compatible games. Force-feedback-equipped joysticks, game pads, steering wheels, and mice from Logitech, Thrustmaster, Gravis, and others will work with Mac games that incorporate Immersion's technology.

The catch is that the list of force-feedback-compatible Mac games is short—at least for now. At the head of the list are F1 Championship Season 2000, from Feral Interactive (www.feral.co.uk), and two games from Aspyr Media (888/212-7797, www.aspyr.com), Tony Hawk's Pro Skater 3 and NASCAR Racing 2002 Season. Immersion promises this list will grow as popular PC games continue making their way to the Mac. Game developers who specialize in porting PC titles say it's pretty easy to make those games support force feedback on the Mac, too.

While games may be the first aspect of Mac computing to benefit from force feedback, the technology has other applications. Immersion claims that force feedback can even make your desktop navigation more precise and less reliant on vision because you "feel" on-screen elements such as menus, windows, hyperlinks, and buttons—that is, if you're not still shaking from the stock car race collision. —PETER COHEN



Get Your Motor Running NASCAR Racing 2002 Season, from Aspyr Media, is one of the first Mac games to feature force-feedback compatibility.

PRODUCTIVITY
BEAT

Software

Business Management

eArtist 2.0, from Artscope.net (www.artscope.net): The business-management tool aims to help artists control mailing lists and contacts, track exhibition schedules, document exhibition histories and artwork, and provide invoicing for sales. The update, which runs on OS 8.6 and later, including OS X, adds the ability to import a number of image files from a folder all at once, among other new features (\$105; upgrade, \$25).

Database

4th Dimension 2003, from 4D (408/557-4600, www.4d.com): The latest version of the relational database-management system adds support for integrated Web services and application-integration capabilities that allow different applications to reuse one another's data and functionality. Other revisions include increased scalability, new printing and reporting features, and enhanced developer programming capabilities (Standard edition, \$349; upgrade pricing varies).

Data Management

NoteTaker 2003, from AquaMinds (www.aquaminds.com): The personal note and idea organizer lets users make lists and organize outlines. The OS X-native application incorporates the desktop features of OS X while supporting QuickTime and AppleScript. It also features embedded Web-page viewing, as well as document and file linking (\$70).

E-mail

IntelliMerge 3.0, from Intelli Innovations (919/468-0340, www.intellisw.com): The latest update to the e-mail-automation software, which runs on OS 9 and X, adds automatic bounce detection and flagging, an enhanced receipt browser, hyperlink insertion, and dynamic custom headers (single-user license, \$80; upgrade from version 2.X, \$30; upgrade from version 1.X, \$50).

Finance

Quicken Bill Pay, from Intuit (888/246-8848, www.intuit.com): The enhanced service works with Quicken for Mac 2002 and later to schedule and track payments, transfer money between accounts, and pay bills from as many as ten accounts (\$10 per month for as many as 20 payments).

Presentation

Storyboard Lite 1.0, from Zebra Development (323/874-6558, www.zebradevelopment.com): The new application helps filmmakers, ad agencies, and other creative professionals illustrate sequential images. Users can import hand-drawn storyboards into the program, which organizes and modifies them. The OS X-compatible software can also create 3-D storyboards and import screenplays for storyboarding (\$500).—COMPILED BY PHILIP MICHAELS

DEVELOPERS TURN TO OS X'S DOCK TO EXPAND SOFTWARE'S CAPABILITIES

Old Dock, New Tricks

The Dock in OS X's Aqua interface is like a pair of khaki pants—useful and versatile, if not exactly flashy. A combination of launchpad and storage silo, the Dock lacks sophisticated options found in tools such as Max-Menu or DragThing.

But as OS X versions of Mac software mature, more developers are taking advantage of the Dock, transforming it into a central powerhouse of options for launching or choosing parts of a program without switching into the application itself.

Virtual PC 6, from Connectix (650/571-5100, www.connectix.com), showcases the Dock's flexibility. Individual programs running within any Windows environment—Microsoft Money, say—appear in the Dock. Clicking on a Windows program in the Dock switches to the Virtual PC system and selects that Windows application within it. Another Dock addition re-creates a Start-menu icon, linked to the Windows system within Virtual PC. You can launch a program from within the Windows environment from that Start menu.

Other developers are also using the Dock to extend their applications' features throughout the OS. PGP Corporation's new PGP 8.0 encryption-software suite (866/747-5483, www.pgp.com) uses Dock menus to offer Clipboard and file encryption, verification, and decryption.



Dock-tered Virtual PC 6 adds a Windows Start menu to OS X's Dock.

CE Software's QuickKeys X 1.5 (800/523-7638, www.cesoft.com) places program-specific and systemwide actions in its Dock menu.

Shareware utilities are pushing the envelope, mostly by removing the need for a main program interface—the Dock becomes the program's home. URL Manager Pro (www.url-manager.com) can add browser-independent bookmarks to its Dock menu. MP3 Dock, from Kanex Group (www.softwarium.com), is an MP3 player that uses the Dock to select and control songs in much greater detail than iTunes' Dock options allow. SearchWare Solutions' Print Window (www.swssoft.com) restores the feature of its namesake from OS 9 and earlier, letting you print folder listings from the Finder.

Because the Dock is both flexible and easy to customize, the kind of passion Mac users once brought to choosing custom Finder folder icons and system extensions might finally find its outlet in tricking out the Dock.—GLENN FLEISHMANN

CYCLONE DEVICE COMBINES DUPLICATOR AND EXTERNAL BURNER

A Double-Feature Duplicator

Directors are always looking for versatility in their on-screen talent. Why shouldn't they expect the same from their off-screen equipment? Yet most DV pros are content to use a stand-alone DVD duplicator when it's time to reproduce their creations. For auteurs who demand greater flexibility, CyClone (www.cdyclone.com) offers its DVD One-2-One device—the first DVD duplicator to include both FireWire and USB 2.0 connections. The FireWire connectivity turns the duplicator into a handy external burner. It can clone a typical CD in 6 minutes and a full-length DVD in 40 minutes. The \$1,099 One-2-One writes DVD-Rs at 2x and DVD-RWs at 1x speeds. With the One-2-One, the only kind of dramatic range directors have to worry about is the kind shown by their actors.—ANTON LINECKER



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WHAT'S
HOTA Quick Look at
the World of Macs

1. The new 17-inch wide-screen PowerBook G4 includes a backlit keyboard that glows when the lights dim. *Steve Jobs explains: "How'd we do it? A lot of engineering savvy, a little know-how, and a dash of plutonium."*
2. Apple releases Keynote presentation software, which it designed for Steve Jobs's Macworld Expo keynotes. *Now, when you hold make-believe trade shows for your stuffed animals, your pretend keynotes will look much more professional.*
3. Apple teams with Burton Snowboard to create a \$499 snowboarding jacket equipped with iPod controls. *This will go perfectly with my \$600 G4 pants!*
4. iMovie 3 features new "Ken Burns" effect for panning and zooming on still photos. *Interestingly enough, this Ken Burns effect will also expand 5-minute home movies into 12-hour ordeals that are frequently interrupted by pledge breaks.*

Mac OS X Updates

powered by
versiontracker.com**ATI Radeon 7000 v208**
Firmware update for video card**Apple Script Editor 2.0**
AppleScript-editing tool**BIAS Peak 3.2**
Audio-editing, -processing, and -mastering program**Codec Calculator 2.5**
Calculator for digital video**CodeTek VirtualDesktop 2.1.1**
Virtual-desktop support for OS X**Dantz Retrospect 5.0 Driver Update 3.3**
Driver update for backup software**Epson Stylus C80 1.3aD**
Printer driver**Executive Sync 1.1.4**
File-synchronization and -backup utility**Freeway 3.5.6**
WYSIWYG HTML editor**Grammarian Pro 1.0.2**
Spelling and grammar checker**ICQ 3.2**
Bug fixes for instant-messaging client**Interarchy 6.0.1**
File-transfer and server- and network-information tool**KoalaCalc 3.1.1**
Advanced calculator**Labels X 1.1.1**
OS X hack adds file-labeling features**Lasso Professional 5.0.2**
Web-site-building tool**Live 2.0.1**
Audio-mixing application**Micromat Drive 10 1.1.3**
Improved optimization for disk-repair and -maintenance tool**MySQL 4.0.7**
SQL-database server software**PHP 4.3**
Web scripting language**QuickVoice X 1.6**
Voice-recording, e-mail, and stickies program**Shop with Sherlock 1.04**
Sherlock 3 shopping plug-in**SNES9X 1.3.9b**
Super Nintendo emulator**Synchronize Pro X 2.0**
Makes bootable system backups and syncs files**Tex-Edit Plus X 4.4.1b2**
Text editor**Thursby Dave X 4.0.2**
Mac-to-PC file- and print-sharing software**Unity Session X 3.0.6**
Audio-synth and -sampling environment**Virtual Desktops 1.1**
App to create and configure as many as five desktops**WeatherPop Advance 1.6.4**
New features for weather-monitoring utility**WhereDidAllMyMoneyGo 3.0.2**
Income- and expenses-tracking program

For these and other current updates, visit:

www.macworld.com/archive/updates/index.html
Macworld.com has the latest from VersionTracker.com.

ACME MADE iCOVERS PROTECT LCDS IN STYLE

Running for Cover

After you've spent \$3,499 on a 23-inch LCD monitor, a couple of specks of dust can ruin your entire outlook. A display cover can provide protection against dirt, smudges, scratches, sun discoloration, and other sorts of wear and tear. But for Mac users who place a premium on aesthetics, it doesn't make much sense to use a cover that's not as stylish as the machinery that needs to be shielded. For people who want their protective gear to be as eye-pleasing as it is effective, Acme Made (www.acmemade.com) offers the iCover. Available in gray sueded rubber or in a white or platinum quilted design, the iCover fits snugly over most Apple flat-panel LCD monitors. "These are designed for the machine itself, instead of just being drapes," says Acme Made's Kirk Thornby. The iCovers for Apple's 22- and 23-inch Cinema Displays and 17-inch Studio Display have mesh openings where the monitors' rear heat vents are located. The iMac's iCover is designed to clasp onto the bottom of the halo that borders the machine's flat-panel display. Prices range from \$30 to \$45, depending on the model. A protective sleeve aimed at shielding PowerBook displays should be available by the time you read this. Acme Made also plans to release a line of carrying bags for Apple laptops. —PHILIP MICHAELS

INPUT-DEVICE
BEAT

Hardware

Controllers

An audio and video controller from Contour A/V Solutions (866/894-1127, www.countouravs.com): The **SpaceShuttle A/V** (\$50) is a five-button jog-and-shuttle controller based on Contour's ShuttlePro device. Each button can be assigned to frequently performed tasks; the SpaceShuttle A/V ships with preprogrammed audio, video, and multimedia settings.

Gaming Devices

An arcade-style joystick from XGaming (866/942-6464, www.xgaming.com): Designed to emulate coin-operated arcade games, the **X-Arcade Solo** (\$100) is a single-player joystick with ten programmable buttons. The device, small enough to fit in a lap, works with Macs, PCs, and game consoles. A two-joystick version (\$180) is also available.

Hubs

Two stackable distribution hubs from Gefen (800/545-6900, www.gefen.com): The **ex-tend-it ADC Splitter** (\$299) sends the same computer-graphics signal from a G4 Mac with an ADC port to two displays. It accommodates ADC and DVI flat-panel displays (with an ADC-to-DVI adapter) and includes a six-foot connector cable. The **ex-tend-it DVI Splitter** (\$249) sends the same DVI-graphics signal to two or more DVI-compatible displays.

An iMac-specific hub from XtremeMac (866/392-9800, www.xtrememac.com): The **UFO for iMac** (\$130) is a 1.5-inch-tall illuminated FireWire and USB pedestal hub that sits directly beneath the domed base of flat-panel iMacs. It features four USB and two FireWire ports in its front quadrants; they provide quick access to peripheral connections while reducing desktop clutter.

Remote Controls

A remote control from SmartDisk (941/436-2500, www.smartdisk.com): The **PowerPlay** (\$70) lets you wirelessly control presentations. It has an integrated laser pointer.

Software

Webcam

EvoCam 3.0, from Evological (www.evological.com): The Webcam application for OS 9 and OS X grabs live video from Webcam peripherals and posts it to the Web. The updated version supports multiple windows and cameras and sends e-mail notifications. Evological claims that EvoCam supports almost any QuickTime-compatible camera or video-input device (\$20).

USB WebCam Driver 1.0 for Mac OS X, from IOxperts (www.ioxperts.com): The driver gives Mac users access to USB video cameras either available only for the PC or not fully supported by OS X. IOxperts says its software supports more than 30 USB Webcams. The software requires OS X 10.1 or later (\$20). —COMPILED BY PHILIP MICHAELS


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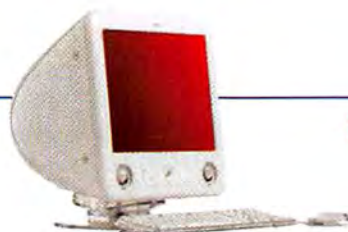
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CUBASE SX 1.0

OS X—Native Version of Venerable Music-Production Application Needs Minor Tune-Up

BY CHRISTOPHER BREEN

If you bemoan the absence of a Mac OS X-native version of QuarkXPress within earshot of a Mac musician, be prepared for a chorus of abuse. Such Mac users have waited nearly two years for the tools they primarily rely on—software-based digital-audio-production applications (once known as *sequencers*)—to appear in OS X-compatible form. With the release of OS X 10.2 and its underlying audio and MIDI components, modern-day professional music applications are finally making their way to OS X. First out of the gate was Emagic's Logic Platinum 5 (*Reviews*, January 2003), a highly capable (and rather complicated) application. Not long thereafter, Steinberg released Cubase SX—a complete rewrite of its flagship Cubase digital-audio-production application—which was compatible only with OS X. Though not as powerful as Logic (and, at times, not as stable), the version we tested, Cubase SX 1.051, boasts a host of desirable features, as well as an ease of use that Logic lacks.

New Groove

First among those desirable features is the program's ability to play back as many audio tracks as your Mac's processor can handle. If your Mac has what it takes to pump out 256 simultaneous bouzouki tracks, you can rock on.

Steinberg has taken a hint from Mark of the Unicorn (MOTU);

like MOTU's Digital Performer, Cubase now includes unlimited undo capabilities and an Edit History feature. Edit History allows you to undo a series of actions in one step, so you don't have to go back through each action.

Cubase SX includes a new time-stretching feature called Hitpoints, which is similar to

Cubase, you could record fader movements to automate your mix. You still can, and Cubase SX also lets you draw automation within each track (known as *vector automation*). To do so, just click on the + (plus sign) button within a track to reveal one of the automation subtracks. Select the parameter you want to automate—for example, volume—and you'll see a line that represents the unchanged parameter. Then you can click on the line to add points to it and drag each point to create an automation event. For example,

sizers such as Propellerhead's Reason 2.0 from within Cubase.

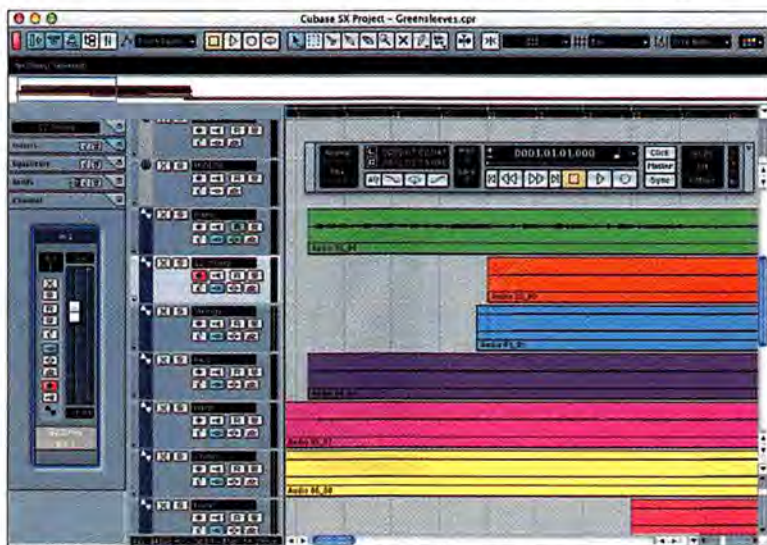
Easier Interface

Cubase is a cross-platform application that, in previous versions, reflected its PC roots in an interface that featured slightly garish graphics. Steinberg has toned down the color palette and redesigned the interface, so Cubase SX is easier on the eyes and easier to use.

Functions are grouped in a logical way. For example, when you select a track in the main Project window, most of the functions you'll need—Inserts, Equalizers, and Sends—are immediately available in the tabbed Inspector pane on the left side of the window. To edit your audio or MIDI, just click on the tab of the function you want to edit, make your changes (transpose a MIDI track, for example), and click on the tab again to hide the editing fields.

Another convenience is that MIDI and audio faders are now found in the same mixing console—no longer must you click between separate MIDI and audio consoles when mixing. And fades can be added graphically by clicking and dragging handles within audio tracks (though you must open a separate window to edit the curve of the fade).

Cubase SX makes MIDI and audio effects operate in similar fashion. Clicking on the Insert tab with either an audio or MIDI file selected provides access to audio and MIDI effects. For audio tracks, you can choose from among the more than 40 included VST effects plug-ins (including such standards as reverb and chorus, along with more-exotic effects



Making Tracks Many of Cubase SX's recording and editing tools are available in the Project window.

Propellerhead's ReCycle application. Hitpoints lets you automatically slice audio tidbits (a drum groove, for example) so that the program recognizes the major beats within the audio file—a snare drum that falls on beat 2, for example. Then you can change the tempo of the track, and the audio bit will also speed up or slow down to match that tempo. But the resulting groove sounds better when you increase—rather than decrease—the tempo.

Automation has also been improved. In past versions of

in a volume subtrack, you could add two points to the beginning of the chorus and drag the second point down to automatically decrease the volume. If you add another two points to the beginning of the next verse and drag the second point up, you can increase the volume.

Like Logic Platinum, Cubase SX supports surround-sound mixing. Unlike Logic, Cubase SX also supports Propellerhead's ReWire 2.0 standard, a technology that allows you to play external software synthe-

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CDW 434069

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- ▶ Memory: 512MB
- ▶ 60GB hard drive
- ▶ CD-RW/DVD-RW SuperDrive
- ▶ 56Kbps modem
- ▶ 10/100/1000 Ethernet
- ▶ 15.2" active-matrix display
- ▶ Mac OS X 10.2



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CDW 439468

Logitech MX700 Cordless Optical Mouse

- ▶ Powerful MX™ optical engine
- ▶ Cruise control scrolling system
- ▶ Quick switch program selector
- ▶ Convenient Internet navigation
- ▶ Rapid charge base station



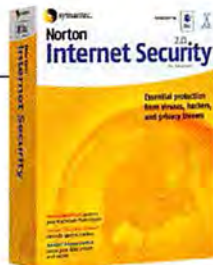
Logitech

\$77.46

CDW 421490

Norton Internet Security 2.0

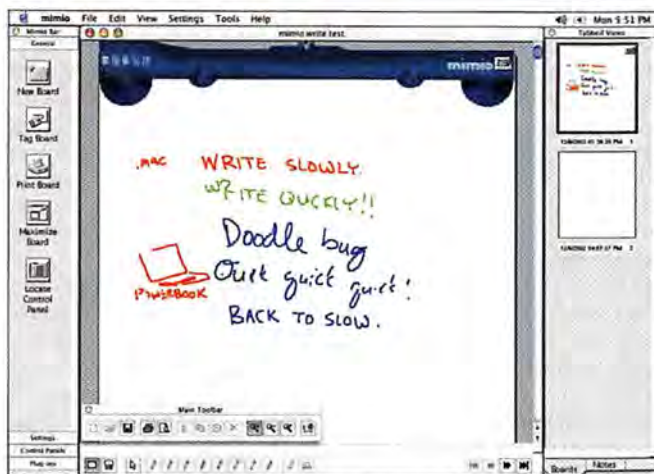
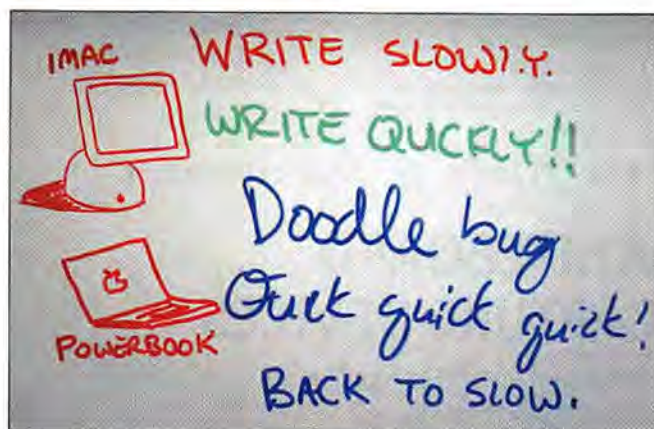
Norton™ Internet Security™ 2.0 for Macintosh® provides essential protection from viruses, hackers and privacy threats. This powerful suite includes three Symantec tools: Norton AntiVirus™—antivirus software for Macintosh systems; Norton Personal Firewall—keeps hackers out by blocking unauthorized Internet connections; and Norton Privacy Control—safeguards your personal data. Defend your Mac against online threats with Norton Internet Security 2.0.



symantec.

\$89.92

CDW 362073



Under Pressure The electronic dry-erase marker sleeves each device uses require a firm touch to capture all strokes accurately. Shown here are the original whiteboard (top) and its mimio interpretation (bottom).

the eBeam's built-in network-conferencing capability earns it higher marks than the mimio.

On Your Marks...

Naturally, our first concern was whether these devices would accurately translate to the Mac what we drew on the whiteboard. We found that, as with writing on carbon paper (if everyone hasn't forgotten about carbon paper by now), we had to apply firm pressure to both devices' markers to ensure accurate recording of strokes. In one example, we applied light pressure—closer to what we'd normally use on a whiteboard—to draw an image of an iMac, which the mimio didn't detect at all (see "Under Pressure"). Speed was also a factor; strokes dropped out when we deliberately wrote quickly (attempting to simulate a vigorous brainstorming session).

But the software in both packages includes virtual pens and erasers, making it easier for you to edit a project or even create new software-only whiteboards on the Mac without uncapping a single marker. The mimio offers a total of eight marker colors (you can buy additional sleeves separately), plus two eraser sizes. The eBeam sticks with four basic colors (red, green, blue, and black), but improves on the mimio's features with a text tool for adding typewritten notes on the project screen, as well as a useful highlighter tool (see "Mac Markup").

Virtual Ink claims the mimio's sensor can cover a maximum 4-by-8-foot area, while the eBeam System 3 can handle a 4-by-6-foot area. (Electronics for Imaging also sells the \$599 eBeam System 1, which can capture a 5-by-8 area, but we didn't

test that model.) Our whiteboard measured roughly 2 by 3 feet, so we couldn't test the limits of the devices' sensor range.

Out to the Playground

Wish you could go back to the beginning of your presentation, before you accidentally erased all that important information? As you work, each device's software records every move, so you can replay an entire session at any point. Aside from a basic play-pause button, mimio's software includes a horizontal slider for tracking to the point you're looking for. eBeam's offers a more useful choice of four replay speeds (half, normal, double, and quadruple) along with its play-pause button.

As you might expect, you can choose from a variety of export formats for sharing whiteboard data. You can save the replays from both programs as QuickTime or DV-formatted movie files (the latter are suitable for adding to digital-video productions); the mimio even includes a smart option for creating a complete iMovie project openable directly in iMovie. In terms of still images, both programs can create JPEG, PICT, and PostScript or EPS files; the mimio can also save files as SVG (Scalable Vector Graphics) format, and the eBeam can handle PDF and TIFF images. Both can create HTML files for viewing each whiteboard page on the Web.

Study Abroad Program

If everyone is in the same room while you're working away on the whiteboard, the meeting files you create provide a good backup of the session, for archiving or later viewing. But what if your coworkers are in another building, another city, or another country? Only the eBeam offers the capability on the Mac to share your ideas remotely in images without having to set up a complicated videoconferencing system. The mimio requires a Windows-only plug-in, purchased separately, or a Windows-only paid monthly service.

Sharing an eBeam meeting is as easy as naming the session,

specifying an optional password, and clicking on OK. An eBeam company server hosts meetings, or you can specify another server; however, neither the eBeam's skimpy instructions nor its online help offer any more information on what's required to set up your own server. People attending your meeting need only download and install the free eBeam software to join in. (To initiate a meeting, you must have the eBeam hardware attached to your Mac.) You can determine whether to allow attendees to mark up the workspace for more-collaborative sessions or whether to limit them to simply watching the presentation.

Macworld's Buying Advice

Both the mimio and the eBeam System 3 provide the invaluable function of saving whiteboard scribbles to disk, but the eBeam's built-in remote-conferencing capability and better markup tools make it our top pick. Although neither device is particularly inexpensive, they're both much smaller and more portable than dedicated electronic whiteboards that sell for a few hundred dollars less. Now we're just waiting for a device that will erase the ink on the whiteboard when we shut down our Macs. □

EBEAM SYSTEM 3

RATING: ★★★

PROS: Good capture; built-in conferencing capability; good editing tools; compact design.

CONS: Marker sleeves need more sensitivity; poor documentation.

PRICE: \$750

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Electronics for Imaging, 650/357-3500, www.e-beam.com

MIMIO

RATING: ★★★

PROS: Good capture; novel iMovie export feature.

CONS: No conferencing capability; marker sleeves need more sensitivity.

PRICE: \$649

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Virtual Ink, 877/696-4646, www.mimio.com

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Cubase SX 1.051

31 Electronic whiteboard systems
eBeam System 3, mimio

33 3-D-animation software
Universe 5.0

35 Color laser printer
Hewlett-Packard Color LaserJet 2500L

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Makto Personal Storage 5000

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Canon i850, Canon S530D, Epson Stylus C82, Hewlett-Packard DeskJet 5550, Lexmark Z65 Color Jetprinter

OUTSTANDING: ★★★★★ VERY GOOD: ★★★★ GOOD: ★★★ FLAWED: ★★ UNACCEPTABLE: ★

such as Quadrafuzz and Grun-gelizer) and apply as many as eight effects per track. (Note that some of these plug-ins are carryovers from the older Cubase 5.1, and Steinberg has not extensively tested them with Cubase SX. In our tests, they worked as expected.) You can apply as many as four effects to MIDI tracks, choosing from among such Steinberg-created MIDI processing effects as Arpache5 (an arpeggiator) and MIDI Echo. There are 14 MIDI effects in all.

Link with the Past

Our mention of VST should prick up the ears of people who follow the state of audio in OS X (see "OS X in Tune," January 2003). Unlike Logic, Cubase SX doesn't currently support Apple's Audio Units effects standard, though Steinberg has expressed an interest in supporting Audio Units at a later date. (Logic supports Audio Units only). This gives Cubase SX users access to a greater variety of effects and instruments (software synthesizers), because Audio Units-compatible effects and instruments are currently few and far between.

Cubase SX includes four such instruments: AI, a two-oscillator virtual analog synthesizer from Waldorf; VB-1, a virtual bass synthesizer; Neon, an analog synthesizer found in earlier versions of Cubase; and LM7, a drum sample player. Excluding Neon, which is a little on the thin side, the included instruments produce rich sounds and are versatile.

Sour Notes

Considering the program's power and its more than 700 electronic pages of included documentation, making music with Cubase SX is remarkably easy. But there are bugs to squash. On several occa-

sions, audio tracks stuttered as we played back (on our 933MHz Power Mac G4) a project that contained fewer than a dozen of them. This aberrant behavior was usually triggered by our switching applications or mucking about in the Dock during playback. In most of these cases, we had to close and reopen the project to make it play properly.

Like Logic Platinum 5, Cubase SX is copy-protected, requiring a USB dongle to operate. You can use the program on any compatible Mac the dongle is plugged into, but you may have to pay a substantial price to replace the dongle should you lose it (although Steinberg says it will attempt to work out an amicable solution on a case-by-case basis).

Macworld's Buying Advice

Cubase SX is a substantial bug fix away from being a solid contender for your digital-audio-production dollars. Logic Platinum is the deeper program, but Cubase SX packs plenty of punch and is easy to use. When a stabler version ships, people with earlier Cubase iterations should upgrade in a hurry. If you're new to music on the Mac, you may want to wait for the OS X-native version of MOTU's Digital Performer before you make a decision. □

RATING: ★★★★★

PROS: Track number limited only by processor power; improved automation; ReWire support; improved interface is more intuitive.

CONS: Occasionally unstable; no support for Audio Units; copy-protected.

PRICE: \$799; upgrade from Cubase Audio or VST/32, \$149; upgrade from Cubase Score, \$199; upgrade from Cubase Standard, \$299

OS COMPATIBILITY: Mac OS X

COMPANY: Steinberg, 818/678-5100, www.us.steinberg.net

WHITEBOARD CAPTURE DEVICES

eBeam and mimio Let You Digitize Your Dry-Erase Brainstorming Sessions

BY JEFF CARLSON

It's amazing that whiteboards are sold without one crucial feature: a preprinted area that reads, "Do not erase!" Most whiteboards we see include this determined scrawl somewhere, or else the ghostly residue of those words. If you simply can't think without a dry-erase marker in hand, then it's time to look into getting a whiteboard capture device, such as Electronics for Imaging's eBeam System 3 or Virtual Ink's mimio. You can then save your ideas and drawings in a more-lasting digital format on your Mac with these systems' included software, now available for both Mac OS 9 and OS X.

Each product includes a capture device that attaches to any

ordinary whiteboard, and regular dry-erase markers, which fit into battery-powered sleeves that relay the markers' positions on the board by way of ultrasonic signals. The capture devices connect to a Mac via USB, and transfer the marks made on the whiteboard to the included software. You can also use both products in presentation mode, which enables you to control your Mac from the whiteboard with a projected display. We tested both systems in OS X (the eBeam System 3 with software version 2.1 and the mimio with software version 1.6) and found that while each performed well in terms of capturing whiteboard strokes and saving them to the Mac, continues



Mac Markup Each device's software includes markup tools for working directly on the Mac. eBeam (shown here) also offers a virtual highlighter pen and a text tool.

THIS MONTH IN INK-JET PRINTERS



Model	Canon i850	Canon S530D	Epson Stylus C82	Hewlett-Packard DeskJet 5550	Lexmark Z65 Color Jetprinter
Rating	★★★★	★★★★	★★★★	★★★★	★★★
Type	general-purpose ink-jet printer	general-purpose ink-jet printer	general-purpose ink-jet printer	general-purpose ink-jet printer	general-purpose ink-jet printer
Price	\$200	\$180	\$149	\$150	\$149
Inks	4 colors	4 colors	4 colors	4 colors	4 colors
Cartridges	4	4	4	2	2
Cost to Replace All Cartridges	\$50	\$50	\$66	\$55	\$65
Paper-Tray Capacity	150 sheets	100 sheets	150 sheets	100 sheets	100 sheets
Special Features	borderless printing (in OS 9 only)	media-card reader; optional LCD preview module available	pigment-based inks; Bluetooth print-adaptor and Ethernet print-server options available	six-color-cartridge (for color-photo printing), Ethernet, wireless-networking, and duplexing options available	Ethernet option available
Image Quality					
Text	good	very good	very good	good	excellent
Photo	excellent	very good	good	very good	fair
Graphics	very good	good	very good	good	good
Print speed ^a					
Word Document	2:09	1:34	1:38	2:58	4:11
Photo	7:39	2:54	7:13	5:18	6:33
PDF	5:43	5:51	4:45	7:04	6:14
Size (in inches) ^b	16.5 × 6.3 × 10.8	16.9 × 7.4 × 11.6	23.3 × 18.5 × 12.4	17.9 × 15.2 × 6.2	17.5 × 21.0 × 13.0
Weight (in pounds)	7.3	12.8	11.8	11.3	10.8
Pros	Photo quality close to six-color photo ink-jets; compact design; individual ink tanks; quiet operation.	Fast print speeds; built-in memory-card reader; strong image and text quality; individual ink tanks.	Individual ink tanks; very good text and graphics output; long-lasting, waterproof inks.	Good all-around output; six-color photo printing via optional cartridge.	Excellent text quality.
Cons	None significant.	Banding in darker areas on plain paper.	Photos printed on glossy papers don't look as good as photos printed with dye-based inks.	Two ink cartridges are less efficient than individual cartridges.	Two ink cartridges are less efficient than individual cartridges; mediocre photos.
Users It's Best For	People looking for a printer for everyday printing tasks and for photos.	Digital-camera owners who want computerless photo-printing capabilities in an affordable device for general printing needs.	People who want a speedy printer for text and graphics documents and the occasional photo.	People looking for an affordable, four-color device that can print very good photos and good text.	People who want primarily to print text documents in color or black-and-white.
Contact	800/652-2666, http://usa.canon.com	800/652-2666, http://usa.canon.com	800/463-7766, www.epson.com	800/752-0900, www.hp.com	800/539-6275, www.lexmark.com

^a All speed scores are in minutes:seconds. Best print speed results are in bold. ^b Width × height × depth.

We tested the printers using an 867MHz Power Mac G4 with OS X 10.2.1 installed and 256MB of RAM. A panel of experts examined the each printer's output from a variety of applications and rated it excellent, very good, good, fair, or poor. We recorded the time each printer took to print an 8-by-10-inch photo from Adobe Photoshop 7.01 at the printer's Best Quality setting. We also recorded the time each printer took to print a 10-page Microsoft Word X document at the printer's Normal setting. Our PDF file was a four-page document, which was printed in color at each printer's Normal setting. —MACWORLD LAB TESTING BY JAMES GALBRAITH

BY JAMES GALBRAITH

Ink-jet printers made specifically for photo printing are getting plenty of attention these days, but why buy such a spiffy machine to print Web pages or e-mail? In these cases, a general-purpose ink-jet printer will suffice, and some even sport advanced capabilities. This month, Macworld Lab put five of these printers to the test, and one rose quickly to the top.

Canon i850

The \$200 Canon i850 is the best all-around ink-jet we've ever seen. Although other printers in this group might print slightly crisper text or

cleaner graphics, the i850 was good at printing both types of documents, and it produces amazing photo prints, even with its limited four-ink palette. The i850 took more time than the other printers to produce an 8-by-10-inch photo, but it was well worth the wait. You won't get the continuous tones and smooth transitions that a six-color ink-jet produces, but the i850 comes close.

Canon S530D

The \$180 Canon S530D offers speedy prints of very good quality, but what sets it apart is the built-in media-card reader on its front. The reader allows

you to transfer the contents of a digital camera's media card to your Mac for editing, or print directly from the printer's front control panel without interacting with your computer. (For a review of photo ink-jets with this capability, see *Reviews*, February 2003.) The S530D's text was very clear. Its photo output, though a little dark, was also very good. We did see some banding in darker areas of photos and graphics when we printed on plain paper, but by using heavier—albeit more expensive—stock (matte photo paper in this case) we successfully eliminated this problem. In terms of print speed, the S530D won two of the three timed trials, with

UNIVERSE 5.0

Venerable 3-D-Animation Software Adds Match Moving, Multiprocessor Support to Its Galaxy of Features

BY SEAN WAGSTAFF

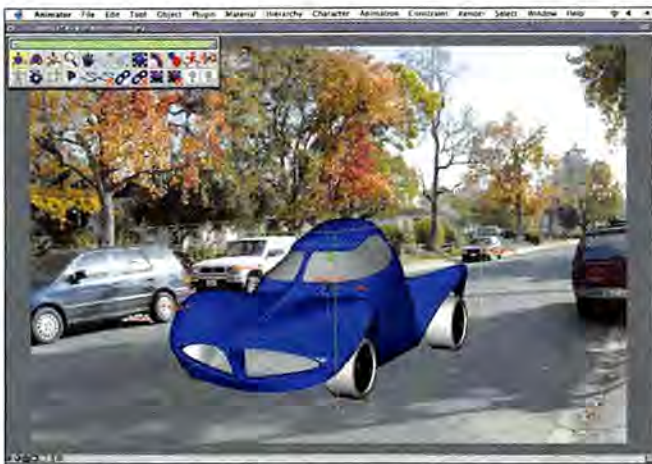
Electric Image's 3-D-animation software has been used to produce realistic 3-D animation and special effects for countless films, television shows, and commercials during the past decade, and it's renowned for its rendering quality and speed. With Universe 5.0, Electric Image continues its trend of producing upgrades that offer two or three major new features accompanied by a suite of subtle refinements. In this case, the new features include Match Move and Radiosity, while multiprocessor support is the most visible and by far the most important of the latest version's refinements.

Make Me a Match

Universe 5.0's Match Move feature makes it easy to create an animation with camera angles and movements that match original footage shot with a real camera. For example, you can animate a car you've made in 3-D so that it appears to drive down a street that was filmed with a video camera (see "All Synced Up").

Match Move allows you to easily import existing footage, calculate the camera's angle for every frame, and export this information as a standard animated camera into a Universe scene. In previous versions of the program, match moving required painstaking manipulation and careful note taking while shooting footage for animators to match their virtual cameras to real-world scenes. Even without significant camera shake or erratic motion, the results usually required plenty of fine-tuning.

The match-moving functionality of Universe 5.0 resembles that of dedicated match-moving software such as RealViz's MatchMover Professional (\$4,999; 415/615-9800, [\[realviz.com\]\(http://realviz.com\)\). But even though Universe's Match Move feature can duplicate camera movement information for a locked-down, pivoting camera, the module works only for footage shot with a camera of known focal](http://www</p></div><div data-bbox=)



All Synced Up Electric Image Universe 5 includes a Match Move feature for matching your 3-D animation to existing video or film footage.

length on a fixed mount, and it does not handle shots where the camera is moving in space. For example, the module won't let you match background plates filmed from a moving vehicle or a handheld camera in motion. This is a serious limitation since these types of shots require automatic match moving the most.

Radiosity

Radiosity is a much lauded rendering feature in 3-D applications because it brings natural luminance to finished images. (It works by calculating light reflecting between surfaces, as well as direct lighting.) Electric Image's implementation of this feature adds great realism and warmth to still images and scenery. But for many animators, it will have limited utility: While you can use radiosity for rendering background plates and for scenes where only the camera is

moving, a radiosity solution breaks down as soon as you animate lights and geometry.

Multiprocessor Support

Universe 5.0 is fully compliant with OS X, and this version supports multiple processors, including those on remote machines. The software includes a license for unlimited rendering cameras, so you can populate your network with rendering slaves and use the

great for hard surfaces and standard types of dynamic effects, the program offers no deep-level scripting or relational power, as Alias|Wavefront's Maya does. And Universe's plug-in particle and dynamic effects suffer from a lack of integrated soft- and hard-body simulations. Universe does not make it easy to simulate objects bouncing and colliding due to gravity and other laws of physics, smoke curling around objects, and other natural phenomena.

As in NewTek's LightWave 3D, the modeler and animator are separate modules that don't communicate well in both directions. And though Universe's animation tools are great for skeletal characters, they lack the type of lattice deformations required for animating fine muscle and facial movement.

Macworld's Buying Advice

Electric Image's Universe 5.0 may not be the ultimate 3-D tool, but it does provide an undeniably fast, efficient way for average users to do the type of 3-D animation they do most often: propel ships through outer space, position animated buildings and vehicles on a real-world street, and make logos and graphics fly through commercials. If you're doing this type of work or considering an upgrade from an older version, Universe 5.0 is a very good value. □

RATING: ★★★

PROS: Fast, high-quality multiprocessor rendering; radiosity; flexible modeling; great animation tools for hard surfaces and skeletal character motion.

CONS: Match Move limited to locked-down cameras; character animation lacks lattice and influence deformations; no soft- and hard-body dynamics; no relational animation controls.

PRICE: \$1,295; upgrade from version 4.X, \$349; upgrade from earlier versions, \$499

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Electric Image, 949/481-6660, www.electricimage.com

MAXTOR PERSONAL STORAGE 5000

One-Button Backup Solution Combines Ease of Use and Flexibility

BY ADAM C. ENGST

No one expects to lose data because of a fire, burglary, or hard-drive failure. But disasters do happen, and backing up your data is the best way to protect it. Maxtor's Personal Storage 5000 hard drives simplify this daunting task with Maxtor OneTouch, a front-panel button that, when pressed, activates the included version of Dantz Development's Retrospect Express Backup 5.0 (★★★★; "60 Mac Software Bargains," July 2002), which backs up new and changed files.

CMS Peripherals' ABSplus (★★★★; *Reviews*, January 2003), a FireWire hard drive with custom software, also aims to simplify backups by backing up your Mac whenever you connect it. But despite the ABSplus's appealingly small size and easier installation process, Maxtor's solution offers users greater flexibility.

Maxtor Hardware

Maxtor sells three Personal Storage 5000 drives with OneTouch: the 5000LE (80GB, 5,400 rpm, USB only), the 5000DV (120GB, 7,200 rpm, FireWire and USB), and the 5000XT (a whopping 250GB, 5,400 rpm, FireWire and USB).

Maxtor includes an external power adapter and FireWire and USB cables with the drive. Unlike CMS, Maxtor doesn't sell diminutive models that draw power from FireWire; one way around this limitation is to buy additional power adapters for use in multiple locations.

Installation and Setup

Getting started could be easier, since you must first format the Personal Storage 5000; however, this extra step prevents problems we've seen with preformatted drives. And although installation was easy in OS 9 and OS X 10.1.5, the process was marred in Jaguar by the



need to download updates to Retrospect Express and to the Maxtor driver. Maxtor plans to remedy this in the near future.

The first time you press the OneTouch button, the Maxtor wizard helps you configure your settings. It gives you two options: Just Documents and Applications And Documents. Just Documents is a poor choice—it doesn't back up a particularly relevant set of files, and it backs up your operating system and application-support files, saving you relatively little space. We recommend using Applications And Documents, which backs up your *entire* drive, and we'd like to see Maxtor eliminate the Just Documents option and clarify what will be backed up.

Default and Enhanced Backups

Initiating a backup is merely a matter of pressing the OneTouch button. When you do so, Retrospect Express launches, executes the OneTouch script, and starts copying new and changed files. After the backup finishes, Retrospect Express quits. Users who want additional flexibility can modify or replace the Maxtor OneTouch script in Retrospect Express.

The Maxtor OneTouch feature duplicates your files in their native formats and stores them in a folder structure that matches that of the source. However, the default Maxtor OneTouch script copies files in such a way that you can't boot from your backup, as you can with the ABSplus. You can modify the Maxtor OneTouch script so it duplicates files to the

top level of the Personal Storage 5000, which provides a bootable backup.

In its default configuration, the OneTouch feature has the same flaw we found in the ABSplus software: it adds new files and replaces modified files, but it does not remove files from the storage drive if you've deleted, moved, or renamed them on your hard drive. These extra files could fill up the Personal Storage 5000 prematurely, and restoring your entire drive requires removing the duplicates manually. To eliminate the duplicate-files problem, you can modify the Maxtor OneTouch script so that OneTouch uses the Replace Entire Disk option instead of Replace Corresponding Files (this change doesn't require copying any additional files).

In fact, the Personal Storage 5000's OneTouch button executes any script named Maxtor OneTouch, so you could replace the default Duplicate script with a Backup script that adds files to a Retrospect File backup set—a huge file that contains all your data and stores multiple versions of changed files. (ABSplus can't do this.) Separate backup sets are also the best way to back up multiple Macs to a single Personal Storage 5000, but you should still buy a copy of Retrospect Express for each Mac.

Restoring Your Data

Because the OneTouch feature duplicates your files on the Personal Storage 5000, it's easy to restore a deleted file or folder by

copying it from the Personal Storage 5000 to your hard drive, just as you normally would in the Finder. But restoring your entire hard drive from the Personal Storage 5000 by manually invoking the Duplicate function in Retrospect Express is awkward (and undocumented by Maxtor), since you can't boot from your backup by default.

You cannot recover a corrupted file if you've backed up since the corruption occurred, because every backup overwrites changed files. Avoid this problem by replacing the Maxtor OneTouch Duplicate script with a Backup script.

In case of physical damage due to fire, flood, or theft, the only protection against the simultaneous loss of your Mac and your backup is an off-site backup. To do this, you can use Retrospect Express to make secondary backups to recordable CDs or DVDs, or to an FTP site.

Macworld's Buying Advice

In our backup and restore tests, Maxtor's Personal Storage 5000 performed well, but installation was unnecessarily complicated in Jaguar. We were also disappointed by its default configuration options. But these deficiencies were more than made up for by the product's high storage capacities, its reasonable prices, and the ability to change the Maxtor OneTouch script, all of which will make it more attractive than the ABSplus for most people. □

RATING: ★★★★★

PROS: Extremely easy to initiate backups; takes advantage of the full power of Retrospect Express; users can modify OneTouch feature; good value.

CONS: Installation process unnecessarily complicated in Jaguar; poor default configuration choices; minor interface errors.

PRICE: 5000LE (80GB, 5,400 rpm), \$199; 5000DV (120GB, 7,200 rpm), \$299; 5000XT (250GB, 5,400 rpm), \$399

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Maxtor, 408/894-5000, www.maxtor.com

a very impressive showing of less than three minutes when we printed a photo at the printer's Best Quality setting.

Epson Stylus C82

The \$149 Epson Stylus C82 doesn't claim to be a photo printer, mainly because its pigment-based DuraBrite inks don't work well on glossy photo papers. These inks lay on top of the glossy paper, producing a somewhat dark and metallic appearance. But on matte paper, this printer does a very fine job, so if you prefer a matte finish, the C82 is a great choice. Epson's pigment-based inks are long-lived and waterproof, making the C82 great for printing restaurant menus, for example. The C82's printed text was a bit on the light side but very legible, even at tiny point sizes. In color-graphic documents, a visible dot pattern appeared in lighter areas, but the consistency of the C82's prints helps keep this from being a distraction. The C82 was the fastest of the group in our PDF-document test and a close second in our Word-document test.

HP DeskJet 5550

The \$150 Hewlett-Packard DeskJet 5550 is also a great all-around document printer that produces heavy but clean and legible text, as well as very good photos. And swapping the standard three-ink color cartridge for an optional \$25 photo cartridge transforms the 5550 into a six-color photo printer—a boon for people torn between the continuous tones of a six-color photo printer and the expense and space requirements of having two devices.

When we tested the 5550's ability to print our test photos in six-color mode, the printer produced better shadow details and skin tones than in four-color mode. Overall, we found the output to be pleasing, if a little oversaturated. HP's lack of color correction options—you can use only HP's ColorSmart or gray-scale settings—may frustrate more-advanced users.

The 5550's print times in four-color mode were in line with those of most of the other printers we tested, but it did lag nearly a minute behind the rest in our PDF-document test.

Lexmark Z65 Color Jetprinter

The \$149 Lexmark Z65 Color Jetprinter proved to be a great printer for both color and black text. Though it took quite a bit longer to print our Word document, the Z65 produced the cleanest, sharpest text we saw from any of the printers we tested. The Z65 was the only printer that did not show even one break in graphics with fine, curved lines. Unfortunately, its seemingly random dither pattern in light areas of printed images produced noticeable dots. Although we would have expected these results and even found them completely acceptable in earlier printers, advancing technology has raised the bar considerably. The Z65's text and fine-line accuracy make it worth considering if you plan on printing photos only rarely. Otherwise, we'd have a hard time recommending it over any of the other printers in this group. □

HP COLOR LASERJET 2500L

Inexpensive Color Laser Printer Turns Out Great Documents Quickly

BY RICK LEPAGE

If you do moderate- to high-volume printing, you should know that, in the long run, a laser printer costs much less than an ink-jet. Even though a laser printer costs more initially, and despite the higher price of toner cartridges, ink-jets almost always have a higher cost per page. It's easy to find a monochrome laser for less than \$300, but prices for color lasers that work with the Mac have stayed fairly high—generally above \$1,500. Hewlett-Packard has changed this with the Color LaserJet 2500L, a PostScript-based color printer for individuals and small workgroups that's priced at an unbelievable \$1,000. And while its price is nice, the Color LaserJet 2500L's speed and the quality of its output are what set it apart from nearly every other printer in its price range.

The Color LaserJet 2500L has a strong set of specs: 600 dpi, 16 pages per minute (ppm) in black and 4 ppm in color, PostScript Level 3 emulation, USB and parallel connections, and a 125-sheet input tray. (HP also offers models based on the 2500L, including the \$1,199 Color LaserJet 2500, which comes with an additional 250-sheet paper tray, and the \$1,499 2500n, which includes the tray and a 10/100BaseT network card.)

Quick Setup, Snappy Performance

Although the Color LaserJet 2500L is fairly small for its genre, it weighs a hefty 53 pounds—you won't mistake it for an ink-jet, and you won't want it on your desk.

Setup is easy. The printer has four toner cartridges (cyan, yellow, magenta, and black) and an imaging drum, all of which are easily accessible and a snap to install. Once you've installed the PostScript Printer Definition files and connected the printer to your Mac, you can share it across either an OS 9 or an OS X network without a problem, making it great for small workgroups.

In our tests, the 2500L was zippy with both black-and-white and color output. A 20-page Microsoft Word monochrome text document took 1 minute and 45 seconds to print, and a color version of the same document printed in 5 minutes and 29 seconds. A single-page color PDF took 48 seconds while a 10-page color PDF file printed in slightly less than 3 minutes. Our standard 22MB Photoshop test file also



printed very quickly, in 1 minute and 47 seconds.

Print quality is very good. HP claims that its new toner formulation results in sharper text and more-consistent color, and our tests bore this out. Text at small point sizes was readable, and graphics were pleasing to

the eye, with sharp, even lines. If you're a graphics pro, you won't want to use the 2500L as a proofer, but you can use it for quick comps.

HP went with a PostScript 3 clone, instead of licensing Adobe's PostScript, but this really isn't a problem; during testing, every page from Adobe Acrobat, Adobe Illustrator, and QuarkXPress printed flawlessly. In fact, the only significant negative we can ascribe to the printer is that the front-loading paper tray is a bit flimsy, but this is not a major flaw.

According to HP, each color cartridge should last for approximately 4,000 pages; the black cartridge, about 5,000; and the drum unit, between 6,000 and 8,000. This translates to roughly 2 cents per page for monochrome output and 12 cents for color. Our unit's toner life was very close to HP's claims, which means that you'll spend a lot less money over time than you would with an ink-jet (because of the small size of ink-jet cartridges, an ink-jet's ink usually costs two to three times as much as a laser printer's ink—and costs can go even higher if you use expensive coated papers designed for ink-jets).

Macworld's Buying Advice

Breaking the magic price barrier of \$1,000, HP has done an amazing job with the Color LaserJet 2500L. Its combination of crisp, clean laser output and PostScript support means that small workgroups with big printing needs can finally get the benefits of color-laser technology without putting too large a dent in their budgets. □

RATING: ★★★★★

PROS: Affordable; excellent performance for its price; crisp, clean output; PostScript Level 3 support.

CONS: Flimsy paper-input tray.

PRICE: \$1,000

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Hewlett-Packard, 800/752-0900,

www.hp.com

FONTAGENT PRO

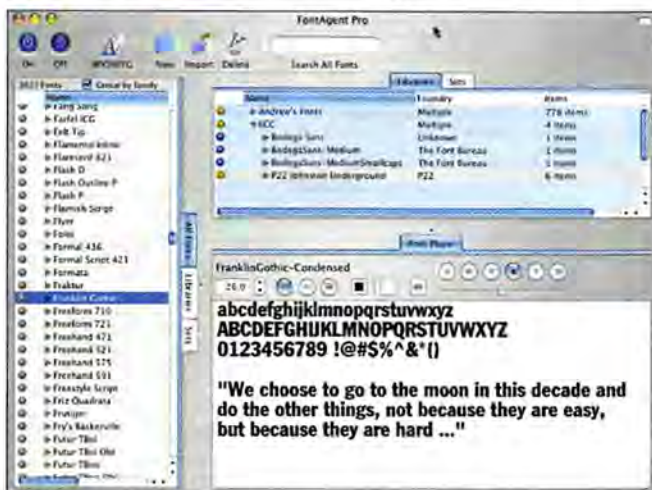
Strong New Font-Management Program Goes Up Against Proven Rivals

BY ANDREW SHALAT

Managing fonts is not something most people look at with eyes twinkling and heart a-racing. But Insider Software's new FontAgent Pro is one of those tools that makes managing fonts as appealing as it may ever get.

Hand Over the Reins?

The first time you launch the application, FontAgent Pro asks whether it can have control over the system fonts (this set of installed fonts must load at startup for the operating system to appear and function as it's



Déjà Vu? FontAgent Pro's familiar three-panel interface will quickly put to rest any learning-curve anxiety you might be experiencing.

Insider Software has reinvented its FontAgent font-repair and -organization program as FontAgent Pro, a comprehensive font activator and manager, like DiamondSoft's Font Reserve 3.1.1 (★★★★; *Reviews*, February 2003) and Extensis's Suitcase 10.1 (★★★★; *Reviews*, April 2002). Insider wrote FontAgent Pro from the ground up to take as much advantage of Jaguar as possible, and this strategy has succeeded in many subtle and surprising ways—from the simple and fast font-activation scheme, which loads user fonts first instead of last, to the Font Player preview engine, which creates font books in just a few mouse clicks.

With these improvements, FontAgent Pro can compete head-to-head, feature-to-feature, with the best that Suitcase and Font Reserve offer, and in many cases it comes out on top.

supposed to). The default button for this option is Yes, but you might want to consider what that means before taking the plunge.

If you let FontAgent Pro take control of your system fonts, it then copies them into a new FontAgent Pro fonts folder. This allows you to use FontAgent Pro to activate, deactivate, delete, or move system fonts wherever or however you wish. FontAgent will move your original system fonts into a new folder that you can easily retrieve in an emergency.

This feature is an asset for pro designers, who often use fonts that might conflict or become confused with system fonts. But most casual users don't need to worry about such issues.

Libraries, Sets, and Secrets

FontAgent Pro's multipaned window interface is similar to Font

Reserve's and Suitcase's, but FontAgent Pro has some subtle differences. On the left of the main window is the library and sets pane; its tabs are similar in appearance to Microsoft Internet Explorer's various tabs (History, Favorites, and so on). The upper right pane shows sets, and the lower right one is for previews (see "Déjà Vu?"). FontAgent's printed documentation is sparse, but font-management novices will appreciate the application's simple tutorial when they're getting started—it's located in the Secrets menu.

The easiest way to begin building a comprehensive library is simply to drag your hard-drive icon into the library pane on the left. FontAgent lets you set up multiple libraries to avoid confusion if you receive fonts from clients or other outside sources. FontAgent Pro will verify all your fonts, checking them for corruption or damage, and it will remove them if it finds problems. It will also check for duplicate or orphaned font files.

Once you have a complete library, making working sets is easy: you just drag font names to the Sets pane from the library pane. You can designate font sets as startup sets, which means they will start up with your computer.

Easy Font Previewing

The lower right pane contains Font Player, an iTunes look-alike. Font Player is actually a versatile preview engine that lets you sample type size, font color, background color, and text. Further kerning, spacing, and ligature controls found in the Fonts menu let you refine your preview.

Font Player's major drawback is that it limits you to viewing only one font at a time, unlike Suitcase, which provides an excellent multiple-font preview pane. But you can select as many fonts as you like, click on the print button in Font Player, and then save the set of displayed fonts as a PDF. The font book you produce will include all the fonts you've chosen, displayed in the format you set in Font Player.

Best of Both Worlds

As with Font Reserve and Suitcase, activating and deactivating fonts is quick and easy; however, FontAgent Pro uses different terminology. Select the font, group of fonts, or font set; then click on the On or Off button (rather than Activate or Deactivate) in the upper left of the FontAgent Pro window. Like Suitcase, FontAgent Pro works as a separate application. But if you quit FontAgent Pro, all your fonts remain active as long as you keep your computer on, or until you open FontAgent to deactivate them. In this way, FontAgent Pro works like Font Reserve.

FontAgent Pro keeps out of your way more than its rivals. And at press time, Insider Software had just added autoactivation plug-ins for QuarkXPress and Adobe InDesign; however, there are no such plug-ins for Adobe Illustrator. (The company expects the Illustrator plug-ins to be available by mid-February.)

Macworld's Buying Advice

Where there were once two contenders for the title of font-management champion, now there are three. FontAgent's new activation and preview features, combined with its continued excellent font-organization and -repair capabilities, make it much more than a mere complement to Font Reserve and Suitcase. This challenger looks as though it's prepared to take more than a few rounds. □

RATING: ★★★★★

PROS: Fast, intuitive interface; strong font-repair and -organization features; control over system fonts.

CONS: Previews only single fonts unless you make a PDF; no printed documentation; no autoactivation plug-ins available yet for Adobe Illustrator.

PRICE: \$100; download, \$90; upgrade from version 8, \$50

OS COMPATIBILITY: Mac OS X
COMPANY: Insider Software, 888/263-4799, www.insidersoftware.com

INSPIRATION 7

Accessible Diagramming Program Helps You Organize Your Thoughts and Realize Your Ideas

BY CHARLES PURDY

For most of us, the act of brainstorming involves hastily written words on whiteboards and paper stickies, which require tedious transcribing and photocopying before we can share our ideas with others. There is a better way: Inspiration Software's newly Mac OS X-compatible Inspiration 7. (It also works in OS 9 and Windows, with an identical interface.) Although it's primarily targeted at students and teachers, this tool will benefit anyone who needs to diagram and organize ideas quickly and easily; with it, you can create anything from a simple article outline to a Web-site plan or a complex scientific diagram.

Now You See It

Installing Inspiration in OS X is as easy as installation gets: less than five minutes after opening the CD envelope, we'd launched the program and were creating our first chart. The program opens in an all-purpose diagram view, with one symbol already placed and ready to be labeled.

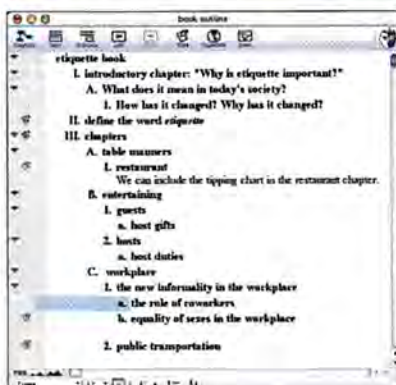
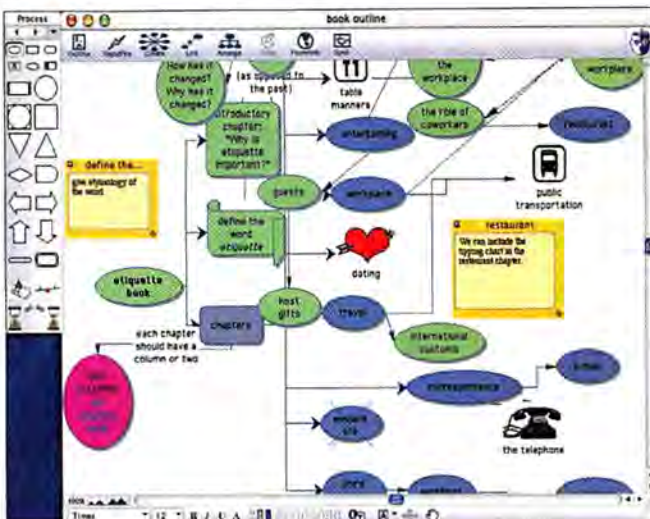
At the top of the window are icons representing key functions. With a chart symbol selected, you click on the Create button to draw a connection to a new symbol, where your cursor lands so you can start entering text; clicking on Create without a symbol selected creates a free-floating item. Use the Link button to draw connections between items, the Hyperlink button to add customizable Web-site links quickly to an item, and the Note button to add a concealable "sticky" to an item or a connection. The RapidFire feature was made for fast-paced brainstorming: with the RapidFire tool selected, you just press the return key to create a new item connected to a starting-point item, so you can focus on transcribing your team's fantastic ideas. You don't even need to worry about misspelling words: Inspiration has a spelling checker.

On the left side of the window is the symbol palette, which boasts 1,300 symbols (everything from basic shapes to line drawings of vegetables)—and you can import your own via an easy drag-and-drop process. At the bottom of the window is a formatting toolbar, which you can use to select the font and color of chart items. Clicking on the Arrange button opens a dialog box where you can rearrange your chart (to turn a top-to-bottom hierarchical chart into a left-to-right one, say). Charts and outlines are printable and can be exported in several formats, including JPEG, so you can incorporate them into Microsoft Word or PowerPoint documents, for example.

Although you certainly won't mistake Inspiration for an illustration program, its charts are attractive enough for most purposes. Its design capabilities lag slightly behind those of The Omni Group's OmniGraffle 2 (★★★★; *Reviews*, August 2002)—but where OmniGraffle gives you prettiness (for example, more color options in charts), Inspiration gives you more-powerful but easily accessible chart-building tools.

Learn, Baby, Learn

By clicking on the Outline button, you can turn everything in your hierarchical chart, including notes and hyperlinks, into a hierarchical text outline. (In outline view, you click on the Diagram button to go back to diagram view). What's more, any reorganization or editing you do in outline view will be present when you go back to diagram view (and vice versa). If you completed all your fourth-grade book reports before classroom computers became ubiquitous, this feature is sure to inspire delight—and a little bit of regret. It's also a good example of what Inspiration has to offer in an education environment: the abil-



See What You Think After you create a hierarchical chart in Inspiration's diagram view (top), just click on the Outline button to see your chart represented as a textual outline in a simple word processor (bottom). In both formats, all of your information is editable. Any reorganization or editing you do in outline view will show up when you revert to diagram view (and vice versa).

ity to represent complex ideas quickly in a visual, easily understandable format, as well as a way to help students learn to prioritize and organize information. In addition, the program has curriculum-specific templates for language arts, science, social studies, and more—and all templates are customizable. (Teachers unfamiliar with Inspiration should check out the demo at Inspiration Software's Web site.)

Worthy Additions

This is the first version of Inspiration to run in OS X; other new features include multiple undos, a SiteSkeleton feature that converts diagrams to HTML, and some basic audio capabilities—you can record snippets of audio (as long as 30 seconds) and attach them to chart items. But although version 7's enhancements are noteworthy, you should consider whether you truly need them before paying \$40 to upgrade.

Macworld's Buying Advice

Inspiration 7 earns high marks for its ease of use and excellent visual-representation and chart-

drawing features. Users outside education environments may occasionally wish for a few more design tools—many of the included symbols definitely have a generic, classroom aesthetic. But if you've ever lost a great idea in a brainstorming session's sticky tsunami, Inspiration will blow you away: it handles the grunt work of brainstorming for you, so you can concentrate on being inspired. As a concept-mapping and diagramming tool, Inspiration 7 is at the head of its class. □

RATING: ★★★★★

PROS: Extremely easy to use; fantastic tool set; impressive template and outlining features; new audio and HTML-creation features.

CONS: Upgrade price is relatively high; lacks a few high-end design capabilities.

PRICE: \$69; upgrade from version 6, \$40 (volume-licensing prices vary)

OS COMPATIBILITY: Mac OS 9, Mac OS X

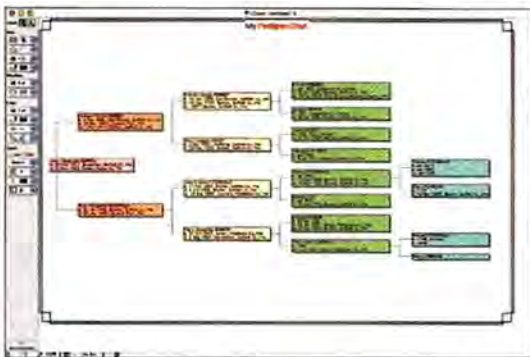
COMPANY: Inspiration Software, 800/877-4292, www.inspirationsoftware.com

REUNION 8

Genealogy Program Evolves Beautifully, Charts Flexibly

BY JEFFERY BATTERSBY

Whether you're looking for your family's black sheep so you can blame your misdeeds on some genetic flaw, or just want to know where you came from and why, researching your roots can be both entertaining and enlightening. On the Mac, there's no better program for tracking and displaying your family's history than Leister Productions' Reunion. And version 8 brings OS X compatibility, as well as significantly improved charting features, to the program, so it will appeal to new and upgrading users.



Charting Your Universe Reunion's excellent new charting features give you infinite control over the layout, formatting, and display of your family history.

No Bad Apples

Like prior versions, Reunion 8 sports an excellent online tutorial that leads you through the program's basics—from adding the first person to your database to creating charts of your genealogical history. But the program is so easy to use that a minute or two with the tutorial is all you'll need.

Entering data is intuitive, and there's virtually no limit to the types and quantity of information you can enter about each person in your family tree, from the date Uncle Willie got his bunion removed to the exact place, time, and date Aunt Marion died. The program provides support for footnotes and other citations, and it lets you view the data in almost any fashion you wish. Simply choose the Views menu option; select which items you'd like to display, such as a relative's birth, death, and occupation; and then determine the order in which you'd like these listings to appear. New to Reunion 8 is extensive support for the temple ordinances of the Church of Jesus Christ of Latter-day Saints, such as baptism and endowment. Reunion also handles multimedia files with aplomb.

You can store and display pictures, audio, and video—each linked to individuals in your family file—from within the program.

Once you've entered your family information, Reunion can calculate some fairly interesting information and statistics unique to the family you're viewing. For example, bringing up the Ages list for any individual displays his or her age at significant milestones in life, such as marriage, children's birth, or the death of a parent or spouse. Living relatives (if they're not faint of heart) can optionally display how much longer they're likely to live. You can also display statistics for entire family lines, detailing minimum, maximum, and average ages for events.

Charting the Past, Present, and Future

Aside from the program's migration to OS X, the most significant change to Reunion is in the way you create genealogical charts of your family history. The charting function now acts like any standard object editor, such as OmniGraffle (*Reviews*, August 2002) or the drawing tool in AppleWorks. You can edit and format text within a box, but only the chart, not the database, will reflect the changes you make. You can select and align objects or layer them on top of one another. You can add pictures to chart boxes or reformat the boxes by changing fonts or colors. Essentially, you have complete control over the way a chart is displayed or printed, a significant—and welcome—improvement over prior versions' fairly static chart-creation options.

Macworld's Buying Advice

Reunion 8 is a superb product. If you're a novice family historian, you'll appreciate the program's intuitive data entry, and you'll be able to learn the program in a matter of minutes. If you're a current user who wants better charting functionality, Reunion 8's OS X compatibility and first-class charting features make it a compelling upgrade. In short, unless someone else is doing the work for you, there's no easier way to track your family's history. □

RATING: ★★★★★

PROS: Easy to learn and use; excellent new charting tools; produces numerous reports and calculates interesting family statistics.

CONS: None significant.

PRICE: \$99; upgrade from previous versions, \$59

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Leister Productions, 717/697-1378, www.leisterpro.com

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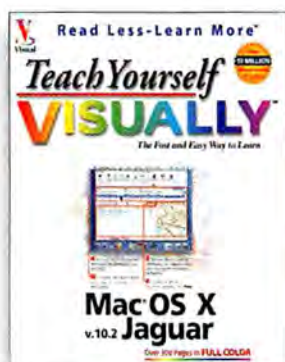
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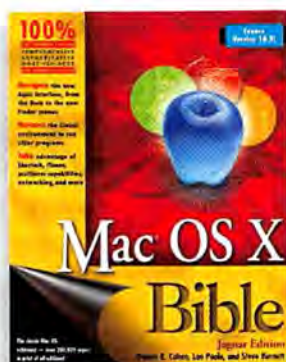
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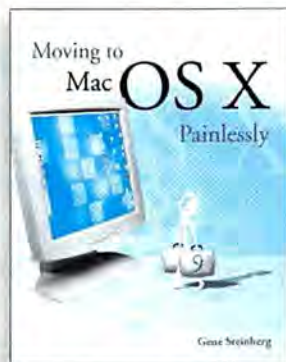
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REVIEWS

BBEDIT 7.0

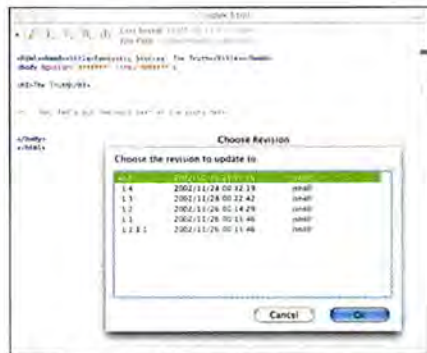
Excellent Tool for Text Specialists Gets Even Better

BY JASON SNELL

BBEdit is unabashedly a geek's tool. Rather than narrow the text editor's appeal to Web-coding geeks, JavaScript geeks, Unix geeks, and programmer geeks, Bare Bones Software has always kept its flagship program blissfully unfocused, constantly adding features for users in various specialized areas. BBEdition 7.0—which offers improved Web-design, HTML-coding, text-processing, and software-development tools—is no exception.

reducing the amount of typing your tired fingers have to do.

But one look at Macromedia's Dreamweaver MX (*Reviews*, October 2002) shows that BBEdition still has plenty of room for improvement in making life easier for coders. Dreamweaver MX's Code View provides floating contextual windows that prompt you with available tags, attributes, and even linked Cascading Style Sheets (CSS) styles, allowing you to generate code without much typing. BBEdition's Tag Maker command, which provides you with a window of appropriate tags or attributes, simply doesn't measure up.



Back in Time BBEdition's new support for CVS brings a free version-control system to Mac OS X users.

Web-Development Help

If there's any single area on which BBEdition 7.0's new features seem to focus, it's Web development. Perhaps the biggest change in this area is the addition of long-overdue support for multiple projects from within the program's Web-site-management tools. Now you can define the home folders of various projects from within BBEdition's HTML Web Sites preference pane, and BBEdition does a good job of using the location of the file you're currently editing to figure out what site you're working on.


The program's new Close Current Tag command is a productivity booster, once you've assigned a keyboard shortcut to it via the Set Menu Keys command. It automatically closes the currently open HTML tag,

Keeping Track

Perhaps the most intriguing addition in BBEdition 7.0 is support for CVS, or Concurrent Versions System, a Unix-based source-code-maintenance system included with Mac OS X. Programmers

have long relied on such tools to keep track of different versions of program code and make sure two users aren't modifying the same file simultaneously. However, such a system can also be of use to people who develop Web sites or write long, complex documents.

continues on page 44

RATING: 

PROS: Powerful text-handling features; productivity-boosting Web tools.

CONS: CVS tools require command-line setup; HTML-tag editing could be more accommodating.

PRICE: \$179; upgrade from version 6.1 or later, \$49; upgrade from previous versions, \$59

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Bare Bones Software, 781/687-0700, www.barebones.com

SWIFT 3D 3

Poky Performance Mars Flash Exporter

BY SEAN WAGSTAFF

Flash animations have become ubiquitous on the Web, so we liked the idea behind Electric Rain's Swift 3D, an easy-to-use, stand-alone design program that lets you easily create and render 3-D animations and graphics in Flash format (SWF). We found, however, that the primary strength of Swift 3D 3, the company's latest release, was not its ability to *create* 3-D art but rather its ability to *output* 3-D art directly into vector-based Flash files. The program intelligently renders various colors as discrete solid shapes, and it can even stroke the edges of shapes with colored outlines for a pleasing cartoonish treatment.

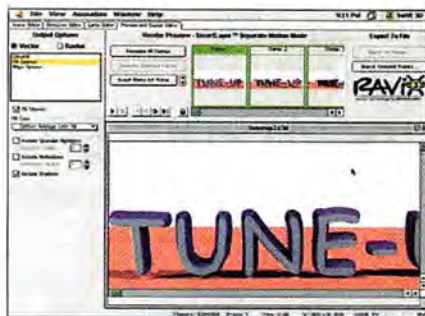
Intended mainly for Web designers who don't need the complexity of a more expensive, higher-end 3-D package, Swift 3D 3 boasts a new ray-trace renderer, as well as a new importer for Macromedia Flash MX format, called SWFT, which even renders various components of an animation or image into separate layers that you can script individually. This is great when you want to animate those components or imbue them with interactivity from within the Flash MX-authoring environment without boosting file sizes.

Slow Speed, Limited 3-D Tools

In spite of Swift 3D 3's additions and its ability to render high-quality 3-D Flash files from existing 2-D designs, we found the program hard to embrace. It's disappointing that Electric Rain has made no public announcement about moving to OS X, so you'll have to run the program either in OS 9 or in OS X's Classic mode, where its performance is unimpressive. For example, moving cameras and objects—even with only a handful of objects in a scene—is slow enough to interfere with the design process.

For artists accustomed to a more feature-rich 3-D application such as Eovia's Carrara

Studio 2 (Reviews, November 2002), Swift 3D's modeling and scene-creation tools pale in comparison. The modeler limits you to primitive 3-D shapes such as cubes and polyhedrons, and simple extrusions and revolves of Bézier paths, which you can draw in Swift 3D or import from Adobe Illustrator, EPS, or SVG (scalable vector graphics) files into Swift 3D. This set of modeling continues on page 45



Fantastic Flash Swift 3D renders 3-D artwork in a variety of 3-D formats suitable for Flash output.

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www.tapintothepower.com

RATING: ★★

PROS: Produces good-looking, efficient Flash rendering from 3-D scenes.

CONS: Not OS X compatible; mediocre performance; very limited 3-D tools for modeling, animation, and scene creation.

PRICE: \$169; upgrade, \$79

OS COMPATIBILITY: Mac OS 9

COMPANY: Electric Rain, 303/543-8233, www.swift3d.com

REVIEWS

VISUALROUTE 7.0

Utility Brings Clarity to Internet Security and Performance

BY JONATHAN A. OSKI

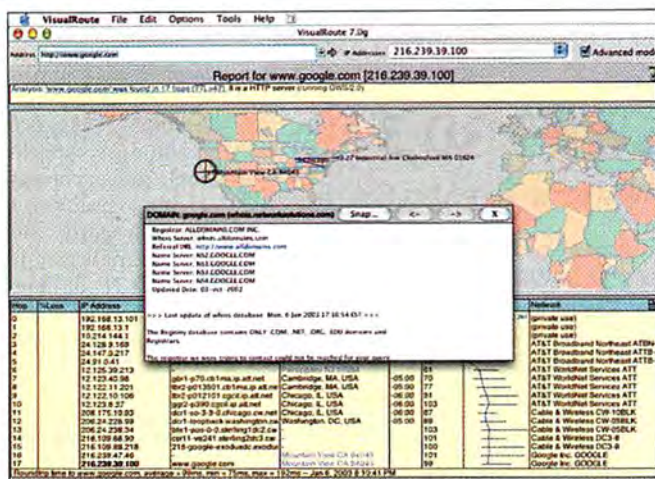
Tracking down a hacker who's twisting the door handles on your servers from halfway across the world is a formidable task. One way to do it is to enter the questionable address into a text-based traceroute tool, such as OS X's Network Utility, and get a listing of all the hops on the route—then you'll look up the network information for each node, pull out your world atlas, and start drawing lines on the map. But try this for a series of different addresses listed in your logs, and you'll soon start to appreciate the easy and rapid information retrieval that Visualware's visual traceroute utility, VisualRoute, makes possible.

The newest version, VisualRoute 7.0, works on Macs run-

ning OS X (10.0 and later). Available in Personal, Server, and Professional editions, VisualRoute can function as a stand-alone utility on one workstation, or you can access it via the built-in HTTP server from any workstation with a compatible Web browser.

How Does It Do That?

VisualRoute integrates three popular Internet tools—ping, whois, and traceroute—to give you rapid visual feedback. You just enter the IP address of any possible intruder listed in your firewall's or server's log, and VisualRoute shows you a map of the world with the route from you to the intrusion's source. You can apply the same approach to tracking down the source of spam, and since



Click and You Shall Receive Selecting a host from the Node Name or Network column instantly invokes a whois query in a movable window.

VisualRoute can display the domain registration information for any node or network with a simple click, you're well on your way to reporting the abuse.

You can quickly zoom in on the map by clicking on it—and you zoom out by control-clicking on it. Select the Advanced Mode option in the upper right corner of the screen to see a table of the traceroute. The table, which displays a

separate line for each hop on the route between the current host and the target, shows in different columns the percentage of packet loss, the IP address, the node name, the location (city, state, and country), the time zone, the average time it takes (in milliseconds) for a ping packet to get to the offending node and back, a graph of the ping time, and the name of the node's network.

DiskWarrior® has than



1999 Macworld Editors' Choice Awards Winner, Utility Software. "DiskWarrior is an excellent ax to add to your disk-repair and -maintenance arsenal. DiskWarrior's ease of use, speed, and new method of fixing disk problems make it a powerful disk-maintenance product."



1999 MacUser Awards Best Utility/Enabling Software. "For providing a new, easier to use, safer, and often more successful alternative to more bloated recovery applications, the judges felt DiskWarrior deserved top billing..."



1999 Apple Design Awards Most Innovative Product, Runner-up Best New Product



5 Out Of 5 Stars "Every Mac on the planet can benefit from DiskWarrior!"

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If you have more-accurate information than VisualRoute reports, you can use the Location Database tab in VisualWare's preferences to specify locations for specific domains or hosts. This tab—and other dialog boxes—stymied us because some windows didn't display completely. Resizing them revealed additional controls and buttons—but you're unlikely to find these without calling technical support.

Spam Killer

Tracking and eliminating spam has become a popular pastime for many people, and VisualRoute's eMailTracker (automatically invoked when you type an e-mail address in VisualRoute's Address field) may be worth the cost of admission for antispam activists. It lets you quickly find the mail server for an account that's been spamming you or your organization. You can then trace the path to the host and send e-mail to the source domain's technical

or administrative contacts—and hope they're good Internet citizens that will take action to stop the spammer.

Another embedded utility, PingGrapher, allows you to track ping responses on a continual basis. The graph plots a history of response time to help you determine whether access to a particular host is inconsistent and how widely the response times vary over an extended period.

The Server Edition

You can configure VisualRoute for Web access (using any port you specify); this allows you to share the program's functionality with anyone who has a browser. To do this, you choose VisualRoute Server from the Tools menu to start the embedded HTTP server. Then you connect to this server using a browser, and the VisualRoute Java applet will download to your workstation.

Unfortunately, we found that VisualRoute worked reliably

only with Microsoft Internet Explorer 5. We had mixed results with Mozilla 1.2, Netscape 7, and Opera 6. Problems ranged from display anomalies, similar to those discussed earlier, to stalled execution that made the Java applet unusable with anything other than Internet Explorer.

There are several situations in which access via a browser pays off. Many enterprise networks strictly limit the types of traffic that can traverse their firewall. By placing the VisualRoute server outside your firewall, you can access the server and perform route analysis from within a secure enterprise network. You can also include specially formatted links to a VisualRoute server on an existing Web site to troubleshoot user-reported problems with site performance or connectivity. Note that users accessing the server via a Web browser cannot use VisualRoute's eMailTracker or PingGrapher features.

Macworld's Buying Advice

At \$50 for the Personal edition, VisualRoute is a real deal. By integrating three tried-and-true analysis tools, VisualRoute saves you time and provides information in easy-to-read tabular and map formats. The server feature's reliance on Internet Explorer is apt to disappoint people who prefer another browser, but this incompatibility should diminish as Java-applet support improves. □

RATING: ★★★

PROS: Low cost; easy to use; eMailTracker can help identify the source of spam.

CONS: Uneven display of some controls; server doesn't support all Mac Internet browsers.

PRICE: Personal edition, \$50; Server edition (10-user license), \$150; Professional edition (500 traces per year), \$995

OS COMPATIBILITY: Mac OS X

COMPANY: Visualware, 866/847-9273, www.visualware.com

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BBEdit 7.0

continued from page 40

BBEdit integrates support for CVS via a new menu, which allows you to switch quickly to various versions of your documents, add new versions of files and folders to the CVS repository, and compare the changes made to a document across different versions.

But BBEdition doesn't help you set up CVS—you must initialize the program, import files into the repository, and initially check out each new CVS project from the Terminal application. Only then can you transition from the unfriendly (for some) realm of the Unix command line to BBEdition's menu-driven interface.

Text Powerhouse

Several features in BBEdition 7.0 will thrill people who massage text files of various shapes and sizes. Chief among them is the ability to select arbitrary rectangular areas of text by holding down the option key while dragging over the desired area. Microsoft Word has offered this feature for more than a decade, and while it may be a bit esoteric for some, it's invaluable for users who work with tabular data.

A trio of updated, included plug-ins—Process Duplicate Lines, Process Lines Containing, and Sort Lines—provide much-improved text handling, as well as the ability to sort files based on captured text of a regular expression.

BBEdition's new Paste Previous Clipboard command provides a sort of "Clipboard undo"—a way to cycle backward through the Clipboard and previous Clipboards every time you invoke the command. And a new Auto-Complete Glossary command lets you insert long fragments of text easily.

This upgrade also includes a host of smaller features that will appeal to various tribes of the BBEdition nation: the syntax-coloring feature now supports Microsoft's VBScript, the XHTML 1.1 specification is now supported, and Bare Bones has made several enhancements to the Shell Worksheets feature, which allows users to interact with the Unix command line from within a BBEdition document.

Macworld's Buying Advice

BBEdition continues to be a remarkably powerful text editor for a wide range of users, from Web designers to programmers. This update further improves the program's text-handling and Web-design capabilities while also offering version control via CVS. Most loyal BBEdition users will want this upgrade; people who have never used BBEdition and need serious text-manipulation power should definitely give it a try. □

XPert Tools Pro

Package Filled with Winners Adds New XTensions for QuarkXPress 5

BY SANDEE COHEN

Choosing the best package of QuarkXPress XTensions is tricky, and sometimes you get only one or two useful features in an entire set. Fortunately, A Lowly Apprentice Production's newest collection of XTensions, XPert Tools Pro, provides more than enough useful features, including tools that let you quickly format objects, as well as a find-and-replace tool for object formatting. Although it's billed as being especially for XPress 5, the product is just as useful for XPress 4.



Order from Chaos After we used the Align palette to line up the picture boxes on the left, a single click in the ItemStyles palette formatted them as shown on the right.

Previous XPert Tools packages included 11 of these XTensions, but the new ones in the Pro package—XPert ItemStyles, XPert Find/Change, XPert Guides, XPert Align, and XPert PageSets—justify an upgrade.

Easily Define Attributes

XPert ItemStyles alone is reason enough to purchase the package. This XTension lets you save all the attributes of a text box, picture box, or other page object as a style sheet. In addition to defining obvious attributes such as size, shape, frames, and background color, you can also choose the position and size of imported images. You can even automatically center and fit images within a picture box—something the similar XTension in Extensis's QX-Tools Pro (*Reviews*, July 2002) doesn't do. With eight different tabs, the Edit Styles dialog box may overwhelm new users. However, you can also define an item style by formatting an object to use as an example.

Once you've defined an item style, you can easily apply it to multiple objects with a single click, instead of wading through many different XPress dialog boxes. Even better, if you make any changes to the item style, all

objects to which you've applied the style automatically update. This is an incredible shortcut for anyone who needs to modify many objects in multiple-page documents.

Additional Time-Savers

Not everyone is disciplined enough to define styles ahead of time. That's where the powerful XPert Find/Change comes in. It lets you search for and replace item attributes.

XPert Guides gives you much more control than XPress provides for placing guides in exact positions; copying and mirroring guides; and automatically creating grids, rows, and columns. Instead of struggling to position a guide by hand, for example, all you need to do is enter a precise numerical position.

XPert Align lets you not only align objects to one another, but also align and space objects in relation to page edges. This is something the regular Align feature in XPress can't do.

Once you change the dimensions of a new document in XPress, you lose the previous page settings, but XPert PageSets makes it much easier to set up and save complicated document settings. Then you can easily choose the correct layout from the Document Preset menu.

Macworld's Buying Advice

If you've moved to QuarkXPress 5, previous versions of the various XPert Tools packages won't work, making XPert Tools Pro a must-have upgrade at a reasonable price. If you're still using QuarkXPress 4, the five new Pro XTensions are well worth the upgrade price. And all users will find that this product is an excellent way to increase productivity and avoid tedious formatting. □

RATING: ★★★★★

PROS: Allows easy definition of object styles; find-and-replace tool for item attributes; provides better alignment controls than QuarkXPress 4 or 5.

CONS: Many features are also available in previous XPert Tools products.

PRICE: \$180; upgrade from XPert Tools volume 1 or 2, \$80; upgrade from XPert Tools Bundle (volumes 1 and 2), \$60

OS COMPATIBILITY: Mac OS 9

COMPANY: A Lowly Apprentice Production, 888/818-5790, www.alap.com

WEBMERGE 2.1

9X

Fourth World Media, 800/288-5825,
www.fourthworld.com; \$79



You don't need an expensive, complicated database system to generate a Web site populated with massive amounts of data—especially if the site doesn't need to be linked to a live database. Fourth World Media's WebMerge 2.1 lets you quickly generate dozens, hundreds, or even thousands of Web pages based on the contents of a FileMaker Pro database, Microsoft Excel spreadsheet, or just about any other application that can export delimited text files.

WebMerge merges your data into HTML templates that contain special tags wherever you want to insert data into your pages. WebMerge's language of tags gives you flexibility in transmuting data into HTML-ready format quickly. The program is also speedy; it generated hundreds of fairly complicated pages for us in less than 20 seconds.

Welcome improvements since version 1.6 (Reviews, November 2001) include support for conditional statements in templates, automatic creation of Next and Previous links, and support for multiple index pages. These and other improvements make WebMerge 2.1's templates much more capable of generating sophisticated Web pages that change based on the data poured into them. The result is an easy, low-cost way to create a database-derived Web site that doesn't require any complex Web database infrastructure.—JASON SNELL

ART DIRECTORS TOOLKIT 3

9X

Code Line Communications, 818/884-8379,
www.code-line.com; \$40



Art Directors Toolkit (ADT) 3 combines eight of the most practical production utilities for print or Web artists—including a direct numerical converter, color tester, scaler, and font viewer—with an intuitive interface. It spares graphic designers having to spend time searching for process color charts, rulers, and calculators. If not a must-have, ADT 3 is at least a should-have for every designer.

The application's toolbar displays eight specific tool sets. Among ADT's many handy functions is its ability to convert number values between common units of measurement, and ADT will even calculate file sizes instantaneously, based on your color space of choice. Further, it will allow you to translate RGB into hexadecimal, mix and view CMYK combinations, view all characters of a particular font, preview font sizes, obtain accurate scaling results by per-

centage or dimensions, and calculate column widths. Of particular use to graphic designers are the drag-and-drop color swatches from the Pantone Matching System and from HTML and Web-safe color spaces, which help when you're making color-consistent choices from screen to print to Web.

The results of these calculations are also shown in a small Global Results window that floats in front of any active application. And you can drag and drop any of your results—whether they're numbers, colors, or characters—into any other application.—ANDREW SHALAT

DRAGTHING 4.5

X

TLA Systems, james.t@kagi.com,
www.dragthing.com; \$25



We've long promoted DragThing as a fantastic Finder enhancement that gives users a way to organize their desktops via floating "docks" full of icons that represent programs, documents, and even URLs. So we're happy to report that with version 4.5.2, DragThing is still our favorite shareware file launcher.

This new version is even more OS X savvy than its predecessors, with a slick trick for minimizing its own individual docks à la OS X's default Dock: when the Show Dock As Drawer preference is selected, only the tabs of your DragThing dock will appear along the edge of your screen. When you slide your cursor over them, the dock slides out to reveal the icons within. The tab you move over with your mouse is even automatically selected for you, making it easy to get to important items without using much screen space. In another time-saver, you can also now set hot keys to control individual docks. Other new features include the ability to navigate more than five levels deep when you control-click on folders in a dock, support for custom DragThing sounds, and OS X support for labels. For users who find their desktops littered with aliases, and for those whose Docks are full to bursting, DragThing can be a great space saver.—JASON SNELL

SIX DEGREES 1.5

X

Creo, 604/451-2700, www.creo.com; \$99;
upgrades from version 1.0, free



In our November 2002 review of Six Degrees, we noted that Creo's innovative new program that finds relationships between e-mail messages, documents, and address-book entries was sorely lacking in the speed department. With the version 1.5 update, though, our misgivings have largely been put to rest.

In our tests on a 450MHz Power Mac G4 with 384MB of RAM, Entourage X no longer slowed to a crawl when Six Degrees was running in the background. This makes Six Degrees usable—and extremely useful—on an everyday, minute-by-minute basis. Six Degrees took a little while, but not an unreasonable amount of time, to search through our thousands of e-mail messages and many e-mail folders, and it did not inhibit the rest of the OS.

Version 1.5 also has some nifty interface improvements, such as the ability to search by keywords in e-mail messages, file names, and address-book entries; reveal the location of a message or file; and send a reply to an e-mail message directly from the Legend.

Six Degrees is compatible with just one e-mail client—Entourage X—and this still keeps it from greatness. But Six Degrees is a very powerful application that can save people who work on a project basis a load of time.—JENNIFER BERGER

Swift 3D 3

continued from page 41

tools is adequate for producing basic 3-D logos and simple geometric shapes—staples for Web designers—but you'll be hard pressed to create anything beyond cookie-cutter 3-D designs. Fortunately, Swift 3D does let you import 3-D models in DXF format, so you can use 3-D objects created in other applications or purchased from third-party developers, but we're skeptical of supposedly stand-alone design tools that force you to either do the bulk of your creation in another program or buy your content from other sources.

For Web artists who need to do raster-style rendering and vector-based art, version 3 includes a ray-trace renderer. However, with the program's minimal modeling, lighting, and scene-building tools and capabilities, you shouldn't expect a lot of realism from your final products, even though Swift 3D has an otherwise decent-quality rendering engine. On the other hand, version 3 has vastly improved Flash rendering and allows transparent shadow effects and even reflections.

Macworld's Buying Advice

Swift 3D does a fine job of outputting good-looking Flash renderings, but in a world where rendering is only the final step of the creation process, the software's 3-D tools barely live up to the challenge. If you already have 2-D vector art or 3-D models in DXF format created elsewhere and simply want to render them in Flash format, then Swift 3D 3 is a good choice. □

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Military Action, Spy Intrigue, and a Classic Arcade Revival

Bullets Are Forever

NOT EVERYONE CAN BE A SECRET AGENT, NO MATTER WHAT you might think if you watch *24* or *Alias*. But Mac gamers can put themselves into the heat of battle, thanks to two new games that take very different

approaches—although they both end up using plenty of ammo. We've also got something for the kids and something for the kids of the 1980s inside *The Game Room*.

Ghost Story

"One shot, one kill"—it's the mantra to memorize when you're playing *Ghost Recon*, a squad-based tactical action and strategy game that puts you in control of the

Ghosts, a team of elite military reconnaissance specialists sent into hot zones to help defuse situations before they explode into global conflicts.

The game's back story seems pulled from a Tom Clancy technothriller, and it should: Tom Clancy's name is on the box. This is a realistic simulation of modern warfare, set in the near future. You don't go into hot zones with your particle-beam weapon blazing and endless supplies of ammunition; instead, you're equipped with the sort of armament you'd expect today's soldiers to have—sniper rifles, assault weapons, handguns, knives, grenades, and so on.

Don't expect to find magical health packs littering the battlefield to charge you back up to 100 percent health, either. By the time you hear the bullets flying, it's usually too late to do anything but watch your corpse fall to the ground. Going in with guns blazing, as you often do in other 3-D-action games, is a sure way to get yourself killed. You have to carefully plan your assault, handpicking your team from a group of experts and deciding how they'll be equipped for the mission at hand.

Once you've been dropped onto the battlefield, you give your team commands on-the-fly—go here, cover this area, shoot anything that moves. This is a change from previous games in this series (*Rogue Spear* and *Rainbow Six*), where you had to plan your assault in a separate stage before you went onto the battlefield.

The game's interface can be a bit vexing. You'll see what's happening in a 3-D view, along with status



Hunter Killer In Tom Clancy's *Ghost Recon*, there are no traditional frag-fests—you fight realistic battles with realistic weapons.

indicators for soldiers, weapons, and threats; a command map; and more. It takes a bit of adjustment, but once you're in the swing of things, your team can become a lean, mean, well-coordinated killing machine.

To get yourself in shape, you can ease into *Ghost Recon* with training missions that let you practice the fundamentals. Once you're com-

fortable with the basic mechanics of play, you can run either quick missions or a complete campaign.

As in real life, soldiers gain experience and accolades with each successive mission. These lead to promotions that make them better soldiers and provide them with access to more-sophisticated hardware, which you'll need to succeed.

If you're familiar with its predecessors, you'll be happy to know that *Ghost Recon* has a new, much better graphics engine. The improved visuals are augmented by realistic audio that even models birds and other wildlife indigenous to the areas you find yourself in. That realism also extends to bloody, bullet-riddled corpses, which is why *Ghost Recon* merits an M (for Mature) ESRB rating.

The *Ghost Recon* story line puts you in harm's way when a fictional hard-line communist regime hopes to regain power and return Mother Russia to her Iron Curtain ways; you and the Ghosts must stop it. But also included as a part of *Ghost Recon* is an expansion set called *Desert Siege*, which takes you to the East African nation of Eritrea, where you must repel an invading Ethiopian force that threatens to destabilize the region. Each campaign comprises a number of missions with different objectives—reconnaissance, firefighting, rescues, recovery, and so on.

There are no particle-beam weapons in *Ghost Recon*—just the weapons today's soldiers have.

continues



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TOM CLANCY'S GHOST RECON

RATING: **★★★★****PROS:** Leaps and bounds better than predecessors; mission editor and multiplayer mode add longevity.**CONS:** Daunting interface is tough to learn.**PRICE:** \$50**OS COMPATIBILITY:** Mac OS 9, Mac OS X**COMPANY:** Aspyr Media, 888/212-7797,www.aspyr.com

You can also play multiplayer missions online. Ghost Recon is supported by (and hugely popular on) the Mac-only online gaming service GameRanger (www.gameranger.com), so you shouldn't have any trouble finding someone to play with.

Ghost Recon's system requirements are pretty reasonable, and the game features a built-in system that helps you tune your graphics settings so the game runs smoothly on your Mac.

The Bottom Line If you enjoy 3-D-action games such as Medal of Honor: Allied Assault and Quake III: Arena but find that the nonstop action leaves your brain wanting, then Tom Clancy's Ghost Recon is an excellent choice.

On Her Power Mac's Secret Service

The Operative: No One Lives Forever was a surprise hit when it was released for the PC. Few

expected this first-person shooter to sell well, but a strong and likable heroine—Cate Archer—and a compelling story line that didn't take itself too seriously helped propel the game into the spotlight. Now, more than two years later, MacPlay has brought No One Lives Forever to the Mac.

A Cold War-era spy story set in the 1960s, No One Lives Forever draws its

inspiration as much from *The Avengers* and *The Saint* as from the James Bond films. Cate Archer is a smart, sexy, resourceful, and ruthlessly independent woman in an era when only one of those traits was considered properly feminine. That's an issue that comes up in the game from time to time, as Archer has to overcome resistance in her own covert-operations group (ironically called U.N.I.T.Y.) before she can go on to thwart the nefarious, megalomaniacal plans of an evil covert group called H.A.R.M.

The in-game dialogue and interstitial sequences are rife with humor, and it's just



Return the Equipment This Time! You use various forms of weaponry, both traditional and exotic, to play the spy games of The Operative: No One Lives Forever.

the sort of tongue-in-cheek banter you'd expect from a game whose protagonist draws inspiration equally from Emma Peel and James Bond, with a pinch of Austin Powers to boot.

Graphically, No One Lives Forever isn't on a par with the most recent 3-D-action games released on the Mac, though it looks fine and runs smoothly.

Let's Take a Trip Down Memory Lane

Back in 1997, programmer James Hague published a \$20 e-book called *Halcyon Days: Interviews with Classic Computer and Video Game Programmers*. Hague interviewed many of the programmers responsible for some of video gaming's biggest hits (for example, Eugene Jarvis, mentioned in this month's column). Now Hague has republished his e-book, and it's available for free on his Dadgum Games Web site (www.dadgum.com).

The HTML-formatted book contains comments from an impressive array of programmers. If you

fondly remember games on your Apple II, such as M.U.L.E. or Choplifter, you'll enjoy comments from their makers here. If you spent afternoons in the arcade pumping quarters into games such as Battlezone and Armor Attack, you'll delight in comments from their programmers. What's more, Hague also maintains a Giant List of Classic Game Programmers, which includes dozens, if not hundreds, of names that didn't make it into *Halcyon Days*. His site also contains the excellent game Bumbler Bee-luxe, which runs fine in OS 9 and OS X's Classic mode.

THE OPERATIVE: NO ONE LIVES FOREVER

RATING: ★★★

PROS: Unique style and sense of humor; entertaining characters and settings, especially for fans of 1960s spy movies.

CONS: No mission editor; pricey for an old PC conversion.

PRICE: \$50

OS COMPATIBILITY: Mac OS X

COMPANY: MacPlay, 214/855-5955,

www.macplay.com

And given how old the original PC game is—especially considering that its sequel is already available for Windows—the \$50 price seems a bit much. It's up to MacPlay to try and improve the speed at which it brings its converted PC games to market.

Game play varies from direct frontal assaults on your enemies to stealth operations where you have to sneak about without being detected. To that end, you're equipped with an arsenal of weapons and nifty gadgets that can help you get out of jams—a hair barrette that you can use to pick a lock, for example, and an exploding tube of lipstick. You'll travel to exotic locations in Europe, North Africa, and even outer space as you seek to keep Archer out of H.A.R.M.'s way. There are also multiplayer modes and maps to keep you busy online. The game is rated T for Teen by the ESRB—although there are plenty of explosions and a lot of gunplay, there's not excessively gruesome bloodshed.

While the Mac edition of the game includes the multiplayer maps and missions of the PC version, it lacks the mission editor of its PC counterpart.

The Bottom Line First-person shooters are a dime a dozen on the Mac these days, but *The Operative: No One Lives Forever's* style and sense of humor put it in a class by itself. It's a bit long in the tooth, but it's still a fun romp.

No Castaways on This Island

The Learning Company has released the third title in its long-running line of Zoombinis education software: *Zoombinis Island Odyssey*. The series has distinguished itself with educators by providing fun and original math and problem-solving games. This new game

also introduces kids to scientific concepts and ecology.

The Zoombinis return to their homeland to find the island devastated by the horrid Bloats. Zoombini Isle's natural habitat has been destroyed, and it's up to the Zoombinis to make things right: they must reestablish the natural ecology by cultivating insects, horticulture, and wildlife in a sequence of puzzles that test a kid's ability to perform logical operations.

In one game, you need to match tiles to their hieroglyphic patterns on a wall, in order to unlock a door. Another task, operating a catapult that launches the Zoombinis over a steep cliff wall, requires understanding gear ratios. Such activities help kids develop math skills without using stuffy numbers or equations. To



Save the Zoombinis! Kids have to use their noodles to help their Zoombini friends put the pieces of Zoombini Isle back together.

solve problems, players must organize information and test their theories. Other exercises introduce kids to basics in astronomy and genetics, too.

All told, there are seven different puzzles, each with three levels of difficulty to keep players challenged. The puzzles randomize themselves, so kids can't count on using the same solutions each time. Some puzzles can get a bit

continues

ZOOMBINIS ISLAND ODYSSEY

RATING: ★★★

PROS: Develops reasoning and deduction skills in a fun and entertaining way.

CONS: Occasionally frustrating puzzles.

PRICE: \$20

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: The Learning Company, 800/395-0277,

www.broderbund.com

THE OPERATIVE

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frustrating, especially for kids who are used to instant gratification.

A help system will guide first-time players through the basics of how each puzzle works, without giving away the solution. Kids who don't solve the puzzles correctly the first time can revisit them later, too.

If you're a teacher who would like to incorporate Zoombinis Island Odyssey into your curriculum, it's worth noting that The Learning Company has produced an educator-enhanced version that includes whole-class progress tracking, printable classroom activities, and more.

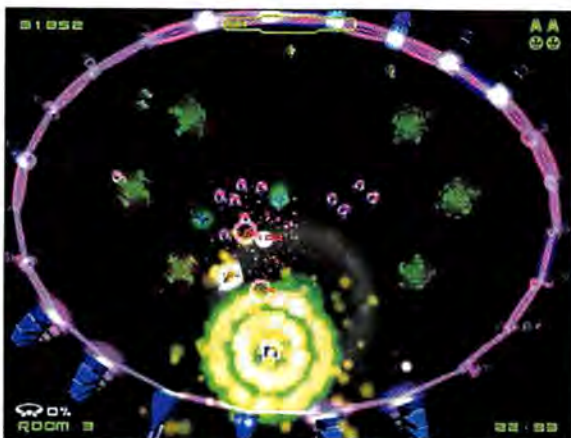
The Bottom Line Challenging and fun, Zoombinis Island Odyssey may help your youngsters develop math and logic skills—without them even knowing it.

Brain Storm

The two guys behind PomPom Games are clearly fans of the 1980s coin-op arcade classics designed by Eugene Jarvis. PomPom's last game, Space Tripper, was an homage to Defender. Its newest game, Mutant Storm, borrows heavily from Robotron: 2084.

Mutant Storm is no simple clone, however. It's a wild, positively psychedelic spectacle that puts you inside a ship armed to the teeth with weapons that can blast out any side—top, bottom, left, or right. Swarms of enemies descend on you from all directions, and between dodging the bad guys and shooting at them, you'll need to get ambidextrous awfully fast, because you use one set of controls to move while simultaneously using another set to fire.

Though the action sounds thoroughly retro, the graphics are anything but. Mutant Storm makes brilliant use of OpenGL to render particle effects, draw 3-D objects, and generally wreak absolute havoc on your retinas as you play. And if you have an Adaptor and a Nintendo 64 controller (***; July 2002) or the X-Arcade ("Macworld's 2002 Game Hall of Fame," January 2003), you'll find that Mutant Storm is a perfect match. In particular, the X-Arcade provides the same two-stick design that made Robotron: 2084 such a hoot back in



Where's Wolverine? Borrowing heavily from Robotron: 2084, Mutant Storm is a psychedelic spectacle of action that begs for an arcade-style controller, such as the X-Arcade.

the Reagan era. Trying to play the game with the keyboard or the keyboard and mouse is absurdly difficult but not impossible; it's just much easier to play with a game controller.

Mutant Storm depends on an open-source multimedia technology called Simple Direct Media Layer to work on OS X. This requires that you install a new library in your Mac's Frameworks folder if it's not already there, and PomPom includes a separate installer with the Mutant Storm download.

A playable multilevel demo is available for download from PomPom's Web site; when you're ready to buy it, you can download the full 15MB game.

There's one thing I'm disappointed about: Mutant Storm lacks a soundtrack and really deserves one, even if it bulks up the download size.

The Bottom Line If you're looking for a game evocative of Robotron: 2084 that's been thoroughly updated for the new millennium, look no further than PomPom Games' Mutant Storm. □

MUTANT STORM

RATING: ****

PROS: Hypnotic and wild graphics complement fast and frantic game play evocative of classic coin-op romps.

CONS: Cries out for a soundtrack.

PRICE: \$20

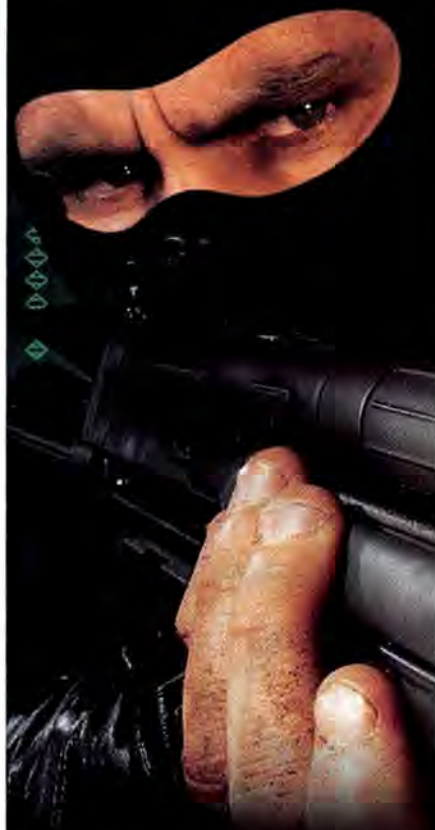
OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: PomPom Games, www.pompom.org.uk

No one would ever mistake MacCentral.com Senior Editor PETER COHEN for a member of Ghost Recon—he's shaped more like a Zoombini.

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WELCOME BACK



SCANNERS WORK IN OS X AT LAST. WE PUT THEM TO THE TEST.

BY DAVID WEISS

Together with Macs and laser printers, flatbed scanners helped herald the desktop-publishing revolution of the 1980s. By the mid-1990s, flatbed scanners had shrunk in size and plummeted in price (some cost less than the average toaster oven), making them practical and cost-effective tools for the home user, too. But when Apple released Mac OS X in 2001, scanners and their users were suddenly caught in a state of limbo, as developers pondered the task of writing compatible drivers for a completely new operating system. Even after Adobe Photoshop came

to the platform, many digital-design enthusiasts were left in the past, forced to call up OS X's Classic mode when they needed to scan.

The wait is finally over. The latest breed of flatbed scanners from Canon, Epson, and Hewlett-Packard are up and running on OS X. Macworld Lab rounded up six of these OS X-compatible flatbed scanners, each of which costs \$300 or less. Three of the scanners (the Canon CanoScan 5000F, the Epson Perfection 2400 Photo, and the HP Scanjet 5500c) offer a maximum scanning resolution of 2,400 dpi, and three (the Canon CanoScan LiDE 30, the Epson Perfection 1260, and the HP Scanjet 3500c) top out at 1,200 dpi.

To see how well these new arrivals perform, we tested each for speed, color fidelity, image detail, and ease of use. While some were a little rough around the edges, the group offered an impressive combination of affordability and options. And for Mac users who aren't quite ready to give up on their current, incompatible scanners, we looked at two software alternatives—LaserSoft Imaging's SilverFast Ai 6 and Hamrick Software's VueScan 7.5—that get the job done in OS X (see "Revive Your Old Scanner").

The Whole Package

While you shouldn't judge a scanner entirely on its looks, how well a machine fits into your working environment is a concern—especially if you have limited desk space.

The Scanjet 5500c, with its automatic photo feeder, is the thickest, bulkiest scanner in the bunch, so you probably won't want to move it once you've found it a home. It's also the longest scanner by a couple of inches. The CanoScan LiDE 30 is the slimmest, at just a couple of inches thick. And as it's only a tad larger than a Titanium PowerBook, you can easily carry it under an arm. The other scanners fit between these two extremes; the CanoScan 5000F and Perfection 2400 Photo are a bit taller and heavier than the Perfection 1260 and Scanjet 3500c.

The Scanjet 5500c is the only scanner that comes with an automatic photo feeder that processes stacks of three-by-five- or four-by-six-inch photos with a single command. But we had trouble getting an accurate crop of each photo when we used the photo feeder. The underside of the photo-feeder mechanism was visible in each of our scans, so we had to manually crop each image later in an image editor.

See How They Stacked Up We tested (from top to bottom) the Canon CanoScan LiDE 30, Hewlett-Packard Scanjet 3500c, Epson Perfection 1260, Canon CanoScan 5000F, Epson Perfection 2400 Photo, and Hewlett-Packard Scanjet 5500c.

THE WAITING GAME

OS X-compatible scanners are finally starting to appear on store shelves, leaving many Mac users wondering what took so long. The process of writing and updating a scanner driver—the software that lets your Mac control the scanner—in OS 9 was relatively straightforward. But with the release of OS X, Apple, scanner developers, and other industry leaders were at odds over how to build drivers for the new OS.

Here's a look at how scanner drivers have changed in OS X and how these new options may affect the way you work.

Drivers Wanted

When many Mac users began switching to OS X, they discovered that their scanners weren't ready to make the journey with them. Scanner manufacturers needed to completely rewrite their drivers for the new OS. To make matters worse, OS X lacked support for TWAIN, one of the most common ways scanners interact with other programs.

A Standard Approach TWAIN, a software standard developed by the TWAIN Working Group, lets applications such as Adobe Photoshop, Macromedia's Fireworks, and ScanSoft's OmniPage Pro access a scanner's driver directly. This lets you avoid the tedious process of opening scanner-specific software, saving out the image file, and then opening the file with the appropriate editing software—a common regimen in the days before TWAIN. Because the TWAIN software resides at the system level, it's instantly available to any TWAIN-compliant application on your system; you won't have to reinstall your scanner driver if you install a new version of Photoshop, for example.

TWAIN in OS X Developing a new TWAIN driver for a scanner in OS 9 was comparatively simple, requiring only minor adjustments. But since there was no TWAIN standard set for OS X, many scanning vendors were left to chase a moving target. As a result, most scanning developers sim-

ply decided to put development for OS X on hold and instead support scanning only from Classic mode.

Back in the Saddle

Two recent changes in the Mac market have helped end the scanner limbo: Photoshop 7 and Jaguar. These releases finally gave scanner manufacturers the tools they needed to get scanners up and running in OS X.

Photoshop Plug-Ins Photoshop is one of the most popular stops for scanned images. So the release of version 7 for OS X gave a green light to some developers working on OS X scanner drivers.

Photoshop 7 came to OS X much sooner than TWAIN did. Rather than wait for Apple and the TWAIN Working Group to pound out an OS X TWAIN specification, one manufacturer, Canon, decided to write directly for Photoshop, bypassing the TWAIN issue completely. Canon created a driver that users can install in Photoshop's Import folder—and in any application that accepts Photoshop plug-ins. Although Canon's plug-in doesn't offer the benefit of immediate access, as Twain drivers do, it's intelligent enough to find and install itself in any applicable programs on your system each time its installer is launched.

The downside to Canon's approach is that the driver is available only to software that supports Photoshop plug-ins. This won't be a problem for most users—in addition to most image editors, ScanSoft's optical character recognition (OCR) application, OmniPage Pro X, accepts plug-ins—but in some cases it may require extra work to get the image in the program you need. (Canon representatives say they are currently working on an OS X TWAIN driver.)

Jaguar and TWAIN The other major milestone for OS X scanners was the release of Jaguar. In this release, Apple expanded Image Capture (a small application that previously provided access just to digital cameras) so that it

Three of the scanners—the Scanjet 5500c, CanoScan 5000F, and Perfection 2400 Photo—come with transparency adapters for scanning slides and film. An adapter is built into the lid of the 5000F and 2400 Photo, resulting in their added stature. The 5500c's adapter is a separate unit that you place onto the glass.

Capturing Color

While none of the scanners we tested were truly flawless in terms of color accuracy, two models—the Perfection 2400 Photo and CanoScan LiDE 30—stood out.

All of the scanners produced some degree of color shifting. The Epson Perfection models, the 1260 and 2400 Photo, showed a green bias, whereas the other scanners erred on the side of red, to varying degrees. Of the six, the 2400 Photo provided the best color matches, producing natural flesh tones and smooth gradations between shades. Its slight green bias was most noticeable in neutral grays but was otherwise very subtle.

Despite a slight red bias, which tended to subtly shift blue tones to purple and therefore put it behind the

The Results Are In

Macworld LAB TEST	Timed Results		Juried Results		
	PREVIEW SCAN (SECONDS)	300-DPI SCAN (SECONDS)	COLOR MATCHING	LINE-ART DETAIL	PHOTO DETAIL
Canon CanoScan 5000F		15	41		
Canon CanoScan LiDE 30 *		18	57		
Epson Perfection 1260		23	55		
Epson Perfection 2400 Photo *		12	30		
Hewlett-Packard Scanjet 3500c		9	39		
Hewlett-Packard Scanjet 5500c		11	33		
< Better		< Better			

BEST RESULTS IN BOLD. * = Editors' Choice.

We tested each scanner with Mac OS X 10.2.1 installed on a dual-1GHz G4 with 256MB of RAM. We recorded the time it took for each scanner to display a letter-size preview of the scanned image and then to scan an 8-by-10-inch photo at 300-dpi resolution. Image quality was assessed by a panel of experts who rated each scanner's ability to capture photographic detail, fine line details, and accurate color (as Excellent, Very Good, Good, Fair, or Poor).—MACWORLD LAB TESTING BY JAMES GALBRAITH AND DAVID WEISS



Driver Difference
Although Epson's Image Capture Module (right) offers a simpler interface than the TWAIN driver (left), you can set Image Capture to get all of TWAIN's functions.

worked with scanners. More important, Apple made Image Capture TWAIN-compliant. The TWAIN specification on OS X had at last been established, giving scanner developers a working TWAIN standard for which they could write their drivers. Epson was the first scanner manufacturer to take advantage of Jaguar's developments by writing OS X-compatible TWAIN drivers.

Scan Capture with Image Capture In addition to TWAIN, Apple created a new driver format specifically for Image Capture: Image Capture Modules. (Epson was also the first to produce drivers for this standard.) Image Capture isn't a fancy application; its role is to provide invisible, seamless access to cameras and scanners, regardless of your level of expertise or what software you've got installed.

With most Image Capture Modules, you won't get the filters, adjustments, and options that you'd get with a TWAIN driver (although you can set Image Capture to adopt all the functionality of a scanner's TWAIN driver—if one is available—by selecting the Use TWAIN Software Whenever Possible preference). But Image Capture does produce some very good, accurate scans. If you don't have an image-editing program or the time to fiddle with adjustments, Image Capture offers quick and easy access to your scans. And by cre-

ating a standard for Image Capture Modules, which Apple says can be easier to write than TWAIN drivers, Apple hopes to encourage other scanner developers to make the move to OS X (see "Driver Difference").

An Independent Scanner

Despite the developments with Jaguar and Photoshop 7, some scanner companies have decided to avoid the issue completely and develop their own scanning software. Hewlett-Packard, for example, decided it could get more functionality from PrecisionScan Pro, its stand-alone scanning utility. This approach is reminiscent of the days before TWAIN. The application gathers image data from the scanner and saves the file in various file formats or passes it off to an image editor of your choice. This means you'll often need to use two programs to scan rather than one—an extra step that some users may find tedious.

Scan Away

It took a while, but at last a few good options have emerged out there for scanning with OS X. And now that the scanning architecture in OS X is set, it should provide a firm foundation for further, better support in the near future.

2400 Photo, the CanoScan LiDE 30 also provided accurate scans with attractive skin tones.

The Perfection 1260 and Scanjet 5500c both showed more-pronounced color shifts, but our jury thought that they still produced acceptably accurate matches to our targets. The Scanjet 3500c performed slightly worse, producing skin tones with a markedly unnatural orange tint and earning only a Fair rating.

The CanoScan 5000F was the worst of the lot in terms of color fidelity. In addition to having the most pronounced red tint, scans made with the 5000F had noticeably fewer tonal gradations. Some colors jumped out, with bright, almost fluorescent saturation, while others looked ghostly and pale.

Getting Down to Details

In addition to capturing accurate color, a good scanner must be able to detect and reproduce fine details in scanned documents and images. The degree of detail a scanner can register is largely influenced by its resolution. But while our tests found that the higher-resolution scanners often fared better when scanning

line art, the same scanners didn't always provide better detail at lower resolutions.

Line Art To test each scanner's ability to capture intricate details from line art, we scanned the extremely small text surrounding Abraham Lincoln on an old five-dollar bill (in grayscale, at the highest hardware resolution that each scanner supported). As expected, the 2,400-dpi scanners were able to pick out tiny details that the lower-resolution (1,200-dpi) scanners couldn't see.

Of the three higher-resolution scanners, the Perfection 2400 Photo was the sharpest; it was able to reproduce more tiny, solid lines and subtle features such as the paper's grain, and it offered the most-legible text. Results from the CanoScan 5000F and Scanjet 5500c followed closely behind. Of the 1,200-dpi models, the Scanjet 3500c provided the sharpest, most legible scan of this tiny text. Although we could read the text scanned by the Perfection 1260, it was noticeably blurry, earning a Poor rating; the CanoScan LiDE 30 fell between these two extremes. When we put the scanners on equal footing by testing them all at 1,200 dpi, the

**THE 2,400-DPI SCANNERS
DIDN'T ALWAYS PROVIDE
BETTER DETAIL AT
LOWER RESOLUTIONS.**

REVIVE YOUR OLD SCANNER ►

It's reassuring that companies such as Epson, HP, and Canon are providing OS X-compatible drivers for many of their latest scanners. But what if you want to keep using the scanner you bought last year? While there may not be an OS X driver for it in the near future, chances are you can still speak to your scanner with the help of third-party software such as LaserSoft Imaging's SilverFast Ai 6 or Hamrick Software's VueScan 7.5.

Although the two programs are aimed at different audiences (SilverFast is geared toward graphics professionals looking to exert greater control over their scanners, while VueScan is aimed at a more general audience), both offer the hope of at last bringing your scanner into the world of OS X. We tested both programs with scanners currently unsupported in OS X to see how well they worked.

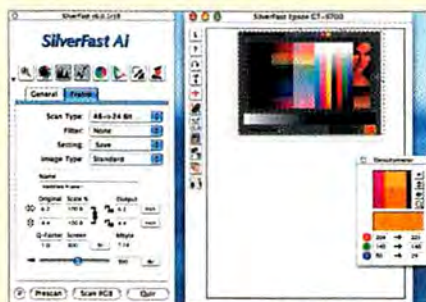
SILVERFAST AI 6: DRIVER TAKES YOUR SCANS TO THE NEXT LEVEL

Just as a talented driver can bring out the best in a sports car, a well-crafted software driver can bring out the best in a scanner. Aimed at graphics professionals, LaserSoft Imaging's SilverFast Ai 6 can command over 150 scanners, with specific versions for each model. We tested SilverFast Ai for the Epson Perfection 2450 and found that it not only provides OS X support but also offers

many possibilities beyond those of the standard driver.

SilverFast Ai works as either a TWAIN plug-in or a stand-alone application. Its tools are both powerful and flexible. While the Epson driver lets you turn sharpening on or off, SilverFast offers six levels of sharpening. The Sharpen USM (unsharp masking) preview tool also lets you call up a dialog box so that you can visually control the edges formed by contrasting colors. It's true that most image-editing software also does this, but by making this adjustment with a scanner driver, you can save time when working with multiple, similar images.

SilverFast Ai offers a host of advanced color-correction features. For example, you can neutralize as many as four points on your image to remove color casts, which are common with scanners. Like the Info panel in Photoshop, the Densitometer shows the RGB (or even



Split 'Em Up SilverFast Ai 6's interface has two panels—one for settings and one for the preview.

VUESCAN 7.5: VERSATILE DRIVER OFFERS WELCOME SUPPORT

If your scanner isn't supported in OS X, Hamrick Software's VueScan 7.5 may be able to act as a surrogate driver. In our tests with an Epson Perfection 2450 and a Microtek 6700, we found that it had a few quirks and some welcome powers. And unlike SilverFast, a single copy of

VueScan supports dozens of scanners, and the list is constantly growing.

VueScan provides a respectable assortment of tools, such as sharpening and grain-reduction filters. You can set the black and white points and choose from several presets for white balance and curves, but you can't tweak the image curve visually. When you zoom in on your preview, VueScan doesn't perform a new scan, which would make it easier to see intricate details; it simply enlarges the pixels.

VueScan's most valuable feature is its ability to save multiple crops from the same scan, rather than rescanning for every crop. You have to save a file before performing a scan, which is not a problem unless you forget and elect to not over-



View to a Scan VueScan 7.5 provides a driver for non-OS X scanners, as well as compelling features.

RATING: ★★★★★

PROS: Powerful, flexible image-editing tools; neutralizes color casts; provides detailed color measurement; available as a TWAIN plug-in and a stand-alone app.

CONS: Some features are difficult to find; you must buy a new version for each scanner model you own.

PRICE: \$119

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: LaserSoft Imaging, 941/383-7496, www.silverfast.com

CMYK) values of any spot in your preview, as well as before and after measurements. Our only gripe is that some of the program's features aren't obvious without checking the manual.

Macworld's Buying Advice

SilverFast Ai 6 is full-featured driver software. If you're a professional who needs precise color matching, or if you'd like to get a lot more control from your scanner software, SilverFast is a good choice.

RATING: ★★★

PROS: Can save multiple files from the same scan; has a few useful filters.

CONS: Only digital zoom on preview; file-saving bug.

PRICE: \$40

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Hamrick Software, www.hamrick.com

write the previous scan: the program will report an error, and the scan will be lost.

Macworld's Buying Advice

If you need your unsupported scanner to work with OS X, VueScan may make it happen. Although it's got some clunky file-saving issues and uses a digital zoom, it provides good image quality at a hard-to-beat price, and its ability to save raw scans can save you a lot of time.

5000F came in behind the 3500c. The 2400 Photo and the 5500c both fared worse than the LiDE 30 but better than the 1260.

Photo Detail Some of our scanners had trouble reproducing photographic detail, perhaps a result of their problems with color in general. To compare the scanners' abilities to capture detail using color, we set each scanner to 300 dpi. In this test, the Scanjet 5500c and the Perfection 2400 Photo both produced very good, detailed scans, with the 5500c taking a slight lead. The CanoScan LiDE 30 captured an acceptable amount of detail. The three remaining scanners produced muddy, blurry scans. In particular, the CanoScan 5000F's performance was much worse on this test than on the line-art test; it failed to distinguish subtle shades of shadow and color.

Driving Skills

Because of initial disagreements over how to create a standard for scanner drivers in OS X, many scanner developers have created their own solutions to the issue (see "The Waiting Game"). While all the scanners in this roundup come with OS X-compatible drivers, each manufacturer has taken a slightly different approach—some with more success than others.

The Epson Perfection models both use TWAIN drivers, so they can be accessed from any TWAIN-compatible application. This includes Apple's Image Capture application if you're running Jaguar. When you're using the Epson TWAIN drivers, all of the features are accessible from one well-designed panel. You can drag the preview window to any size, and when you zoom in on a preview, it rescans the image rather than just enlarging the pixels via a digital zoom (as Image Capture does by default). Although this takes a

little more time, it allows you to see details that you can't see otherwise. (The Perfection 2400 Photo clocked the fastest scanning speed of the bunch. Coming in at just 30 seconds, it was almost twice as fast as the slowest scanner, the CanoScan LiDE 30, which required 57 seconds [see "The Results Are In].") While half a minute may not seem like much, the time savings can add up if you spend a lot of time at your scanner.)

The only downside to the Epson TWAIN drivers is that they don't respond to the buttons on the outside of the scanner, which let you scan directly into an e-mail or send a scan to the nearest printer. Epson plans to update the drivers to fix this problem and hopes to provide the updated drivers on the CD this spring.

The drivers for the Canon scanners are Photoshop 7 Import plug-ins (they also work with any program that supports the Photoshop plug-in architecture). They

have a clean look and provide easy access to basic settings. And as with the Epson TWAIN drivers, if you zoom, you'll get a new preview. Both scanners also come with CanoScan ToolBox software, which manages the behavior of the scanner's buttons. And unlike those on the Epson scanners, the buttons on the front of the Canon scanners do work. (When we first set up the driver to scan from the LiDE 30 into Photoshop, it mistakenly opened Photoshop in Classic mode. There's a simple workaround for this, which is posted on Canon's site. You have to do it only once; thereafter, the correct version of Photoshop will launch when you push the button.)

HP uses its own software, PrecisionScan Pro, for scanning in OS X. Because it stands alone, you

EACH SCANNER TAKES A DIFFERENT APPROACH TO OS X COMPATIBILITY—SOME WITH MORE SUCCESS THAN OTHERS.

Late Arrivals: Six OS X-Compatible Flatbed Scanners

★ = Editors' Choice.

COMPANY	PRODUCT	MOUSE RATING	PRICE	CONTACT	RESOLUTION	TRANSPARENCY ADAPTER INCLUDED?	PROS	CONS
Canon	CanoScan 5000F	★★	\$200	800/652-2666, www.usa.canon.com	2,400 × 4,800	Yes	Very good line-art detail; moderately fast scan speed; full-featured driver; has one-touch buttons.	Poor color matching and mediocre photo detail; slow previews.
	CanoScan LiDE 30 ★	★★★★	\$100	800/652-2666, www.usa.canon.com	1,200 × 2,400	No	Very good color matching; full-featured driver; has one-touch buttons; very small footprint; requires no AC power.	Slow.
Epson	Perfection 1260	★★	\$99	800/463-7766, www.epson.com	1,200 × 2,400	No	Uses a TWAIN driver.	Poor line-art detail; slow; one-touch buttons currently not supported in OS X.
	Perfection 2400 Photo ★	★★★★	\$229	800/463-7766, www.epson.com	2,400 × 4,800	Yes	Excellent line-art detail; very good color matching, photo detail; fast; uses a TWAIN driver.	One-touch buttons currently not supported in OS X.
Hewlett-Packard	Scanjet 3500c	★★★	\$100	800/752-0900, www.hp.com	1,200 × 1,200	No	Very good line-art detail; fast; has one-touch buttons; comes with OCR software for OS X.	Mediocre color matching; flawed driver.
	Scanjet 5500c	★★★★	\$300	800/752-0900, www.hp.com	2,400 × 2,400	No	Very good photo and line-art detail; fast; has one-touch buttons; comes with OCR software for OS X.	Flawed driver; document feeder does a poor crop.

SCANNER SHOPPING TIPS

When browsing for a scanner at your local computer store, you won't find information about speed, color accuracy, or driver capabilities—for that, you'll have to rely on reviews. But here's how to make sense out of what you will find on a scanner's box or on its manufacturer's Web site.

Resolution

A scanner's resolution refers to the number of dots per inch (dpi) that the scanner is able to capture. This figure is typically expressed as two numbers—such as 1,200 by 2,400—where the first represents the number of dots across the width of the scanning area and the second represents the number of dots down the length.

When comparing scanner resolutions, keep in mind that the smaller number listed (usually the width) is the most telling. A scanner with a resolution of 1,200 by 2,400 dpi is not significantly better than a scanner with a resolution of 1,200 by 1,200 dpi, because the smaller number (in this case, 1,200 dpi) represents the limit the scanner can achieve without using interpolation—a software process that invents extra pixels without actually capturing extra detail.

Also note that if you scan images only at resolutions of 72 dpi, 300 dpi, or 600 dpi, you won't see a bit of difference between a 1,200-by-2,400-dpi scanner and a 2,400-by-4,800-dpi scanner. But you will appreciate the difference if you scan small sections of a document at the highest resolution each scanner can support, and then enlarge the images. The 2,400-by-4,800-dpi scanner will provide noticeably more information.

Bit Depth

The number of colors that a scanner is capable of detecting is its bit depth. Most scanners, if not all, can capture 48-bit color. Note that in image editors such as Photoshop, you'll probably be doing most of your work in 24-bit color. Still, a 48-bit scanner will provide a more accurate scan into a 24-bit file than will a 24-bit scanner.

Hardware Extras

If you spend a lot of time scanning the same type of media, such as 4-by-6-inch photographs, look for a scanner that gives you the option of adding appropriate extras—an automatic photo feeder, for example. This feature, which must often be purchased separately, lets you scan a stack of images with just one command.

Software Extras

Scanners often come bundled with additional software above and beyond the basic drivers. This can include anything from basic image-editing to asset-management software. Pay close attention to those that offer OS X-compatible optical character recognition (OCR) software such as ScanSoft's OmniPage Pro X (♦♦♦; Reviews, June 2002), which allows you to convert scanned documents into editable text. This is a great tool for writers, researchers, or document managers who need to synthesize information from multiple printed documents.

have to run it alongside any additional software you might use for image editing. It will, however, pass a file directly to Photoshop, so it's not entirely independent.

The PrecisionScan Pro application is very rough, though. The field for entering your scan resolution isn't visible at startup and becomes visible only after you select Resolution from the Tools menu. Also, every time you perform a scan or a preview, a copy gets saved on your hard drive. As a result, you must periodically go in and delete these; otherwise, your drive will quickly fill up with files you don't want. The software also suffers from a smattering of design

flaws. The Resolution tab in the Preferences panel lists your default resolution but doesn't let you change it by picking a resolution from the list. If you don't see a resolution you want, you can add a new one to the list, but it must be a number between 1 and 99.

On the positive side, the program offers good tools for color control. PrecisionScan Pro makes basic suggestions as you scan, via a pop-up window. For example, if you try to scan an 8.5-by-11-inch document at 9,600 dpi, the program will inform you that you might want to rethink your strategy. And the scanner's buttons do work.

Macworld's Buying Advice

If you need a scanner for heavy-duty Web-site or graphic-design production but don't have the money to spend on a high-end professional scanner, we wholeheartedly recommend the Epson Perfection 2400 Photo. Its one-touch buttons aren't currently supported in OS X, but it received high marks in color matching, detail, and speed, and it comes with a transparency adapter. You may have to invest some time in getting truly accurate color, but the cost savings may be worth the extra effort. If you want the convenience of one-touch buttons and you're less concerned about getting the color exactly right, or if you've got a closet full of photos you'd like to scan, the Hewlett-Packard Scanjet 5500c may appeal to you. It's good at capturing details, and it holds its own in terms of speed. But you'll have to put up with flawed scanning software that feels thrown together.

For the casual scanner user who doesn't need all of the power or resolution of the Perfection 2400 Photo, the Canon CanoScan LiDE 30 is also a good choice; although it's slow, it has very good color-matching abilities, requires no external power, and is extremely slim. Also, at \$100, its price is hard to beat. □

EDITORS' CHOICE

Best 2,400-dpi Flatbed Scanner

♦♦♦♦ EPSON PERFECTION 2400 PHOTO Excellent at capturing line-art detail; very good color accuracy and photo detail; fast scans; one-touch buttons are not currently supported in OS X.

COMPANY: Epson, 800/463-7766, www.epson.com

PRICE: \$229

Best 1,200-dpi Flatbed Scanner

♦♦♦ CANON CANOSCAN LiDE 30 Very good color fidelity with a full-featured driver; inexpensive; portable design doesn't require AC power cord; slow.

COMPANY: Canon, 800/652-2666, www.usa.canon.com

PRICE: \$100

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THE WAY WIRELESS

BY ADAM C. ENGST AND GLENN FLEISHMAN



Everything You Need to Know to Join the Wireless Life

Part of the appeal of new technology is that it promises to allow you to do things you'd never before dreamed possible. And anyone who has sat outside with a PowerBook, checking e-mail and surfing the Web without being connected to any wires or cables, knows how wireless technology has radically changed the way we use our Macs.

Apple's AirPort has made wireless networking easy and affordable for Mac users, but there's a lot to know about the technology. So we've put together this introduction to everything from security and legal issues to extending the reach of your wireless network—so you can fully experience the joy and marvel of wireless technology.

Security in a Wireless World

DANGER

Encryption

When you set up an AirPort Base Station, one of the important options you can select is Enable Encryption (Using WEP). This simple check box understates a host of complexity that Apple has neatly hidden from us, including how encryption works and what *WEP* (Wired Equivalent Privacy) even means.

When encryption is turned on, each AirPort user must enter the same password to join the base station's network. AirPort's encryption scrambles data entering or leaving the base station or any computers on the network, ostensibly

of waiting; a home broadband user might send enough data only after days or weeks. However, some security experts say that newer cracking programs need just a few minutes for even a home network.

Fortunately, help is on the way: a new industry standard should become available as an upgrade to existing AirPort and AirPort Extreme equipment. The current standard, WEP, will be replaced by WPA (Wi-Fi Protected Access).

WPA addresses the cryptographic problems in WEP and extends AirPort-like simplicity to non-AirPort users, who

currently have to enter a long series of digits and letters. AirPort users should see almost no difference after upgrading.

At press time, Apple's vice president of hardware products, Greg Joswiak, said the company was looking at WPA but hadn't made any decisions yet. If Apple doesn't support WPA, AirPort users could find themselves locked out of more-secure corporate networks.

Other companies that make Wi-Fi equipment, including those that Apple relies on for its AirPort chips and cards, have already announced their support for WPA. The first upgrades from these companies should be available in early 2003.

Flying Outside AirPort AirPort is compatible with Wi-Fi equipment made

by any other company—access points and network adapters alike. Many mixed networks have only one Mac user with an AirPort card, while others may have a Windows or Linux computer connected to an AirPort Base Station.

In these conditions, three situations often stymie both AirPort and non-AirPort users: connecting a non-AirPort user to a password-protected AirPort Base Station, connecting an AirPort-equipped

Mac user to a password-protected base station from a maker other than Apple, and configuring an AirPort Base Station without a Mac in sight (or on site).

Hexadecimal WEP Apple put a happy face on top of the encryption system that standard Wi-Fi uses to protect network data. AirPort users merely enter a password when adding security to the AirPort Base Station, and they enter the same password when connecting to an AirPort network via an AirPort card.

Apple's software converts the password into the format Wi-Fi understands: a WEP encryption key, usually written as a hexadecimal (or base-16) notation (basically, a number from 0 to 15 expressed as a single digit [the numbers 10 through 15 are represented by the letters A through F]).

A WEP key unlocks an encrypted wireless connection, and all users who join the protected network must use the same key. The WEP key can be 40 bits or 128 bits long—and some equipment can use only the shorter key (the longer key is harder to crack). The shorter key, the only one supported by older, graphite Base Stations, is 10 digits long (for example, DF6B8F331A44). The longer key, which new and updated AirPort cards and Base Stations can handle, is 26 digits long.

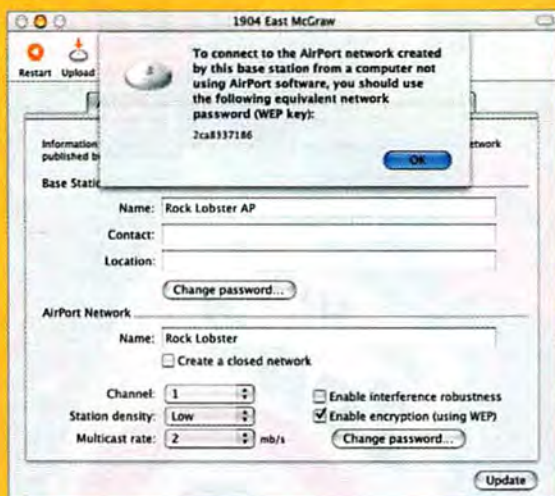
Extracting a WEP Key If you're a non-AirPort user and you want to join an AirPort network, you need to extract the AirPort Base Station's WEP key. AirPort Admin Utility makes this easy.

Just launch AirPort Admin Utility, connect to your AirPort Base Station, and then click on Password in the list at the top of the window or choose Equivalent Network Password from the Base Station menu.

Write down the sequence of digits and treat it as you would any other password: this key provides full network access. Enter this key whenever other connection software, such as Linksys's Wireless Configuration Utility or Windows XP's wireless-connection manager, asks for a WEP key.

Connecting with Plain WEP In case you need to connect to a protected network that isn't orbiting an AirPort Base Station, OS X supports true hexadecimal WEP keys.

OS X 10.2's prompt offers a pop-up menu with five choices for what you're entering. Choosing Password lets you enter an AirPort-style password. The



In OS X, you can find your WEP key—needed for non-AirPort users to connect to AirPort networks—and enter a hexadecimal password to connect to non-AirPort wireless networks.



rendering that data indecipherable to nonusers within range of the network.

Unfortunately, flaws in the way your network traffic is encrypted make it fairly easy for a patient network attacker to grab your data. When enough passing data has been captured, a free software package can automatically decode your transmitted secrets (banal and otherwise) and leave your network open to attack. Busy company networks might require just 15 to 30 minutes

other four choices correspond to the key length (40 or 128 bits) and the encoding (ASCII or hexadecimal).

Choose the appropriate ASCII option only when your WEP access is via a passphrase. These WEP passphrases are converted into WEP keys, but not in the same way that Apple turns AirPort passwords into WEP keys. In fact, they're not compatible with all Wi-Fi equipment and are less secure—so avoid them.

With OS 8.6 and OS 9, and in the password field of the Network preference pane

in OS X, entering the WEP key by itself won't work. You have to enter \$ before the hexadecimal WEP key. The dollar sign tells the AirPort software to send the exact hexadecimal key to the access point instead of interpreting it as a password to send to the AirPort Base Station.

To enter a WEP-style passphrase in early versions of the AirPort software or in OS X's Network preference pane, enclose it in straight quotation marks ("passphrase").

Configuring a Base Station without a Mac The AirPort Base Station is popular among

Linux and Windows users, too, and they've often had to rely on their Mac-using friends to configure or update their networks. But there are two tools they can employ to configure an AirPort Base Station: a Java-based configuration program that runs on several platforms (download it from <http://edge.mcs.drexel.edu/GICL/people/sevy/airport>) and Apple's unsupported Windows AirPort Admin Utility (download it from <http://docs.info.apple.com/article.html?artnum=120093>). The latter supports only the newer, snow AirPort Base Station.

Enter AirPort Extreme

Apple introduced AirPort in July 1999, and the world of wireless networking has come a long way since then. Apple led the entire computer industry into embracing 802.11b, the networking standard behind AirPort. After several years largely spent promoting 802.11b, Apple has now moved to a new wireless networking technology: 802.11g, or AirPort Extreme.

Designed to be compatible with existing AirPort cards and Base Stations, as well as commercial wireless hot spots (see "AirPort Away from Home"), AirPort Extreme offers a maximum theoretical speed of roughly five times that of the original AirPort, which has a maximum theoretical speed of 11 Mbps.

In the Cards The new AirPort Extreme card—built in to the 17-inch PowerBook G4 (see *Mac Beat*, elsewhere in this issue) and optional in the new 12-inch PowerBook G4—is based on a mini-PCI card design rather than a PC Card. According to Apple, the old AirPort card design simply couldn't handle AirPort Extreme's top speeds of 54 Mbps. This means that older PowerBooks and iBooks can't upgrade to Apple's new card, although a PowerBook owner could take advantage of AirPort Extreme's speed boost by installing an AirPort Extreme-compatible PC Card.

Original AirPort cards can talk to the AirPort Extreme Base Station but can't take advantage of the faster speeds. New AirPort Extreme cards can also talk to the original AirPort Base Station, again at the lowest-common-denominator speed of 11 Mbps.

At Home Base Apple has also introduced two AirPort Extreme Base Stations. In addition to providing wireless network access for devices equipped with either 802.11b or 802.11g cards, they have several new features that Base Station owners have been begging for.

Both models offer a built-in USB port for printer sharing. Once you connect a compatible USB printer to a Base Station's USB port, that printer is automatically available to all Macs connected to the AirPort network. But those Macs must be running OS X 10.2 to print—because the entire process is handled via Apple's new Rendezvous networking technology, which appears in OS X only as of the Jaguar update.

Another new feature of both Base Stations is the ability to extend an AirPort network via *bridging*. If you place a second AirPort Extreme Base Station within range of home base, it will pick up the first Base Station's signal and then relay it, allowing you to cover a wider area with AirPort service without running Ethernet cables to each Base Station.

While the \$199 AirPort Extreme Base Station model offers those features, the \$249 model sports a few additional features, such as a modem, which allows you to dial out to an Internet provider (including AOL) or dial *in* to the Base Station to access your home network.

The \$249 model also has a connection for an external antenna, allowing you to vastly increase its range. Simultaneously

with Apple's announcement of AirPort Extreme, Dr. Bott (www.drbot.com) announced two add-on antennas for the \$249 Base Station: the \$99 ExtendAir Omni, which expands AirPort range in all directions to a 250-foot radius, and the \$149 ExtendAir Direct, which lets you focus a 70-degree beam of AirPort access as far as 500 feet away. Combine that with the AirPort Extreme's new bridging capabilities, and you've got the makings of a massive wireless network for schools, large businesses, and even communities.



Speed to Spare If you're using AirPort only to surf the Net, the added speed of AirPort Extreme probably won't make any difference: even the original AirPort Base Station was faster than most home broadband Internet lines. But if you need to move lots of data around your local network at high speeds, you'll welcome the speed improvements AirPort Extreme offers (it's roughly half as fast as a wired 100BaseT network).—JASON SNELL

AirPort Away from Home

You're visiting your sister in Seattle, and you need to send some important e-mail and do some research on the Web. Instead of pulling out a phone cable and using a painfully slow modem, you head for the nearest Starbucks, order a latte, open your AirPort-enabled iBook, and surf wirelessly to your heart's content.

Wireless Internet access has moved out of the home and the office and is increasingly available in cafés, hotels, and airports. No more does travel have to mean being out of touch.

Finding Access But what if no Starbucks is nearby? The hardest part of checking your e-mail on the road is finding a *hot spot*—a location where your Mac can connect to an Internet-connected wireless network. Some hot spots provide free access; others charge by the hour, day, or month.

Rates vary, but expect to pay between \$20 and \$50 per month if you subscribe to a commercial wireless ISP. Short-term connections cost about \$5 to \$10 per day or \$4 to \$12 per hour. See "No Strings Attached" for a list of major commercial players, and visit their Web sites to see if they provide coverage where you need it. Serious travelers should consider signing up with an aggregator such as Boingo, which sells a single account that provides

access to many different wireless ISPs (its OS X software should be available by the time you read this).

Your easiest connection may come from a free hot spot in an area covered by a community network (for example, NYCwireless covers Bryant Park in New York City) or run by a public library (as in Palo Alto, California, or Saugus, Massachusetts).

There are also numerous hot spots in coffeehouses, bars, and other places people hang out. Some good Web sites to check are 802.11 Hotspots.com (www.80211hotspots.com), WiFinder (www.wifinder.com), and NodeDB.com (www.nodedb.com). It's also worth searching in Google (www.google.com) for hot spots that haven't yet been added to a directory. For example, search for **wireless Internet access Denver Colorado** to find hot spots such as the WashPark Coffee Company in Denver.

Lastly, while you're wandering around a city, you may see a chalk mark that looks like two back-to-back parentheses on a wall or sidewalk: $\backslash/$. This *warchalking* symbol identifies an openly shared wireless network (visit www.warchalking.org for details). Try opening your laptop to see if you can connect and check your e-mail.

Tips for Traveling Most everything you do via a wireless network at home can be done the same way on the road. But there

are some differences, and these tips will simplify your wireless roaming:

Try to determine where you'll find wireless Internet access *before* you leave home.

If a wireless ISP requires additional software, download it ahead of time. Some ISPs, such as T-Mobile (at many Starbucks), require that you log in to a *captive portal*—a special Web page that asks for your account and/or credit card information before you can access the Internet.

Since all hot spots rely on DHCP (Dynamic Host Configuration Protocol) to hand out IP addresses, configure your laptop, in OS X's Network preference pane, to acquire an IP address via DHCP (choose Using DHCP from the Configure pop-up menu). In OS 9, choose Using DHCP Server from the Configure pop-up menu in the TCP/IP control panel.

Set up your e-mail system so you can send and receive messages while you're on another network, something most e-mail servers normally prevent to block spammers. This may involve activating SMTP authentication in your e-mail program and e-mail server, setting up SSH tunneling between your computer and your e-mail server, or setting your e-mail server to forward your mail to an easily accessible Web-mail account such as a Mac.com account. If your company runs a VPN, you can use it to send mail while roaming.

No Strings Attached

COMPANY	CONTACT	MONTHLY PRICING	PREPAID OR PAY-AS-YOU-GO PRICING	TOTAL LOCATIONS (APPROXIMATELY, AS OF DECEMBER 2002)	TYPICAL LOCATIONS
Airpath Wireless	419/930-1500, www.airpath.net	\$40	\$6/60 minutes; \$4/hour; \$10/day	80	airports, cafés, hotels
Apple Stores	www.apple.com	free	free	50	urban shopping areas
Boingo Wireless	310/586-5180, www.boingo.com	\$25/10 connect days (extra days \$5); \$50/unlimited	\$8/day	900	airports, cafés, hotels
HotSpotzz (formerly WiFi Metro)	www.hotspotzz.com	\$20	\$6/day	100 (most in San Francisco Bay Area)	bookstores, cafés, hotels
iPass GBR	www.ipass.com	through major ISPs	\$7/day, airports (midnight to midnight); \$10/day, hotels (noon to noon)	400 (plus 100,000 Ethernet points in hotels)	airports, cafés, hotels
Joltage	www.joltage.com	\$25/3,600 minutes or 500MB	\$2/hour (1-hour minimum, 15-minute increments thereafter)	110 (most in New York and California)	cafés, public areas
Surf & Sip	www.surfandsip.com	\$30; \$20/month with one-year contract	\$5/day; \$20/week; \$40/month; \$5/hour (prepaid cards billed by the minute)	130 (most in California, Colorado, and Florida)	cafés
T-Mobile HotSpot	800/981-8563, www.t-mobile.com/hotspot	\$30 local, \$50 national (with contract) *	\$3/15 minutes; \$20/120 minutes; \$50/300 minutes	2,100	American Airlines lounges, Borders Books & Music, Starbucks
Wayport	512/519-6000, www.wayport.com	\$50; \$30/month with one-year contract	\$7–\$10 for 1 connection; \$25, \$50, or \$100 for 3, 8, or 20 connections **	485	hotels, Laptop Lane areas in airports

* Plans include data transfers of up to 500MB; no limit on minutes.

** A connection is defined as one hotel stay or until midnight in airports.

Expanding Your Range

Apple promises AirPort ranges of about 150 feet, but as we've all discovered, the actual range depends on the number and type of walls between your Mac and your AirPort Base Station—and even the type of portable you're using (see "Wireless Range Testing" for results of our tests). What do you do when your DSL connection comes into your basement office on the east side of your house and you want to provide wireless access to your second-floor office on the west side of the house? And what if you want to extend the range of your network anywhere from 200 feet (perhaps so your next-door neighbor can share your Internet connection) to 20 miles (to pick up a long-range, high-speed Internet connection that might be available where wired broadband connections aren't)? Adding another access point to your network can help, or you can solve the problem with external antennas and wireless bridges.

Adding an Access Point If you want merely to connect to an existing AirPort Base Station in your basement from your second-floor office, the easiest approach may be to run an Ethernet cable to a spot nearer to that room and plug in another inexpensive access point or wireless gateway (which is just a souped-up access point). Just make sure to give it the same network name as your AirPort Base Station and turn off DHCP and any other gateway features, and you'll have full wireless coverage. You could use a second AirPort Base Station to extend your network in this fashion, but you can regularly find wireless gateways for around \$100 to \$150—somewhat cheaper than an AirPort Extreme Base Station.

Using an Indoor Antenna The hard part about adding another access point is running extra Ethernet cable—the whole point of wireless networking is to reduce the wires in our lives! For an alternative that doesn't require more wires, try increasing the range of your wireless network with an indoor antenna. Most wireless gateways (including the original AirPort and \$199 AirPort Extreme Base Station) do not provide antenna jacks, but for those that do, you can buy a small indoor antenna that increases range by 10 to 50 percent, which may be enough to reach that second-floor office. Confusingly, there are many types of

antenna jacks out there, so you must buy an antenna that's compatible with your gateway; get yours either from the company that makes your gateway or from a vendor such as NetNimble Wireless Products (www.netnimble.net), which sells antennas with different connector types. Adding an antenna to the original AirPort Base Station is possible, but it requires surgery that voids your warranty (see www.vonwentzel.net/ABS/ for instructions and plenty of other great wireless information).

Crossing Bridges The best way to share your Internet connection with your next-door neighbor is to use a wireless bridge such as the AirPort Extreme Base Station or the Linksys WAP54G (802.11g), WAP11, or WET11. The concept behind bridging is that you attach a bridge to your neighbor's network (even just one or two Macs can be a network) with an Ethernet cable and then wirelessly connect that bridge to another bridge or access point that's attached to your network. (This works best if you can position the bridges in windows that face each other.) You can connect a pair of Linksys WAP11s, or you can connect a single Linksys WET11 to an access point from any manufacturer. The Linksys WAP54G and WAP11 don't support AppleTalk, though. If you're setting up a new network or need AppleTalk support, you could purchase two AirPort Extreme Base Stations, which can connect to each other and handle wireless connections—a feature formerly found only in \$500 to \$1,000 gateways.

Going the Distance Say you live way out in northern North Dakota where wired high-speed Internet access is a pipe dream. If your house has line of sight to one of Invisimax's wireless transmission towers (www.invisimax.com), even if it's miles away, you may be able to get faster-than-cable-modem speeds for \$40 per month. For long hauls of multiple miles to a wireless ISP (or even to a distant

friend who has a high-speed Internet connection to share), you need a bridge and a powerful external antenna.

Setting up such a connection doesn't have to be expensive, but you'll need help from the wireless ISP. If you want to do it on your own, there's a lot to learn about antenna types, calculating signal loss, determining line of sight, and antenna cables. All the necessary information exists in scattered form online, most notably at community networking sites such as Seattle Wireless (www.seattlewireless.net)



Apple's new AirPort Extreme Base Station (below) and products such as the Linksys WAP54G (above) can serve to bridge and extend your network's wireless range.



and NoCatNet (<http://nocat.net>), and in the Bay Area Wireless Users Group mailing list (www.bawug.org). For a single source of all this information, check out the long-range-wireless chapter of *The Wireless Networking Starter Kit* (Peachpit Press, 2002).

Pay a bit more attention to security if you have a long-range wireless Internet connection. Although antennas are directional, someone in the right location can still listen in on your wireless traffic if you don't take precautions.

Alternatives to AirPort

Overall, Apple has done an excellent job with AirPort, ensuring that all recent models of the Mac accept AirPort cards and introducing the original AirPort Base Station at a price that had PC users drooling. But even with the latest price drops, to \$199 and \$249 for the AirPort Extreme Base Stations, other manufacturers still beat Apple's price by \$100 to \$150, so they're worth a look. Also, if you have either a Mac that predates AirPort (any Mac introduced before July of 1999) or a Titanium PowerBook G4 (which has notoriously poor AirPort reception), you might want to look beyond Apple for a wireless network adapter (see "802.11g Alternatives" for some suggestions).

Alternative Wireless Gateways The AirPort and AirPort Extreme Base Stations offer some unusual features. Both have a dedicated Mac configuration program, a built-in modem for sharing a dial-up Internet connection (\$249 Extreme model only), and support for AOL. The Extreme models also have USB printer sharing. But other wireless gateways cost less and may offer other useful features.

There are plenty of nearly identical PC-centric wireless gateways available, but because you want to use one with a Mac, you should pay close attention when purchasing. Most important, make

sure you can configure it entirely via a Web browser, since some gateways rely on custom Windows software. Also determine whether you need support for AppleTalk, a network protocol that simplifies file sharing in OS 9 and that older LaserWriters and some programs may still require. Most wireless gateways don't support AppleTalk, so needing it narrows your choices.

Once your list includes only Mac-compatible gateways, look at other features to find the right gateway for your needs. Depending on your situation, useful features include additional 10/100-Mbps Ethernet ports, small antennas that improve range (or jacks you can plug more-powerful antennas into), a well-designed configuration interface, and support for an external modem.

Alternative Wireless Network Adapters That Bondi-blue iMac works great, but how can you connect it to your wireless network? And your shiny new Titanium PowerBook G4 has an AirPort card, but is there any way to improve its range? The answer is an alternative wireless network adapter.

To enhance a Titanium PowerBook G4 so its wireless range is as good as an iBook's, or to add a Wall Street PowerBook G3 to your AirPort network, you need a PC Card wireless network

adapter. At press time, there were three 802.11g PC Cards available: D-Link's AirPlus Xtreme G DWL-G650 Cardbus Adapter, Belkin's 54g Wireless Notebook Network Card, and Linksys's WPC54G Wireless-G PC Card for Notebooks. Note that at press time, there were no Mac drivers for any of these 802.11g cards, and only Belkin has announced that Mac compatibility for OS 8.6 and higher should be available in February 2003.

There are several 802.11b choices. (For contact information and notes on these products and many more, see "802.11b Alternatives," at <http://www.macworld.com/2003/03/80211/index.html>.) If you're using OS 9, buy an Orinoco Silver card (they were made by Lucent and Agere and are now sold by Proxim), which uses essentially the same hardware as AirPort cards and works with Apple's AirPort drivers in OS 9. Using a PC Card in OS X requires the 802.11b Driver for Mac OS X, from IOxperts (www.ioxperts.com), or the open-source Wireless Driver (<http://wirelessdriver.sourceforge.net>). Other PC Cards worth a look include the Mac Wireless 802.11 PC Card and the EnGenius EL-2511 CD Plus, which boasts a particularly powerful radio for increased range.

For older desktop Macs with USB, such as the first-generation iMac, 802.11g options are unlikely, given that USB can't handle 802.11g's much larger bandwidth. But on the 802.11b side, you can use Proxim's Skyline 802.11b USB Adapter to hop onto your wireless network. MacWireless's 802.11b USB Adapter also works with older iMacs and should have OS X drivers by early 2003.

To put an older desktop Mac with PCI slots, such as a beige Power Mac G3, on an 802.11g AirPort network, look at D-Link's AirPlus Xtreme G DWL-G520 PCI Adapter, Belkin's 54g Wireless Desktop Network Card, or Linksys's WMP54G Wireless-G PCI Card for Desktops. (Again, be sure to check with the companies regarding Mac support before purchasing any 802.11g cards.) For an 802.11b network, there's Proxim's Skyline 11MB PCI card or MacWireless's 802.11b PCI Card, both of which run only on OS 9.

802.11g Alternatives

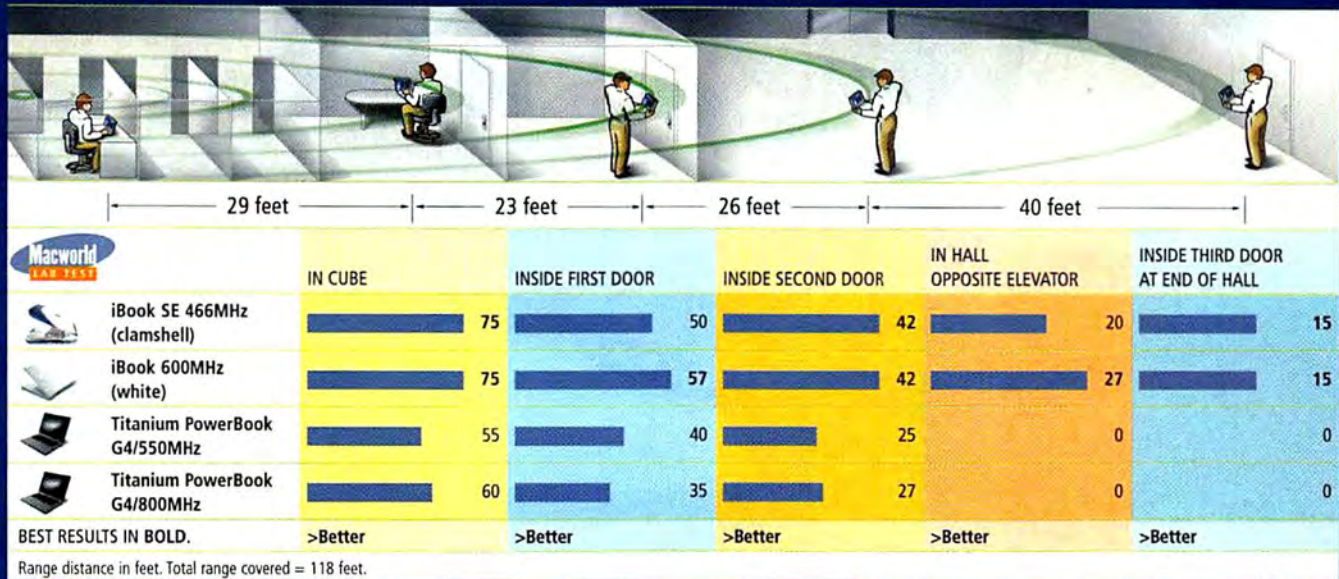
COMPANY	PRODUCT	PRICE	CONTACT
PC CARDS			
D-Link	AirPlus Xtreme G DWL-G650 Cardbus Adapter	\$79	800/326-1688, www.dlink.com
Belkin	54g Wireless Notebook Network Card	\$80	800/223-5546, www.belkin.com
Linksys	WPC54G Wireless-G PC Card for Notebooks	\$70	800/546-5797, www.linksys.com
PCI CARDS			
D-Link	AirPlus Xtreme G DWL-G520 PCI Adapter	\$89	800/326-1688, www.dlink.com
Belkin	54g Wireless Desktop Network Card	\$80	800/223-5546, www.belkin.com
Linksys	WMP54G Wireless-G PCI Card for Desktops	\$70	800/546-5797, www.linksys.com
WIRELESS BRIDGES			
D-Link	AirPlus Xtreme G DWL-2000AP Wireless Access Point	\$139	800/326-1688, www.dlink.com
Belkin	54g Wireless Network Access Point	\$140	800/223-5546, www.belkin.com
Linksys	WAP54G Wireless-G Access Point	\$134	800/546-5797, www.linksys.com
WIRELESS ROUTERS			
D-Link	AirPlus Xtreme G DI-624 4-Port Wireless Router	\$149	800/326-1688, www.dlink.com
Belkin	54g Wireless Cable/DSL Gateway Router	\$150	800/223-5546, www.belkin.com
Linksys	WRT54G Wireless-G Broadband Router	\$134	800/546-5797, www.linksys.com

Wireless Range Testing

To get the real story on AirPort range, we set up an Orinoco BG-2000 base station in an office cubicle and then measured signal strength at five locations. Our test systems were four Apple portable models with Air-

Port cards, and we used MacStumbler 0.6b in OS X to measure signal strength, on a scale of 0 to 100. Scores were averaged over a 30-to-60-second period—readings varied up and down as much as 10 points in that

time. Apple says the range for the new 12-inch and 17-inch PowerBooks should be similar to that of the iBook's, thanks to repositioned antennas.—MACWORLD LAB TESTING BY BECKY WARING



Legal Issues

As we start to feel the effects of wireless networking in society at large, ethical and legal questions are cropping up. When you encounter situations such as the following, make sure that you exercise a measure of common sense.

Accessing Others' Networks You're visiting a friend's apartment with your iBook, and when you open it up, you notice that your AirPort card has connected to her neighbor's wireless network. Is it OK to use it? It'd certainly be polite to ask first, but legally speaking, the consensus seems to be yes, because there are multiple mechanisms (closing a network, setting a WEP password, and restricting access to specific computers) for putting up a virtual No Trespassing sign.

What if you're sitting in a car's passenger seat with your iBook open while your friend drives around the city—a process called wardriving? Wardriving is legally

murkier, but it's still essentially a passive activity and probably not illegal. However, if you were to listen in on someone else's network traffic with special utilities that can extract passwords or WEP keys, you would be crossing the legal line.

Sharing Internet Connections You may have a wireless network that you don't mind making accessible to nearby neighbors. Or perhaps you and a neighbor want to share the cost of a single DSL line. Read your ISP's terms of service carefully, since most ISPs, with the notable exception of national DSL provider Speakeasy (www.speakeasy.net), explicitly ban sharing residential connections. Your ISP would be well within its rights to terminate your account if it discovers you've violated its terms of service.

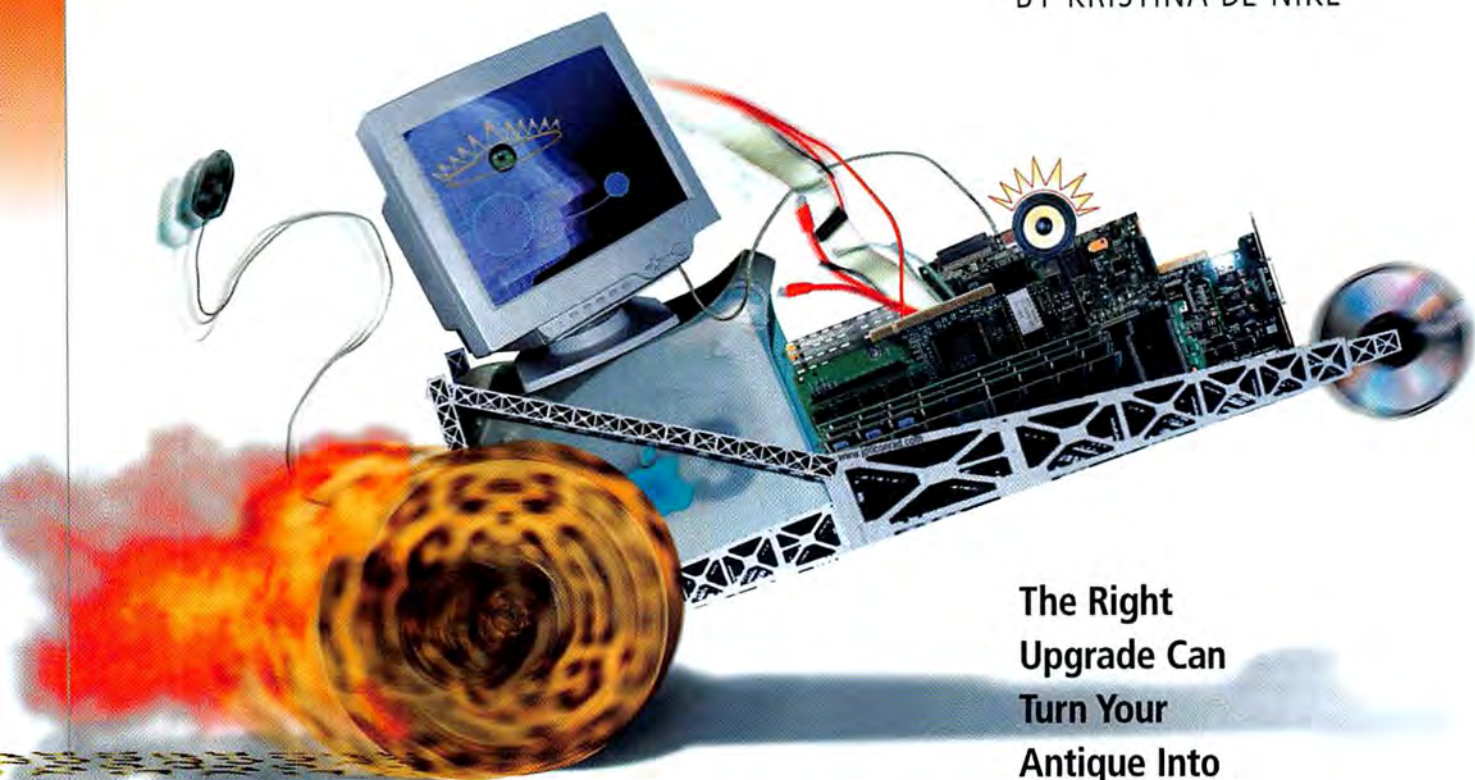
Power Corrupts People extending the range of their networks with powerful antennas must be aware that feeding more

than one watt to an external antenna is not just rude to other users of the 2.4GHz band who might be drowned out by your signal—it's also in violation of Federal Communications Commission regulations.

Luckily, making sure that you're within the FCC's limits is fairly easy. You're probably safe if your wireless card doesn't put out more than 250 milliwatts of power (most are between 30 and 100 milliwatts—read the technical specifications), if you're using a directional antenna that doesn't provide more than 24 dB of gain, and if you don't have any amplifiers in the system. □

Contributing Editor ADAM C. ENGST and Seattle Times columnist GLENN FLEISHMAN are coauthors of *The Wireless Networking Starter Kit* (Peachpit Press, 2002), which offers deep background information on wireless networking, practical instructions for setting up cross-platform networks, detailed troubleshooting advice, and much more (www.wireless-starter-kit.com).

BY KRISTINA DE NIKE



The Right
Upgrade Can
Turn Your
Antique Into
a Modern
OS X Machine

POWER MAC POWER BOOST

OS X IS A FACT OF MAC LIFE. Every month, Mac developers release new software—and every month, more of this software works only in OS X. That's not a problem for newer computers, which run OS X flawlessly, but on systems more than two years old, OS X is apt to be sluggish. However, your older Mac may still be able to keep up with software development—a hardware upgrade could be all you need.

Of course, you can't magically change an old computer into a new one. You're stuck with the system bus and PCI slots you started with (for more on how those components affect performance, see "Does MHz Matter?" July 2001). But you can make some prudent investments to improve the performance and functionality of a system you've had for a few years.

To help you decide what—or whether—to upgrade, we investigated a range of upgrade options. We performed our testing on a blue-and-white Power Mac G3/350MHz, as it has the most upgrade options. If you choose to upgrade your processor, check out "G4 Upgrade Cards," our review of ten upgrade cards.

Is It Worth It?

Before you invest in making improvements to an older system, consider your budget, plans, and technical skills.

Money Matters Add up all the possible upgrade options, and you could be looking at \$1,700, the same price as a new Power Mac and \$700 more than an eMac. To determine whether you should upgrade or buy a new Mac, answer these questions: After you

upgrade, will you be able to use your older peripherals, such as your printer or scanner? Are there OS X drivers for them? (Check the manufacturers' Web sites.) How much will it cost to get OS X running as the main OS? (Sure, you can use OS X's Classic mode for some tasks, but if it's your default, why bend over backward to get OS X running?) Do you have OS X versions of the software you run on your older system?

Tool Time Another consideration is your comfort level with needle-nose pliers. Some Macs are easier to alter than others. If you have a desktop system with a latch and swinging door, which Apple introduced with the blue-and-white Power Mac, adding RAM or a PCI card takes less than a minute. But if you have an original Bondi blue iMac or a PowerBook G3, you'll need all your tools and part of an afternoon just to add more RAM. (For step-by-step instructions on upgrading these models, see "Upgrade an iMac," October 2001 [www.macworld.com/2001/10/howto/imac.html], and "Soup Up Your PowerBook," *Secrets*, January 2003.)

Over the last three years, Apple has made the RAM and AirPort slots accessible on all Macs, including portables. But access to the insides of a computer can be tricky. As a result, some upgrades are too difficult for many people to attempt. For example, there are processor upgrades for the rev. A through rev. D iMacs, but installing them takes a real act of courage. And some enhancements, such as adding a PCI card, are physically impossible.

Warranty Woes When you upgrade your iMac, iBook, or PowerBook, you may void your warranty. Disturbing the processor always voids the warranty, but adding RAM or a PCI card generally doesn't. However, as most Apple systems come with a one-year warranty, older systems usually aren't covered anyway.

RAM: The Easy Upgrade

Now that you've decided you want to run OS X on your older Mac, the first thing to do is make sure you have more than 128MB of RAM. Adding RAM is one of the easiest and least-expensive ways to goose your hardware. You can find PC100 128MB DIMMs for an older iMac or Power Mac for about \$20. A good place to start your RAM search is the Ramseeker Web site (www.ramseeker.com).

If 128MB Is Good, Is 640MB Better? Once you get past 128MB of RAM, the OS X performance boost from more RAM is not as clear. We ran our full Speedmark suite, made up of 16 common tasks, on a blue-and-white Power Mac G3/350MHz first with 256MB of RAM and then with 640MB, and we didn't see a whit of difference.

However, if you often work with image or video files larger than 100MB, more RAM is always better. And if you commonly run multiple applications, more RAM

ensures that applications open directly into RAM and not into virtual memory.

Hard-Drive Upgrades

Is your system dragging when you save a file or move a folder over the network? The source of the delay is probably your original, and relatively slow, hard drive. A 40GB drive costs about \$100, while a 60GB drive starts at around \$120. We replaced the stock internal 5,400-rpm 6GB IBM drive in our blue-and-white Power Mac G3/350MHz with a speedy, 7,200-rpm 60GB Seagate drive (\$120; 877/271-3285, www.seagate.com). It provided substantial improvement in drive-specific tasks, but negligible overall speed gains. For instance, the new drive cut in half the time it took to duplicate files and copy files over a network, but it was no faster at starting up the computer and converting a song to MP3 format with Apple iTunes.

If you have a portable, iMac, or G4 Cube, a new hard drive can actually be harmful. The new drive may be too hot for the case's cooling system, and this could damage the motherboard over time. To check drive compatibility, go to the Accelerate Your Mac Web site (www.xlr8yourmac.com).

Double Your Drives Swapping out your old drive for a faster one isn't your only option. In some cases you can add a new drive and keep your old one. You can run two drives in any Power Mac G4 or a post-rev. 1 blue-and-white Power Mac G3. (For instructions, see "Starving for Storage?" January 2001 [www.macworld.com/2001/01/howto/storage.html].)

Want an ATA Card with Those Drives? On a beige Power Mac G3 tower or an older blue-and-white G3, you can add as many as four drives by installing a PCI ATA card; just don't expect the new ATA card to be substantially faster than the on-board ATA chip. If you just attach your old hard drive to a new ATA/133 (the number refers to the megabytes per second the bus supports)



Upgrade Options

COMPONENT	AREAS OF IMPROVEMENT	APPROXIMATE PRICE
OS X	startup, Classic startup, scrolling	\$129 for Mac OS X 10.2 (Jaguar)
RAM	running multiple applications or editing large files	\$20 for 128MB, \$30 for 256MB
Single-processor upgrade	most operations, especially startup, unstuffing a file, iMovie rendering	\$300 to \$700
Dual-processor upgrade	most operations, especially startup, unstuffing a file, iMovie rendering	\$800 to \$1,200
PCI ATA/133 card	file transfers if coupled with fast drive	\$90
Faster hard drive	file transfers	\$120 for 60GB
Graphics card	playing games, image quality	\$70
PCI FireWire-USB card	allows you to use FireWire or USB peripherals	\$60
DSL, cable, or satellite connection	Web surfing, e-mail	\$40 to \$70 per service per month

G4 UPGRADE CARDS ▶

GIVE YOUR SYSTEM AN OVERALL BOOST

When you want to get the most out of your G3 or early G4 Mac and don't mind sticking a hand into its guts, a G4 upgrade card may be for you. Although it won't bring your system up to par with today's Power Macs, it can significantly improve your OS X experience. For this review, we ran ten upgrade cards through our testing gantlet, a blue-and-white Power Mac G3/350MHz and a Power Mac G4/500MHz. For model names and compatibility, see "Upgrade-Card Cornucopia."

Documentation

To install an upgrade card, you need documentation with clear illustrations. Other World Computing cards come with no documentation in the box. You can download instructions from the company's Web site, but that documentation fails to mention that you need to update the firmware on your blue-and-white G3. We followed the instructions and installed the upgrade without updating the firmware, and then we weren't able to boot up at all. When we called to report the problem, the Other World representative instructed us to use the firmware that comes with the NewerTechnology card and is available on the NewerTechnology Web site.

The PowerLogix PowerForce G4 ZIF, PowerForce G4 Series 100, and PowerForce Dual G4 cards come with an installation sheet with some directions, illustrations, and screen shots that provide a basic outline for installing the card. The sheets for the PowerForce G4 Series 100 and PowerForce Dual G4 lack a tech-support number, and the company's e-mail address is useless if your computer isn't booting. PowerLogix does include a DVD with an installation movie, handy if you have a second computer or a TV near your desk.

NewerTechnology includes a thorough, nicely illustrated manual with its card.

Sonnet Technologies' documentation is the best of the lot. The bound manual for the Encore/ZIF G4 is detailed and easy to follow. The stapled pages for the Encore/ST G4 cards are likewise well illustrated and thorough. The Sonnet manuals give detailed instructions for each of the systems the cards support.

Installation Time

With a reasonably steady hand, clear instructions, and the right tools, the actual mechanics of installing the upgrades are manageable. After you gently remove the heat sink, the ZIF processors lift out of their sockets when you raise a small lever. You have to unscrew three screws to disconnect the G4 processors.

Of the upgrades for the Power Mac G3, the Encore/ZIF was the easiest to install. Sonnet included the necessary software on CD. We booted into OS 9, ran the firmware updater, swapped processors, and we were done.

The PowerForce G4 ZIF instructions direct you to download the updater from the Apple site but then to use the PowerLogix files for the actual updating. The PowerLogix site can be confusing, and the first link we found to the updating software was dead. The card also has a dial for setting the MHz speed.

We had some difficulty installing the PowerForce Dual G4 cards. Because two processors run hotter than one, the dual-processor cards come with a large metal heat sink (meant to draw heat from the processor) and a fan. If you have an internal Iomega Zip drive, the fan hits up against the Zip drive's IDE cable. We were able to install each card after we bent the Zip cable to closely follow the lines of the mounting frames for the Zip and CD drives, but the stiff cable fought us. We also had some trouble lining up the screws in the heat-sink holes; they frequently flipped over.

Upgrade-Card Cornucopia

COMPANY	PRODUCT	MOUSE RATING	PRICE	CONTACT	COMPATIBLE SYSTEMS	PROS	CONS
NewerTechnology	MaxPowr G4	★★★★	\$280	ntsales@newertech.com, www.newertech.com	beige G3, blue-and-white G3, Yikes G4	Good documentation; affordable.	DIP switches on board.
Other World Computing	MercuryZA G4/450 ZIF	★★★★	\$180	800/275-4576, www.otherworldcomputing.com	beige G3, blue-and-white G3, Yikes G4	Affordable.	Must set jumpers.
	MercuryZA G4/550 ZIF	★★★★	\$270	800/275-4576, www.otherworldcomputing.com	beige G3, blue-and-white G3, Yikes G4	Affordable.	Must set jumpers.
PowerLogix	PowerForce G4 ZIF 550/220	★★★★	\$299	512/401-9902, www.powerlogix.com	beige G3, blue-and-white G3, Yikes G4	Stable.	Must download software.
	PowerForce G4 Series 100 1GHz	★★★★	\$699	512/401-9902, www.powerlogix.com	AGP graphics and gigabit Ethernet Power Mac G4s, G4 Cube	Stable.	Must download software.
	PowerForce Dual G4 800MHz	★★★	\$799	512/401-9902, www.powerlogix.com	AGP graphics and gigabit Ethernet Power Mac G4s	Good price/performance ratio.	Initial stability issues; tight fit.
	PowerForce Dual G4 1GHz	★★★	\$1,199	512/401-9902, www.powerlogix.com	AGP graphics and gigabit Ethernet Power Mac G4s	Fast performance.	Initial stability issues; pricey.
Sonnet Technologies	Encore/ZIF G4 500	★★★★	\$300	949/587-3500, www.sonnettech.com	beige G3, blue-and-white G3, Yikes G4	Good documentation; easy installation.	Not as fast as new Mac.
	Encore/ST G4 800	★★★★	\$500	949/587-3500, www.sonnettech.com	AGP graphics, gigabit Ethernet, and digital-audio Power Mac G4s, G4 Cube	Good documentation; easy installation.	Not as fast as new Mac.
	Encore/ST G4 1GHz	★★★★	\$700	949/587-3500, www.sonnettech.com	AGP graphics, gigabit Ethernet, and digital-audio Power Mac G4s	Good documentation; easy installation.	Not as fast as new Mac.

Power Mac Upgrades



	Speedmark 3.2	iMovie 2.1.2	iTunes 3	Quake III v1.30b5
	OVERALL SCORE	RENDER	MP3 ENCODE	FRAME RATE
Power Mac G4/500 (base)	96	1:07	1:18	20.2
with PowerLogix PowerForce G4 Series 100 1GHz	133	0:43	0:42	21.9
with PowerLogix PowerForce Dual G4 800MHz	132	0:48	0:49	22.5
with PowerLogix PowerForce Dual G4 1GHz	139	0:40	0:33	22.7
with Sonnet Technologies Encore/ST G4 800	124	0:51	0:50	21.6
with Sonnet Technologies Encore/ST G4 1GHz	136	0:43	0:41	21.9
Blue-and-white Power Mac G3/350 (base)	54	2:08	2:53	10.6
with NewerTechnology MaxPowr G4	71	1:14	1:26	10.7
with Other World Computing MercuryZA G4/450 ZIF	67	1:22	1:36	10.6
with Other World Computing MercuryZA G4/550 ZIF	73	1:10	1:23	10.7
with PowerLogix PowerForce G4 ZIF 550/220	73	1:08	1:21	10.7
with Sonnet Technologies Encore/ZIF G4 500	72	1:13	1:28	10.7
Dual-1GHz Power Mac G4 (DDR)	163	0:40	0:32	120.8
iMac G4/800	103	0:59	1:00	51.8
	>Better	<Better	<Better	>Better

BEST RESULTS IN BOLD. REFERENCE SYSTEMS IN *ITALICS*.

Speedmark scores are relative to those of a 700MHz eMac, which is assigned a score of 100. iMovie and iTunes scores are in minutes:seconds. Quake scores are in frames per second. Our systems had OS X 10.2 installed and 256MB of RAM. We set displays to 1,024-by-768-pixel resolution and 24-bit color. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds long, converting it from the hard drive using iTunes' Better Quality setting. We tested Quake III at 1,024 by 768 pixels with Graphics set to Normal. For more on Speedmark 3.2, visit www.macworld.com/speedmark.—MACWORLD LAB TESTING BY KRISTINA DE NIKE AND JEFFY K. MILSTEAD

Enabling the L3 cache on the single-processor PowerForce G4 Series 100 card took extra effort. The required software utility didn't come in the box, so we had to go to the PowerLogix Web site to get it. The utility runs in the Terminal window. Although the instructions were easy enough to follow, we would have liked something more elegant.

The Other World Computing MercuryZA cards were the most difficult to install, as they require that you change jumper settings on the motherboard. We had to peel off a sticker labeled "Warranty VOID if seal is broken." (Of course, the warranties on the Power Mac G3s have been void for a number of years, but the warning was disquieting.) Next, we pulled off the jumper block to expose the jumpers. The Other World Computing Web site correctly instructs you to save the block in case you need to go back to the original processor later. A jumper is the size of a grain of rice. Other World Computing includes jumpers in the box, but if you lose them, you can buy replacements at any electronics store for a few cents each.

The NewerTechnology MaxPowr makes you check small DIP switches on the upgrade card to set your computer's bus speed, but we didn't have to add jumpers. The manual gives instructions for setting the bus speed to 66MHz for a beige system and 100MHz for a blue-and-white. This part of the manual would benefit from illustrations.

Performance

Both sets of cards improved the test systems' performance by at least 30 percent. In general, we had fewer installation and performance problems with the cards for the Power Mac G3 models than with those for the Power Mac G4 models. This stability makes sense because the G4 upgrades for the Power Mac G3 have been on the market, at one speed or another, for a few years.

The dual-processor cards outperformed the single-processor cards only slightly in most tasks. The second processor does come in handy with processor-intensive tasks that take advantage of it, such as conversions in iTunes and many Photoshop operations.

The first batch of Dual cards from PowerLogix had stability problems. They consistently crashed when we used iTunes to encode a song as an MP3 file. Moving the card to a second Power Mac G4/500MHz AGP system didn't solve the problem. PowerLogix found the source of the trouble: as the second processor kicked in, the motherboard couldn't supply enough power. The company sent us replacement cards with added power bypasses that fixed the problem.

The first Sonnet Encore/ST G4 800 had difficulties running Classic. Even after we completely reinstalled the system, we got a message claiming that the Classic ROM was damaged. We also had intermittent hangs when we rebooted the system with the Encore/ST card installed. Sonnet was able to get us a replacement card that didn't have either problem.

Macworld's Buying Advice

If you need to get at least another year of work out of your old system, an upgrade card can be a relatively inexpensive choice. The upgrades for the Power Mac G3 systems in particular are affordable and stable. We recommend the Sonnet Technologies Encore/ZIF G4 500 card for its documentation and easy setup. The upgrades for the Power Mac G4s are fast but still fall short of a new top-of-the-line Power Mac. The 1GHz upgrades give you the best bang for the buck. Again, we liked the Sonnet card, this time the Encore/ST G4 1GHz. No processor upgrade will make your old machine brand-new. As our benchmark tests show, a new dual-1GHz Power Mac is 17 percent faster than an older system with a dual-processor upgrade card. Your old system is still stuck with the original hard drive, graphics card, and PCI slots.

card, you'll be disappointed. The old drive probably does not support sustained throughput of more than 30 MBps, so the ATA/33 bus on your blue-and-white is fine.

A newer, faster drive may fare better. For example, a 7,200-rpm Seagate Barracuda drive supports sustained throughputs of between 24 and 41 MBps. So you'll see an improvement when you switch from an ATA/33 connection to an ATA/66 or ATA/133 card, though you won't double your drive speed.

No SCSI Despite the tempting speed specifications of SCSI, we don't recommend adding a SCSI card and SCSI drive to an older system. OS X is less likely to recognize the drive and more likely to crash, especially if you want to boot from the SCSI drive.

Graphics-Card Upgrades

OS X on an older system can be downright poky when you scroll or open windows. You might think that getting a faster graphics card would improve 2-D speed. In our tests, that wasn't true (nor do we know of other ways to quicken scrolling and opening).

We pulled out the ATI Rage 128 card that came in our blue-and-white G3/350 and inserted ATI's Radeon 7000 with 32MB of DDR memory (\$70; 905/882-2600, www.ati.com). The 7000 card dramatically improved Quake frame rates, from a poor 10.6 frames per second to a usable 31.2 frames per second. However, the new card made no difference in our scrolling tests or in the time it took to open multiple windows. ATI says that even though the Radeon card may not improve 2-D performance, it does improve the quality of 2-D images.

Brain Transplant

There is one upgrade that will almost make you think your old Mac is a brand-new machine: a CPU upgrade. With a processor upgrade installed in our blue-and-white G3, 10 of 16 Speedmark tasks were dramatically faster, including startup, iMovie rendering, and installing applications off of a CD. (However, the upgrade didn't make a big difference in drive tasks and

IT'S NOT EASY BEING BEIGE

We had serious problems running OS X on beige Power Mac G3s, despite the fact that OS X officially supports this model. You may have better luck, but we had problems getting OS X to recognize the SCSI drive. If you already have a beige G3 and a free afternoon, by all means do some experimenting. But don't hop on eBay to purchase a beige G3 and expect that it and a few upgrades will be an easy path to a low-cost OS X machine.

If you do get OS X running reliably on an older Power Mac G3, you may want to add a PCI FireWire-USB combo card. The cards are inexpensive: around \$60 (FireWire-only cards are \$40). Don't invest in peripherals that aren't FireWire or USB—you won't be able to use them when you eventually buy a new Mac.

made only a small improvement in networking and Internet tasks.)

If you have a beige or blue-and-white Power Mac G3, a G4 processor-upgrade card is definitely worth considering. OS X takes full advantage of the G4's Velocity Engine, and these upgrades cost only around \$300. We also saw speed improvement with upgrades in a Power Mac G4, but these upgrade cards had a few stability issues and cost upwards of \$500. A few upgrades came with very thorough instructions, but don't install a new processor yourself if you aren't comfortable with a screwdriver and a static strap.

Dual-Processor Dilemma One of the great promises of OS X is overall improved speed with a second processor. While OS X is multithreaded and could potentially run faster on two processors, we don't recommend the dual-processor upgrade unless you use applications designed for multiprocessors, such as Apple iMovie and iTunes and Adobe Photoshop.

Don't Expect Miracles Many people complain about slow processors when what really annoys them is the speed of their Internet connections. Slow performance may be due to an internal modem, not the system or OS. The only way to improve the speed of your browser or e-mail is to switch to a DSL phone line, cable connection, or satellite dish.

The Last Word

Of all the options we examined, upgrading the processor made the biggest difference in the most operations. Unfortunately, it's also one of the most expensive choices and can be tricky in some models.

As you decide what to do with your older computer, weigh the price of upgrades versus the price of a new system. If it takes, say, \$400 to run OS X at a reasonable speed, maybe you should sock that money away for your next computer and keep your older Mac as a dedicated OS 9 system for the occasional OS 9 task. □

KRISTINA DE NIKE, former Macworld Lab director, had a good scare when she installed a DVD-R drive and her internal drive disappeared. Luckily, she was able to coax it back.

EACH X IS DIFFERENT

When you're about to install OS X, the first thing you need, obviously, is OS X. But which version? If you install the original or even 10.1, an older Mac will be slow as molasses, despite an upgrade.

In Macworld Lab tests, OS X 10.2 (Jaguar) was the same speed as or slightly faster than OS X 10.1.5 in most operations. But in a few, including starting up, scrolling PDFs, and starting up Classic, Jaguar was an impressive 20 to 30 percent faster than OS X 10.1.5. For one task—opening multiple windows—10.2 was actually slower because of Jaguar's animation effects.

For more on OS X, including ways to better its performance, see "Exterminate OS X Troubles," February 2003; "Tame Jaguar," November 2002; and "Feel at Home in Mac OS X," March 2002.

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Data-Driven Publishing

Most designers entered the profession to express their creativity, but who has time to be creative when saddled with thousands of pieces of data that have to be formatted for a catalog, directory, price list, or schedule? Fortunately, you can turn these brain-numbing assignments into fun and lucrative projects. I'll show you how to do it, using the Xdata XTension (for QuarkXPress) and the InData plug-in (for Adobe InDesign) to create a fictitious real-estate catalog.

These types of projects fall into the category of data-driven publishing, where the data may come from a database or a spreadsheet. Database and spreadsheet programs don't offer sufficient design tools, so you need to export the data (names, addresses, prices, and so on) as text files and then import those files into a page-layout program. And so you don't have to manually format the data after importing, Xdata and InData automatically style each paragraph (or part of a paragraph) based on a prototype and rules you make.

Xdata and InData are both from Em Software (\$400 each; 877/984-1010, www.emsoftware.com), and they are almost identical in form and function, but because

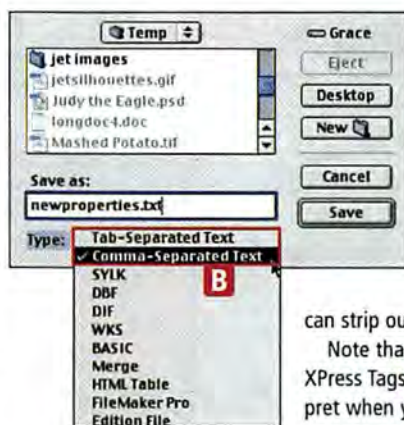
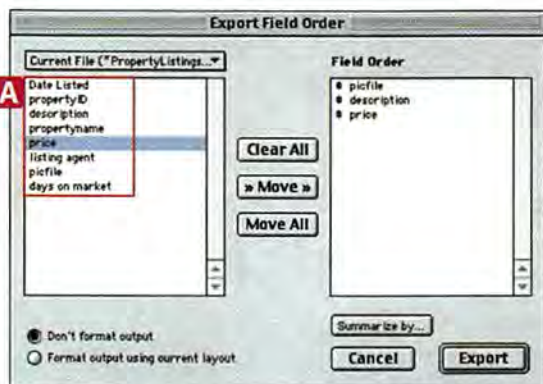
there are currently more XPress users out there, I'll use Xdata to demonstrate. Two other add-ons from Em Software, Xcatalog Pro and InCatalog Pro, are complicated to use and more expensive (\$800 each), but they allow you to push data from QuarkXPress or InDesign back into your database or spreadsheet—particularly helpful when you make last-minute changes on pages but forget to update the database. Still, Xdata and InData will meet most of your needs. □

Contributing Editor DAVID BLATNER (www.moo.com) is the author of *Real World QuarkXPress 5* (Peachpit Press, 2002) and a coauthor of *Real World InDesign 2* (Peachpit Press, 2003).

1 Export the Data

Xdata doesn't connect directly to a database or a spreadsheet, so before doing anything in XPress, you need to export your data as a text file.

Database and spreadsheet data is broken down into *fields* (discrete pieces of information, such as prices) and *records* (the collection of all the fields pertaining to one subject) **A**. Most databases and spreadsheets let you export data as text in various ways, such as putting a *delimiter* (a text character such as a tab) between each field or record.

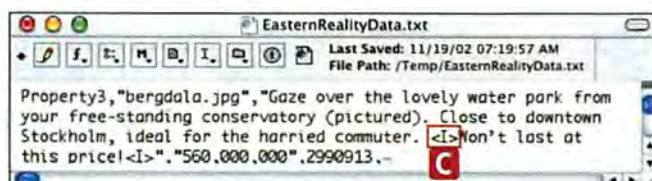


For this project, I'll export the data as a comma-delimited text file **B**. Open the file in a text editor such as BBEdit or SimpleText to make sure all the data is there. It's OK if the text file contains more fields than you'll actually use; Xdata

can strip out the parts you don't need.

Note that our data also contains XPress Tags **C**, which Xdata can interpret when you import the file (for more on tags, see "QuarkXPress Advanced

Type Workshop," Create, August 1999). In this example, XPress will style some words in italic because they're surrounded by <i> tags.



2 Prepare for the Future

This is a quick step—you only need to jot down information in a text file or even on a scrap of paper.

Open the database file and note the order of the fields within. In the text file, make a list of these fields. For instance, in a listing of real-estate properties, you need to know the order the fields are listed in: "property name, price, description" or "price, description, property name," for example. The specific names don't matter—what's important is what each field is. Set the list aside until step 3.

3 Set Up the Prototype

To format your incoming data, Xdata relies on a prototype you make. It tells the XTension what fields to use, what order to put them in, and how to style them.

Set up your catalog's basic structure in XPress, using ordinary XPress text boxes, master pages, paragraph and character style sheets, and so on.

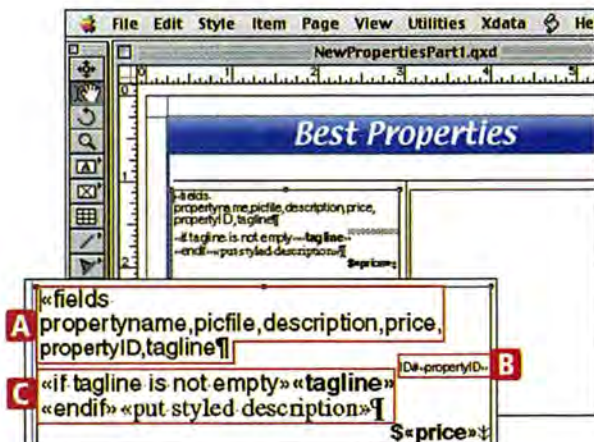
Now you can enter prototype information in the first of several empty, linked text boxes. Begin or surround each statement in the prototype with guillemet characters, « and », which you type by pressing option- \backslash and shift-option- \backslash .

The first line of the prototype names each field. Type «fields followed by a space, and then enter the field names in the order you noted in step 2. Separate the names with commas **A**.

Sometimes you want a word or phrase to appear in every record. For this project, the ID number should be in every record. To accomplish that, press return, and in the second line **B**, type ID#. (Because it's not inside guillemet characters, this text will appear in every record.)

Follow that with the field name «propertyID». In this example, we set it to a paragraph style that is right-aligned and a small text size.

In the third line **C**, type «if tagline is not empty» «tagline» «endif». This is an Xdata rule that says, "if the tagline field is empty, then ignore it; otherwise, include it here." Because the tag line in the finished catalog will be bold, format the word «tagline» in bold.



Immediately after «endif», type «put styled description».

This tells Xdata that our description field contains XPress Tags (if there were no tags, you could just type «description»). Follow this with a paragraph return, then a dollar sign (\$), and then the «price» field tag. Here, we formatted the «price» field tag as bold and right-aligned. Now type the next-box character (shift-option-return).

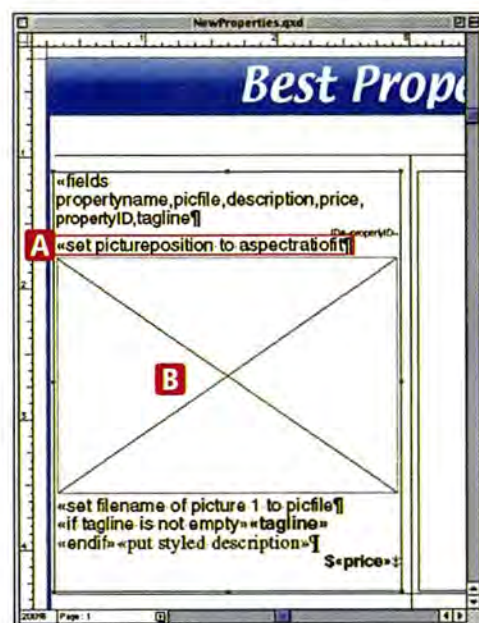
By the way, you don't have to use paragraph and character styles to format your prototypes, but you'll save yourself a lot of time later (when you need to tweak the layout) if you do.

4 Include a Picture

Our real-estate catalog needs pictures. Xdata can import images into anchored picture boxes when the data file includes the picture's file name.

Xdata includes a language for formatting objects and pictures. Place the cursor after the second line, press return, and then type «set pictureposition to aspectratiofit followed by a return **A**. This tells the XTension that any pictures it imports should be scaled to fit the following picture box (which we're about to make). This line does not use a closing guillemet because it's a command to Xdata.

Now draw a picture box several points narrower than the text box with the prototype. (The picture box must be slightly narrower to be properly anchored in the text box.) Use the Item tool to select the picture box, and cut it (Edit: Cut). Now place your text cursor in a blank line following the line you just typed, and paste in the box to anchor the picture box in the text flow **B**. Follow this with «set filename of picture 1 to picfile». This command, which also doesn't have a closing guillemet, tells Xdata to fill the anchored box with a picture (the picfile field contains the picture's name).

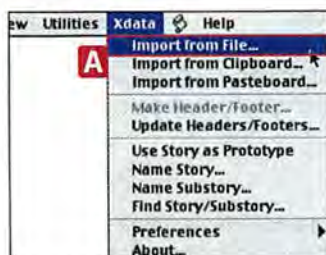


continues

5

Test the Prototype

Once your prototype is done, test it to make sure you didn't make any mistakes. You cannot use the undo command after importing your data, so make sure you first save the XPress document containing the prototype.



Testing the prototype, import only a small number of records.

Click on Start to import those records. Look over the results carefully: Did you get the right fields? Were they formatted properly?



In this case, you can see that there should be a space between the tag line and the description **D**. Select Revert from the File menu to view the prototype again, and type a space between «tagline» and «endif». Because the space comes before «endif», it appears only when the tagline field is not empty.

6

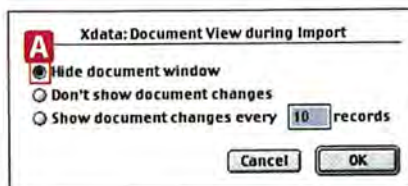
Import the Data

When you've corrected all errors and you're satisfied with your prototype, import all of the records from the data file.

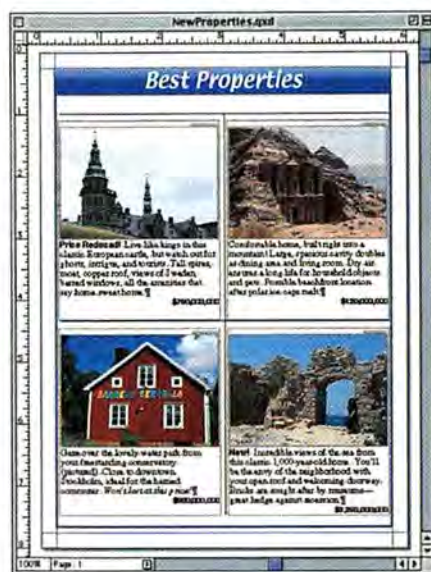
Save the prototype file and again select Xdata: Import From File. In the Xdata dialog box, click on the View button to tell Xdata how often to redraw the screen while importing. Redrawing the screen takes time; for maximum efficiency,

To import data, place the text cursor in the first linked text box (the one with the prototype in it) and select Import From File from the Xdata menu **A**. (Note that Xdata also lets you import data from the Clipboard or from QuarkXPress's pasteboard if that's where you've stored it.)

Xdata asks you to locate the data file you exported in step 1, and then it displays a dialog box that lets you control the import process. In that box, click on the Data button **B** to specify the file's delimiters. Click on the Range button **C** to specify how many records to import—since you're



records, but XPress can slow to a crawl or even crash with a lot of data in a single story, especially when the formatting changes frequently.



select Hide Document Window (the document window reappears only after all the data is imported) **A**.

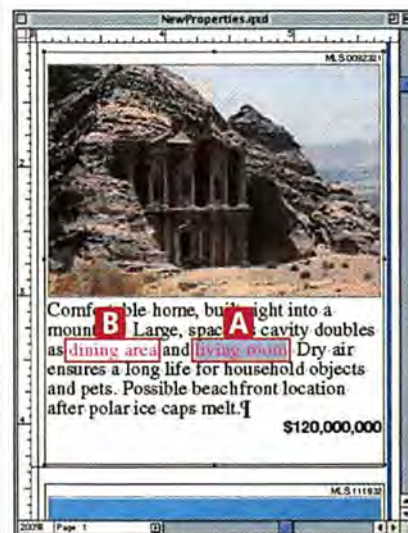
Xdata can handle many thousands of records, but XPress can slow to a crawl or even crash with a lot of data in a single story, especially when the formatting changes frequently. When data runs into the tens of thousands of records, break it up into smaller chunks by importing ranges of the file into different (unlinked) text boxes. For this project, there are only a few real-estate listings.

7

Update the Data

The problem with data-driven publishing is that the data is forever changing. You may need to update your catalog or directory at the last minute. Don't worry—Xdata makes updating almost painless.

There's nothing special about the text or pictures after you use Xdata to import the data into QuarkXPress; you can



always make changes or tweak the formatting where necessary. For instance, select some text in one of the imported records **A** and change its color **B**.

But if there are significant changes throughout the catalog—say, many listings' prices have changed—it's often easier and faster just to reexport the changed data from the database, reopen the template prototype file, and let Xdata reimport the records.

IF YOU PURCHASED A SUBSCRIPTION TO THIS OR ANOTHER MAGAZINE, THE FOLLOWING PROPOSED CLASS ACTION SETTLEMENT MAY AFFECT YOUR RIGHTS

This notice describes a proposed nationwide settlement of class action lawsuits relating to magazine subscriptions that has been reached in *In Re Magazine Antitrust Litigation*, 00 Civ. 4889 (S.D.N.Y.) (the "Action"), and preliminarily approved by the U.S. District Court for the Southern District of New York (the "Court").

PLEASE NOTE THAT THE PROPOSED SETTLEMENT DOES NOT PROVIDE FOR THE PAYMENT OF MONEY OR OTHER COMPENSATION TO THE CLASS MEMBERS BUT INSTEAD SOLELY ADDRESSES CERTAIN INDUSTRY RULES AND PRACTICES THAT WERE DIRECTLY CHALLENGED IN THE ACTION AS BEING UNLAWFUL (SEE "THE CLAIMS IN THE LAWSUIT" SECTION BELOW).

This announcement is intended to give class members notice under Rule 23 of the Federal Rules of Civil Procedure and the Order of the Court dated September 20, 2002, as modified on September 30, 2002, that a hearing will be held before the Hon. Richard Conway Casey on May 27, 2003 at 11:00 a.m. to determine whether: (a) to certify the proposed settlement class under Rule 23; (b) the proposed settlement of the Action is fair, reasonable and adequate; (c) a final judgment should be entered dismissing the Action with prejudice to the class members; and (d) to approve class counsel's application for attorneys' fees and expenses. The rest of this notice summarizes the terms of the proposed settlement. You can obtain a copy of the settlement agreement, the Consolidated Amended Class Action Complaint (the "Complaint"), and a list of the magazine subscriptions at issue in the Action, at www.magazine.org or by writing to The Garden City Group, Inc., the Administrator of the Notice Program, at Magazine Antitrust Litigation, P.O. Box 9000 # 6041, Merrick, NY 11566-9000 (the "Administrator"). **ANY QUESTIONS AND COMMUNICATIONS REGARDING THIS NOTICE OR THE SETTLEMENT SHOULD BE DIRECTED TO THE ADMINISTRATOR AT THE ADDRESS LISTED ABOVE OR BY CALLING 1-888-210-0118. PLEASE DO NOT CONTACT THE ADMINISTRATOR WITH QUESTIONS REGARDING YOUR CURRENT SUBSCRIPTIONS UNLESS THOSE QUESTIONS RELATE TO THE CLASS ACTION SETTLEMENT.**

DO NOT CONTACT THE COURT, COUNSEL TO THE PARTIES, MACWORLD OR ANY PUBLISHER REGARDING THIS NOTICE. THE ADMINISTRATOR, WHERE APPROPRIATE, WILL REFER ANY QUESTIONS TO THE APPROPRIATE PERSON.

THE CLAIMS IN THE LAWSUIT

The Complaint was filed in this Action in or about October 2000, against the Magazine Publishers of America ("MPA"), a consumer magazine trade association, and fourteen magazine publishing companies (the "Publisher Defendants"). The Complaint alleged an agreement among the Publisher Defendants and the MPA to set the minimum price of or maximum discount on magazine subscriptions through the enactment of MPA Guideline 4(a) and/or the collective action among publishers to adhere to the ABC's 50% Rule (as referred to in ¶45 of the Complaint) or the similar Rule of the BPA International pertaining to its definition of

"paid circulation." The Complaint asked the Court to eliminate or modify Guideline 4(a) and to award damages that allegedly were suffered by consumers who purchased subscriptions to the Publisher Defendants' magazines.

The defendants have denied the material allegations of the Complaint. The parties have now agreed to settle the Action in its entirety. On September 20, 2002, the Court preliminarily approved the settlement.

TERMS OF THE PROPOSED SETTLEMENT

In the proposed settlement, the defendants have agreed to do two things: (i) the MPA shall delete in its entirety MPA Guideline 4(a); and (ii) the defendants shall defray the costs incurred in connection with the Action, including the costs of the Notice program involving notifying class members of the terms and conditions of the proposed settlement and the Plaintiffs' actual attorneys' fees and expenses awarded by the Court up to \$1.1 million.

In exchange, the Plaintiffs have agreed that, if the settlement is approved, the Court will enter a judgment dismissing the Action with prejudice, and the named Plaintiffs and all class members who have not duly opted-out of the class will be deemed to be subject to the release in this case, which provides as follows: "As of the date on which the Agreement is Finally Approved, the Publisher Defendants and the MPA . . . shall be completely released, acquitted, and forever discharged, from any and all claims, demands, actions, suits, causes of action, injuries or damages, whether class, individual or otherwise in nature, that Plaintiffs, the Class Members or each of them, in his or her capacity as a subscriber to a magazine, ever had or now has, in law or equity, under federal or state law, relating to an agreement to set the minimum price of or maximum discount on magazine subscriptions through the enactment of MPA Guideline 4(a) and/or the collective action among publishers to adhere to the ABC's 50% Rule (as referred to in ¶45 of the Amended Complaint) or the similar Rule of the BPA International pertaining to its definition of 'paid circulation.'"

The release also releases class action claims that were previously brought (but subsequently dismissed without prejudice) by a plaintiff in the State Court in San Diego, California, who asserted similar allegations against the defendants albeit based on violations of California state laws. The California action was styled *Coossan v. Hearst Corp.*, et. al., No. GIC 752985. A copy of the Coossan Complaint can be obtained at www.magazine.org.

WHO ARE THE PUBLISHER DEFENDANTS?

The Publisher Defendants are: Condé Nast Publications, Inc.; Gruner + Jahr Printing and Publishing Company; Hachette Filipacchi Media U.S., Inc. (f/k/a Hachette Filipacchi Magazines, Inc.); The Hearst Corporation; International Data Group, Inc.; Meredith Corporation; Newsweek, Inc.; Primedia, Inc.; Reader's Digest Association, Inc.; Rodale Inc.; Time Inc.; Time4Media, Inc. (f/k/a Times Mirror Magazines, Inc.); TV Guide, Inc. and Ziff-Davis Publishing, Inc.

WHO IS IN THE CLASS?

Class Members are those persons who purchased a subscription to this publication or to other publications that were published by any of the Publisher

Defendants during the period from and including July 1, 1996 up to and including April 15, 2002 (the "Class"). For purposes of determining inclusion in the Class, it does not matter whether you purchased your subscription from one of the Publisher Defendants, or through agents, sub-agents or other third party marketers. You are not, however, a member of the Class if you did not purchase a magazine subscription within the time period stated above, or if you purchased your magazines only at newsstands.

YOUR RIGHT TO OBJECT TO THE PROPOSED SETTLEMENT

You have the right to appear, in person or by counsel, at the hearing on the proposed settlement in order to comment on, or object to, the terms of the proposed settlement, its adequacy or reasonableness and/or the award of attorneys' fees and expenses to class counsel. However, you will only be heard at that time if you first, by May 5, 2003, (a) file with the Court a notice of your intention to appear, which includes the basis for your objection, a statement identifying the magazines to which you subscribed, and the approximate time period of each such subscription; and (b) serve copies of the notice (and all other papers you intend to rely upon) by hand or first class mail on Plaintiffs' co-lead counsel, Bruce E. Gerstein, Esq., Garwin, Bronzaft, Gerstein, & Fisher, LLP, 1501 Broadway, Suite 1416, New York, NY 10036 and H. Laddie Montague, Jr., Esq., Berger & Montague, 1622 Locust Street, Philadelphia, PA 19103, and on Defendants' coordinating counsel, Lawrence I. Fox, Esq., at McDermott, Will & Emery, 50 Rockefeller Plaza, 11th Floor, New York, New York 10020.

YOUR RIGHT TO OPT-OUT OF THE SETTLEMENT

ALTHOUGH YOU HAVE THE RIGHT TO APPEAR AT THE HEARING, YOU HAVE NO OBLIGATION TO DO SO. If you do not wish to participate in or be bound by the proposed settlement, you can exclude yourself (i.e., "opt-out"). To opt out, you MUST send a request for exclusion in an envelope POSTMARKED NO LATER THAN May 5, 2003 to the Administrator of the Notice Program Magazine Antitrust Litigation, P.O. Box 9000 # 6041, Merrick, NY 11566-9000. The request for exclusion must state your full name, the magazine(s) to which you subscribed and the approximate time period of each subscription, and the address to which your magazines were sent. **IF YOU DO NOT EXCLUDE YOURSELF**, you will be barred from prosecuting any legal action against the MPA or its members and the Publisher Defendants to the full extent of the release set forth in the "Terms of the Proposed Settlement" section above.

EXAMINATION OF PAPERS AND INQUIRIES

For a more detailed statement of the matters involved in the Action, including the Complaint, the settlement agreement, motion papers and certain orders of the Court, you may visit the office of the Clerk of the United States District Court, 500 Pearl Street, New York, New York, during business hours. Copies of the papers relating to the settlement are also available at www.magazine.org.

Error-Free Excel

If you base important decisions on calculations you get from Microsoft Excel worksheets, errors can be costly. Unlike a simple typo in another type of document, an incorrect cell reference in a worksheet can send a ripple of mistakes throughout your work. Here are some tools and techniques to help you avoid this predicament and make sure the worksheets you create are error free.

The Scope of the Problem

If you've ever seen the message **#NAME?** or **#DIV/0!** pop up on your screen, you've already encountered an Excel error. Chances are you'll run into many different errors as you design worksheets for yourself or others. The first step to curing the disease is to understand the symptoms.

Syntax Errors If you type `=ADD(B1:C3)` when you want to add a block of cells, instead of entering `=SUM(B1:C3)`, the cell will display **#NAME?**. That's a telltale sign you've made a syntax error—in other

words, you've written the function incorrectly. Syntax errors are easy to see; to fix them, you'll simply type the correct function or formula.

Logic Errors Sometimes a formula gives a wrong answer even though the cell doesn't display an error message. Say you're using the Payment function (PMT) to calculate repayments on a loan. If you enter the interest rate as 6 instead of 6% or .06, you'll create a logic error. The PMT function will

perform the calculation, but since you're using an interest rate of 600 percent, the result will be wrong. Logic errors are difficult to track because the formula returns a result instead of an error message.

Run-time Errors Because they happen in isolated circumstances, run-time errors can be the most difficult errors to locate. For example, a formula that divides one number by a second will always work perfectly unless the divisor is 0 (zero). When that happens, the formula will fail spectacularly, and the cell will display **#DIV/0!** instead of a result. All formulas on the worksheet that reference this value will display the same

error message. When the value of the divisor is the result of a series of interrelated formulas, it may be difficult, if not impossible, to predict when it will fail.

User Error The wild cards of Excel, user errors may be caused by people typing over formulas or simply entering incorrect data. To stop user errors, you must understand what your users can (and will) do, and then protect your worksheet against their actions.

Stop Errors Before They Start

It's easier to prevent errors than it is to locate and eliminate them later on.

Reference, Don't Retype Consider this scenario: You have values that formulas throughout your worksheet will reference, such as tax rates, interest rates, and industry ratios. You have two options for using them—you can type values directly into your formulas, or you can place them in a special area of a worksheet that your formulas reference.

Referencing the data is the better option because it makes errors easier to find, and if the data changes, you can update the worksheet by updating just one cell. For example, if you have a tax rate of 7.5 percent, you type 7.5% in cell B1 and **Tax Rate** in cell A1. You could then refer to cell B1 every time you needed that value, as in `=F5*B1`. Anyone viewing the worksheet can see the value in cell B1, and you can easily check its accuracy.

Name Your Formulas When you place data in a separate data area on the worksheet, name the cell to improve your accuracy in writing formulas. In our tax-rate example, you would name cell B1 **Tax_Rate** by selecting it, choosing Insert: Name: Define, typing **Tax_Rate**, and clicking on OK. Now you can use the name in your formulas: `=F5*Tax_Rate`. This makes the formulas self-documenting—in other words, they tell you what data they're using.

Understand the Order Many people make a simple error when they create worksheets—they place calculations in the wrong order, with unexpected results. For example, Excel reads `=4+5*3` as 19 and not 27.



ILLUSTRATION BY NEIL LESLIE

Why? The program performs multiplication and division *before* it performs addition and subtraction.

This is Excel's *order of precedence*. An easy way to remember what comes first is with the mnemonic device "Please excuse my dear Aunt Sally" (parentheses, exponents, multiplication, division, addition, subtraction). It's possible to use parentheses to force a specific calculation order. For example, $=(4+5)*3$ will come out to 27.

Send Out Warnings Users who enter incorrect data cause special problems. While you probably won't be able to totally prevent this, you can minimize damage by limiting the data they can enter. Choose Data: Validation to reveal the Data Validation settings. Here you can define limits on the type of data and what values your users may enter. Then click on the Error Alert tab to see the styles of error messages the worksheet can show. Choose the Stop error to prevent users from entering invalid data (see "Change Their Ways"). The Information and Warning styles warn users but don't actually stop them from doing anything.

Test What You've Got

Test a new worksheet's formulas by using familiar sample data, so you'll know what the answer *should* be. For formulas such as PMT, you can get test data from the examples in Excel's help file.

If you don't know what results to expect—if you're making a calculation for the first time—perform a rough calculation to estimate the result. This will help you figure out whether the results are in the ballpark or way outside it.

Make sure to test your worksheet with incorrect data. For example, plug in wrong data, incorrect values, and words where numbers should go. Your users will certainly do all of these things.

Track Down Stubborn Errors

One of the easiest logic errors to make is setting up a formula that operates on an incorrect range. In other words, it should reference cells H1:H3 but references H1:G3 instead. This typically happens when you write individual formulas instead of copying existing ones. If your worksheet is giving an incorrect result, check for this first.

Select a series of cells that should contain a similar formula. Then choose Edit: Go To: Special, and select the Row Differences option (to compare formulas across a row) or Column Differences (to check down a column). Excel checks the formulas in the row or column against the formula in the active cell. It then highlights any that are different.

This technique may also come in handy when users have replaced Excel formulas with hard values—for example, they've typed a number on top of a formula. The worksheet will look just fine, but because they've destroyed one or more formulas, the results will be invalid. If you suspect this, highlight the worksheet



Change Their Ways

Excel gives you the power to nip human error in the bud. If you combine the Stop type of error alert with a data-validation rule, you can prevent users from entering incorrect or invalid data—and let them know what they've done wrong.

and choose Edit: Go To: Special: Formulas to highlight cells containing formulas. You can then check all the cells that aren't highlighted. Of course, you can avoid this situation altogether by locking your formulas, as described in "Final Steps."

Try Auditing Tools Another typical error is a formula that references the wrong cells. For example, the formula refers to cell A1 instead of B1 and therefore gives a wrong answer. To check the arguments in a formula, particularly one that contains multiple cell references, use Excel's Trace Precedents feature (Tools: Auditing: Trace Precedents).

Double-click on any cell containing a formula, and the cells that provide data to that formula will be highlighted. The color of each cell reference will match the outline around the relevant cells in the worksheet, making relationships easy to see.

You can also use the Auditing toolbar to see more levels of precedents. Choose Tools: Auditing: Show Auditing Toolbar. Click on the cell you want to investigate, and then click on the Trace Precedents button once to see the first level of precedents. A blue outline surrounds all precedent cells, and an arrow points back to the formula. Click on the Trace Precedents button again to see the next level of precedent cells. (This won't work on a protected worksheet.)

Final Steps

Before turning people loose on a worksheet, protect your formulas and document the worksheet by selectively protecting the worksheet: First, unlock the cells that you want the user to alter. Select the cells, choose Format: Cells: Protection, and deselect the Locked option. Next, choose Tools: Protection: Protect Sheet to protect the remainder of the cells (with or without a password). Users may now alter only unlocked cells. Finally, write down everything you know about the worksheet, including its formulas, variables, assumptions, what it relies on, and its limitations. Include this data on a sheet in the workbook so it's easy to find.

While all the tools I've discussed here are valuable, the most useful one resides between your ears. Spend some time working to prevent errors and tracking down those that already exist, and you'll be on your way to error-free worksheets. □

HELEN BRADLEY (www.helenbradley.com) specializes in writing hands-on tutorials. Her columns appear regularly in a number of publications in the United States, Australia, the United Kingdom, and Canada.

XPress Time-Savers

QuarkXPress 5 (\$899; 800/676-4575, www.quarkxpress.com) has several features designed to make your life easier. Take XPress libraries: in these files, you can store items you use frequently, including picture boxes, text boxes, lines, and groups of objects.

Libraries are saved as external files on your hard drive. Note that a library holds page items and their contents. For example, you can place a text box containing a particular headline with a particular style in a library. But picture boxes in libraries don't fully embed their pictures. If a picture was imported with Get Picture, the library retains the link to the external file, not the file itself.

You can have more than ten libraries open at a time, and each library can hold as many as 2,000 entries. You can even label each library entry for quick access. Let's look at how all of this is done.

Manipulating Libraries

Libraries are, in many ways, just like XPress documents. Putting an item in a library is like putting it on a separate page of a document. This analogy is also true of creating and opening libraries. You can create a new library by selecting Library from the New submenu

in the File menu (or by pressing ⌘ -option-N). To open a library, you select it in the Open dialog box. (The program recognizes it as a library automatically, so you don't have to do anything special.) Choose a library, and XPress brings it up on your screen as a palette.

Palettes work much like other windows. For example, you close a palette as you would a normal window, by clicking on the close box in the upper left corner. The palette floats, so you can move it wherever you like on screen. You can expand the palette by clicking on the zoom box in the upper right corner. Note that this type of zooming doesn't have anything to do with a percentage scaling view. The first time you click on the zoom box, the palette fills your screen; the second time, it goes back to normal size. And as with a normal window, you can resize the palette by clicking and dragging the resizing box at the lower right corner.

Adding and Moving Library Entries

It's easy to add and move library entries. To add a page item to an open library, just click on the item with the Item tool (or hold down the ⌘ key to get a temporary Item tool) and drag the item into the library. When you're in the library, your mouse pointer turns into a pair of glasses, and two triangular arrows point to your position in the library. When you let go of the mouse button, the item you're dragging is inserted in the library at the location these pointers indicate. You can position your page item (or an existing library item) anywhere in the library by dragging it into place.

You can also add an item to a library by using Cut or Copy and Paste. You use the Item tool to cut or copy an item from a page, but you can use either the Item or the Content tool to paste it in a library. Just click where you want the item to go and then press ⌘ -V (or select Edit: Paste). To paste a new item in a library with existing items, click between items. If you click on an item in the library, you'll replace that item with the new one.

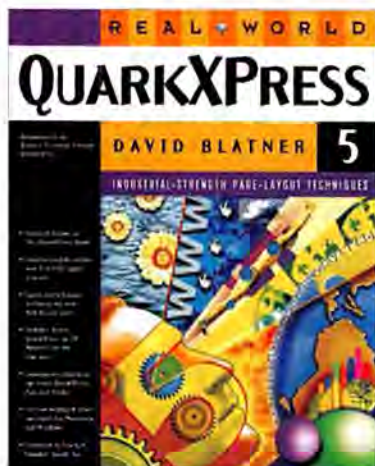
Although I'm saying that you can add "an item" to the library, one item can contain a number of page items. If you want, you can select picture boxes, text boxes, and lines—whether grouped or not—and put them all into the same library item.

After you add an item to a library, you can see a thumbnail-size representation of it (see "Small but Mighty"). This representation is highlighted, and you won't be able to do any work on your page until you click someplace other than the library.

You can move an item within a library by clicking on it and dragging it to a new location. If you have more items in your library than will fit in the palette, you may have some difficulty, because the library doesn't automatically scroll as you drag. You can get around this by cutting and pasting items. And you can click on the zoom box to expand the size, reposition the item, and rezoom down to a small palette.

Removing Library Items

To take an item from an open library and place it on a page, click on it with either the Item or the



Book Learning This article is an excerpt from *Real World QuarkXPress 5* (Peachpit Press, 2002), by David Blatner. You can find the book at www.peachpit.com or at your local bookstore.

Content tool and drag it onto your page. This doesn't remove the item from the library; it makes a copy of it on your page. It's similar to dragging something from one document to another. If you want to delete an item from a library, click on it; then select Clear from the Edit menu (or press the delete key). You can also select Cut from the Edit menu (⌘-X); this removes the item and places it on the Clipboard. XPress always warns you before completely removing something from a library, because you can't Undo afterward.

Labeling Library Items

Imagine having 150 different items in a library and trying to find just the ones that are pictures of baby seals. Remember that all you can see on screen is a tiny thumbnail representation of the items. However, you can label each library item with a foolproof system so that you're just a pop-up menu item away from finding those baby seals.

Every item in a library may be labeled to identify it or to group it with others (or both). With your library items labeled, you can access them by a single label, multiple labels, and more.

To assign a label to a library item, double-click on its thumbnail representation. Up comes the Library Entry dialog box. In this dialog box, there's only one field in which you can type the label. After you add one label to an item, the pop-up menu in this dialog box is enabled. This pop-up menu lists each of the previous labels you've assigned.

Then, if you select a second label from the pop-up menu, XPress adds that label to the category you're already looking at. The name on the pop-up menu changes to Mixed Labels, which tells you that more than one label is being displayed. You can deselect one label category by rechoosing it from the pop-up menu (the labels in the pop-up menu act as on and off toggle switches). You can deselect all the subcategories by choosing All from the pop-up menu.

You can group library items together. This isn't the same as grouping items on a page. You do this by giving them the same label. For example, if you have a bunch of lines that you use a lot for one magazine, you might label them all "Mag Lines." Then, when you need one, you can simply go to the Library palette's pop-up menu and select that label.

But if each one of the items' labels isn't exactly the same, XPress won't know to group the labels

together. Instead of typing the same label over and over again for each item, you can just type it once. Then use the pop-up menu in the Library Entry dialog box to choose that label each time you want to assign it to an item within the library. This method is faster, and it helps you avoid typos.

After you've labeled items in your library, you can select from among them with the pop-up menu at the top of the Library palette. This menu acts as a kind of electronic card catalog. There are always two items in this pop-up menu: All and Unlabeled. Selecting All shows you every item in the library. Selecting Unlabeled displays only the items that have not yet been labeled. Any other labels you've assigned to library items also appear in this pop-up menu. If you select one of these, you see only items that have been assigned that label.

Saving Libraries

No matter how hard you try, you won't find a command to save the library file. This can be disconcerting, to say the least. What happens to all those items if you can't save them?

In previous versions of XPress, the application saved a library only when you quit the program or closed your current document. This is generally unacceptable, because people work for long periods without quitting or closing a document.

Fortunately, you can turn on the Auto Library Save feature in the Application Preferences dialog box. This feature, which is on by default, forces XPress to save a library every time you place a new item in it. This may slow down your work a little if you're adding a number of items, but it could also save you lots of time if something goes wrong.

Once a library is saved on disk, you can move it from one computer to another.

Sending Libraries, Not Pictures

When you're preparing templates and picture libraries so that someone else can do the actual page-layout work, remember that you may not need to send them the picture files. XPress captures a low-resolution preview image for each picture when you import it into a picture box, and that's saved within the library.

If you send just the library file, the person making pages can place, see, and print the screen representations. When the document file comes back to you, XPress remembers the locations of all the original graphics files on your disk, and it uses those for printing. □



Small but Mighty

Store items in an XPress library for convenient access later.



Remember that a library is just an XPress document with a thumbnail preview; if you open an older-version library in a newer version of XPress, you'll no longer be able to open the library in the older version of the program. I speak from sad experience on this one, by the way.

Contributing Editor DAVID BLATNER's newest works are *The Flying Book* (Walker & Company, 2003) and *InDesign for QuarkXPress Users* (Peachpit Press, 2003). You can reach him at www.moo.com.

Roundtable Disc-ussion

To give you the dope on the dish, the fate of the plate, and the chatter about the platter, this month's *Mac 911* focuses primarily on discs—CD-R and DVD-R media. Specifically, I look at ways to back up application files to disc with Apple's Backup utility, create Video CDs, archive iDVD projects, and effectively destroy those shiny silver circles. I round out the column by showing you how to create a personal e-mail blacklist, circumvent a vexatious warning from OS X, and install Jaguar on your iPod.

Backup Strategy

I was dismayed to learn that you can't use the Backup utility that comes with a .Mac membership to back up your OS X applications to CD or DVD. Is there any way around this?

Scott Monroe, Fredericktown, Missouri

You're correct that Apple's Backup doesn't allow you to make copies of your applications. Sure, you can try to back up your Applications folder by dragging it into Backup's main window, but when you restore that backup you'll discover that everything within the

folder *except* the applications was backed up.

But it's not difficult to get around this limitation. The trick is to disguise your applications so they appear to Backup as a single file instead of a collection of apps.

One way to do that is to create a disk-image file with Disk Copy. Just drag the apps you want to copy into a folder and launch Disk Copy (Applications: Utilities). Select File: New: Image From Folder Or Vol-

ume. In the New Image From Folder dialog box, find your folder full of applications and click on the Image button. The folder will turn into a .dmg file that you can drag into Backup and back up (with all contents in place) to disc or your .Mac account.

Another option is to compress the folder with Aladdin DropStuff (part of StuffIt Standard Edition; \$50; 800/732-8881, www.aladdinsys.com) or StuffIt Deluxe (\$80). This saves space—vital if you store files online.

I Want My Video CD

How can I turn my iMovie into a Video CD?

Diane Kearny, La Grande, Oregon

Ah, you mean the variety of CD that plays full-motion, full-screen video at less-than-VCR quality? This is easily done. You create these discs with the help of Roxio's \$90 CD-creation application, *Toast Titanium* (408/367-3100, www.roxio.com). This is how:

Install *Toast* and then launch *iMovie*. Open your finished *iMovie* and choose *Export Movie* from *iMovie*'s File menu. In the resulting *Export Movie* dialog box, select *To QuickTime* from the *Export* pop-up menu. Click on the *Format* pop-up menu in the same dialog box, and mew in wonder when you see the newly added *Toast Video CD (NTSC)* and *Toast Video CD (PAL)* entries. Select the appropriate option (NTSC for a Video CD compatible with North American video players and PAL for European gear), and click on *Export*.

If you're conducting this operation in OS X, put your Mac to some other use while it encodes the movie in the background. If you're using OS 9, treat yourself to a large beaker of coffee and, if your diet allows, a sticky bun—encoding a video in the MPEG-1 format (what a Video CD uses) can take three to four times as long as the original video's length (or much longer if you're encoding in the background in OS X).

When your movie has been encoded, *Toast* will launch and the movie will be added to *Toast's Video CD* window. Switch back to *iMovie* to export and encode any other movies you'd like on your Video CD. When you're ready to create the disc, insert a blank CD-R and click on *Toast's Record* button.

Note that you can also use *Discreet's* \$599 *Cleaner* (800/869-3504, www.discreet.com) to convert a QuickTime movie to MPEG-1 format. Once it's con-



ILLUSTRATION BY LEO ESPINOSA

verted, simply launch Toast, select Video CD from the Other pop-up menu, drag the converted movie into Toast's main window, and burn the disc.

iDVD Duplication

How can I make copies of the discs I create with iDVD? And should I keep the iDVD project archived in case I want to use some of the footage for a "best of" compilation, or can I pull the file I want off the DVD?

Duncan Gray, Harrogate, North Yorkshire, England

Unlike commercial DVDs, the discs you churn out with iDVD aren't copy-protected and are therefore easy to duplicate. Simply insert the DVD, launch Apple's Disk Copy utility, and choose New from the File menu. From the submenu that appears, select Image From Device. In the resulting Device Selector dialog box, choose your DVD drive and click on Image. Your DVD will be saved as an image file.

To burn that image file to a disc (thus making a copy of your DVD), select Burn Image from Disk Copy's File menu, navigate to the image file in the resulting Burn Image dialog box, and click on Burn. Insert a blank DVD-R disc when prompted, and wait for your disc to be burned.

Although you can use tools such as OSex and DVD Extractor (freeware apps best found by conducting a Google [www.google.com] search) to extract audio and video files from DVDs, doing so can be a bit of a chore (synchronizing the audio and video streams can be particularly tricky). This isn't to say that you should keep all your source files on your Mac—the files that make up an hour-long DVD can consume dozens of gigabytes of space. It's impractical to keep these things on your hard drive, and backing them up can be time-consuming and expensive.

For these reasons, I prefer to export my edited source files back to my camcorder. (iMovie includes an option for doing just that in the Export Movie dialog box.) When I later want to create a "best of" DVD, I recapture the footage with iMovie, edit it, and send it along to iDVD, where I create a new project.

Mangling Media

In the past, I backed up some of my data to CDs. I no longer need that data or these CDs and would like to dispose of the discs. But if I toss them in the trash, someone could fish them out and possibly take my data. What can I do to render these discs unreadable?

Dick Tripp, Buenos Aires, Argentina



System Preferences is an often-used application, but there's no keyboard shortcut to it in OS X's Apple menu. There are, however, ways to open specific preferences with your keyboard. Hold down the option key and press either of the brightness keys (F14 and F15 on the Apple Pro Keyboard) or one of the sound keys. When you perform this trick with the brightness keys, System Preferences launches and the Displays system preference appears. Do the same with one of the sound keys, and you'll see the Sound system preference.

Eliot Goldstein, South Orange, New Jersey



Unleashing the destructive child within, I employed the following methods to destroy a collection of discs.

Boiling Unlike most vegetables, CDs maintain their freshness even after ten minutes of boiling.

Corrosive Substances or Fire Corrosive liquids or a direct flame will demolish a disc, but you risk generating toxic fumes and/or setting yourself ablaze.

Food Processor Reasonably effective if you let it run for 45 seconds or more, a food processor scrapes away the foil coating on the edges of a disc.

Microwave Oven A two-second zap renders a disc completely unreadable. Regrettably, this technique also bears the tiny risk of starting a fire: the foil inside the disc will very soon begin to crackle and spark.

Sandpaper Medium- to heavy-grit sandpaper will scrape your data away in next to no time.

Tin Snips or Bolt Cutters Slicing and dicing the disc will certainly make its data unrecoverable, but because these things are brittle and have sharp edges when sheared, you risk cutting yourself or putting out an eye. Use proper safety equipment.

Summary Though discs are remarkably resilient, you can effectively destroy them by scraping or cutting.

Rules to Live By

In Microsoft Entourage, the Junk Mail filter can be set to High and then modified so that mail from a particular address still lands in the in-box. Is it possible to ban mail from certain addresses so that it doesn't land even in the Deleted Items folder and is rejected altogether?

Chris Jones, Koblenz, Germany

Unless you're running a mail server on your Mac, you can't reject incoming e-mail—that's a job for your ISP, a spam-filtering service such as SpamCop (www.spamcop.net), or an antispam application (which screens your mail for spam) such as Matterform's \$30 Spamfire Pro (505/747-1220, www.matterform.com). You can, however, create a personal blacklist with Entourage's Rules and Schedules features. Here's how:

Create a new e-mail folder in Entourage by selecting Folder from the New pop-up menu in

continues

Out, Damned Slop!
Use a well-constructed rule to dispense with the dreck that finds its way to your e-mail in-box.

UNSOLICITED ADVICE

I'm quite keen on iPhoto, but like many others, I was vexed to discover that by default I couldn't share an iPhoto library among multiple users or maintain more than one of these libraries. Thankfully, there's a way around these limitations.

That way is Brian Webster's free iPhoto Library Manager (<http://homepage.mac.com/bwebster/iphotolibrarymanager.html>), a utility that not only allows you to grant read-and-write access to your iPhoto library but also lets you create additional libraries in any location you choose.

Speaking of i-enhancements, I've missed the alarm-clock feature in Casady & Greene's SoundJam. No longer: Koingo Software's \$12 Alarm Clock Pro makes SoundJam's alarm-clock implementation look anemic.

Alarm Clock Pro can play not only a specific iTunes song or playlist but also songs streamed from the Web, CD-audio tracks, and any QuickTime-compatible media file. It's well worth a long look, at www.koingosw.com/products/alarm_clock_pro.shtml.

the toolbar. Name this folder Vile Excrescence. Select Rules from Entourage's Tools menu, and click on the New button in the resulting Rules window.

In the If portion of the Edit Rule window that appears, select a criterion you'd like to use to filter e-mail—for example, a subject heading that includes the word *Viagra*, or a domain such as *valuepromotions.net*. In the Then portion of the window, select Move Message from the first pop-up menu and Vile Excrescence from the pop-up menu to its right. Click on the Add Action button, and select Change Status in the first pop-up menu in the new action. In the pop-up menu to its right, select Read (see “Out, Damned Slop!”).

So far, so good. You've diverted your blacklisted mail to the Vile Excrescence folder and marked it as already read so the folder shows no indication that it contains anything new. To get rid of the folder's contents without ever laying eyes on them, select Schedule from the Tools menu, click on New in the Schedules window, and in the When portion of the resulting Edit Schedule window, select Repeating Schedule. In the Every field that appears to the right, choose how often you want the Vile Excrescence folder emptied—for instance, 10 minutes. In the Action portion of the window, select Delete Mail from the first pop-up menu, select the Vile Excrescence folder from the second pop-up menu, and enter 0 (zero) in the Days field. Click on OK to save the schedule. You've successfully created a schedule that purges the contents of the Vile Excrescence folder every 10 minutes.

I cannot stress enough that this rule and schedule mean death for *any* message that finds its way into your Vile Excrescence folder. Should you be careless in designing your original filter—choosing to divert all mail from an AOL address, for example—you could very easily lose mail that matters. Please be careful.

Yes, I'm Sure!

I'm annoyed by the “Are you sure you want to shut down your computer now?” dialog box that appears when I shut down in OS X. If I didn't want to shut down, I wouldn't have gone out of my way to do it. Can I avoid this notice?

Dave Wallis, Lemont, Illinois

Just hold down ⌘-control-option-eject on Apple's Pro Keyboard, and your Mac will shut down without a whimper (other than quitting open applications and asking you to save any unsaved documents). You can also skirt the warning by holding down the option key while selecting Shut Down from OS X's Apple menu.

Giving iPod the Boot

I successfully installed OS X 10.1.5 on my iPod and used the iPod as a startup disk. I'm having no luck with OS X 10.2, however. Any advice?

Robert Ameeti, Trabuco Canyon, California

It's too regrettably true that you can't install OS X 10.2 on an iPod via the normal methods. Luckily, you can get Jaguar onto your iPod by stealthier means. Mike Bombich's \$5 Carbon Copy Cloner (www.bombich.com/software/cccl.html) is a utility that clones an OS X installation from one volume to another and lets you make the cloned volume bootable.

With your iPod configured as a FireWire drive, plug it into your Mac. Its icon will appear on the desktop. Now download, install, and launch a copy of Carbon Copy Cloner version 1.4 or later.

In the Source Disk pop-up menu of the Cloning Console window, select a volume on your Mac that contains OS X 10.2. Select your iPod from the Target Disk pop-up menu. In the Items To Be Copied list, ⌘-click on those items you *don't* want to copy to your iPod. Items you should copy to create a bootable startup disk include .hidden, Applications, Library, System, Users, bin, mach kernel, private, sbin, and usr.

Click on the Remove button to remove the items you don't want to copy to the iPod. In the Bootability Options section of the window, make sure that the Recreate Darwin Links and Bless System Folder options are selected. Click on the lock icon and enter your user name and password when asked to. Finally, click on the Clone button to begin cloning the source volume to your iPod.

When the operation is complete, launch System Preferences, click on the Startup Disk preference, and select the System Folder on your iPod. Click on Restart, and your Mac should boot from the iPod. □

Contributing Editor CHRISTOPHER BREEN is the author of the books (and decorative lunchboxes) *Mac 911* (Peachpit Press, 2002) and *Secrets of the iPod*, second edition (Peachpit Press, 2003).



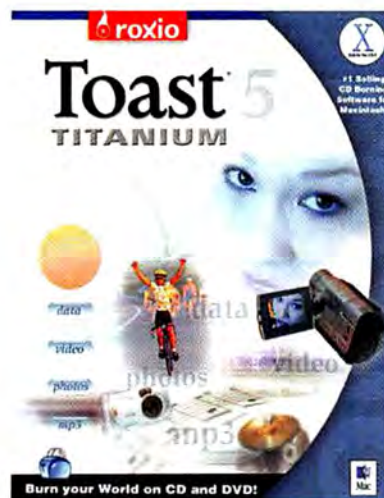
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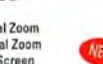


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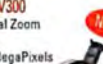
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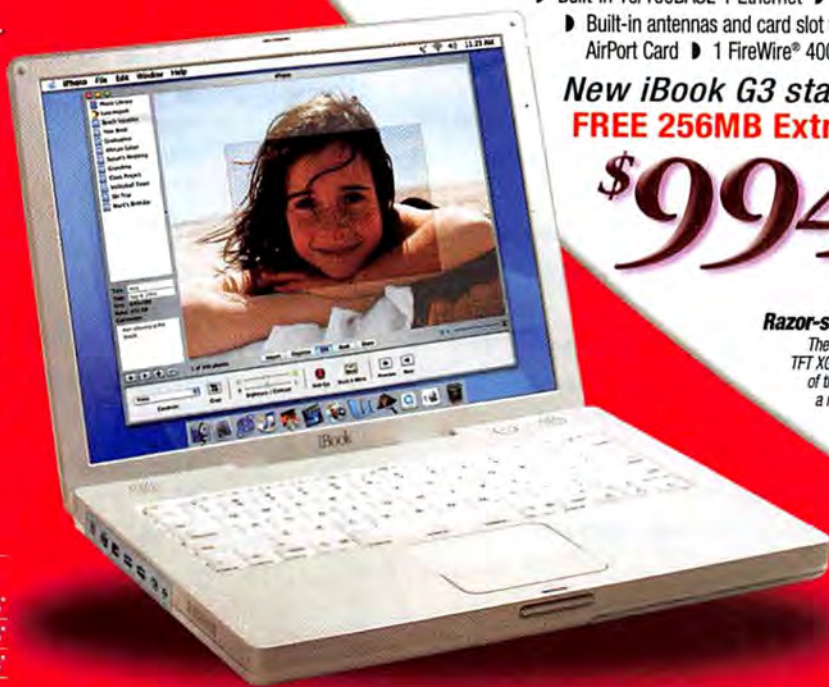
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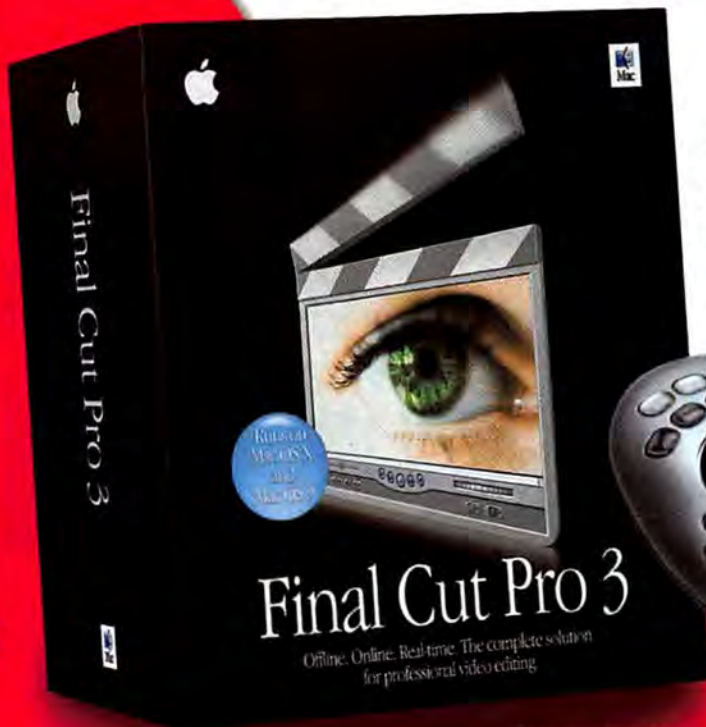
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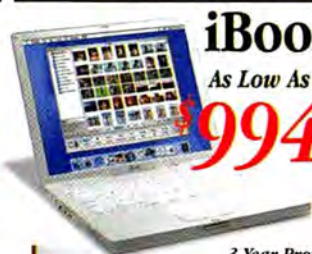
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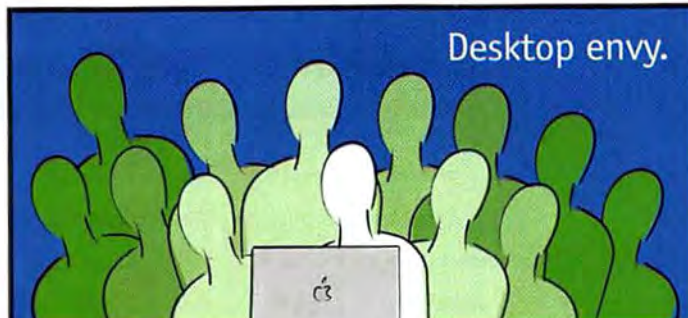


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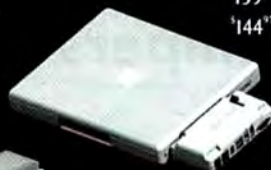
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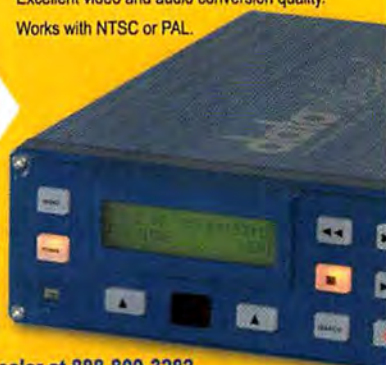
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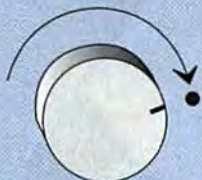
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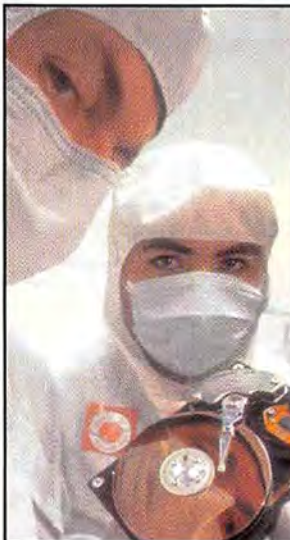
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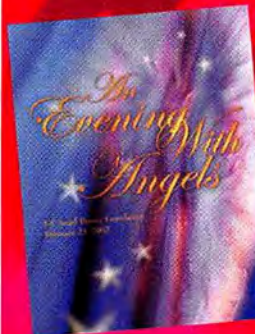
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6. Start grooming your hair with your fingers instead of going to a \$60-a-session stylist, develop an arrogant and inflexible opinion about when *The Simpsons* started going downhill, and don't take no guff from nobody: you're a programmer. Eventually, you'll outgrow AppleScript and move on to RealBasic or another conventional development environment, but you'll graduate from Studio with the experience and tools you need for a smooth learning curve.

There's More to Do

To be sure, Apple still has a long way to go if AppleScript and AppleScript Studio are to assume their rightful places in the hearts and minds of users. For one, Apple needs to commit itself to making OS X all-scriptable and all-recordable at all times. Which should I find more disappointing: that iTunes isn't recordable, despite Apple's assertion that it's the center of my Digital Lifestyle, or that Final Cut Pro isn't scriptable, despite Apple's assertion that you'd more wisely spend \$1,000 on a single piece of software than on a weeklong vacation in a three-star beach hotel?

For another, Apple needs to make AppleScript Studio simpler and more palatable for folks who just want to explore and get a job done; as it is, creating programs in Studio often seems slightly less complicated than trying to change a flat tire without getting out of the car. And the company needs to get more aggressive with its documentation.

AppleScript Studio could mean big things for Apple. One of the things that scared me about OS X way back in 1999 was the idea that its Unix underpinnings would turn it into, I dunno, a Unix operating system or something. I love Unix, but I hate the way its underlying philosophies can impair applications.

I was wrong to worry. The future of Mac OS has always been entrusted to people who think computers should never stop doing startling and exciting things, not to performance wonks. The next great thing doesn't always come out of a computer science master's thesis. As often as not, it's the result of someone whose disregard of the adage "Beer then liquor, never sicker" led to a highly improbable but spectacularly wonderful idea for a piece of software—and then to the question "How hard would it be to actually write that?"

Before AppleScript Studio, the answer was "Pretty damned hard." The path from user to coder was like the Iditarod trail: there are warm beds and fancy meals at the finish, but first there's a 1,100-mile slog through the wilderness. With AppleScript Studio, the path is still long, but now it involves a paved road on which you can travel in a nicely appointed Winnebago. □

Apple needs to commit itself to AppleScript on OS X.

Contributing Editor ANDY IHNATKO (www.andyi.com) also writes about Macs regularly for the *Chicago Sun-Times*.

Forget HyperCard—The Future Is AppleScript Studio

Stages of Grief



HYPERCARD IS DEAD. *PLEASE* BELIEVE ME. HONEST, I HATE to be the delivery system for heavy disturbing facts. And I think it's a danged shame—I'll go even further and describe it as a *gosh*-danged shame—that

Apple killed a simple, easy-to-learn programming tool that was useful for creating everything from presentations to databases to sophisticated apps for automating your Mac.

But c'mon, man—it died *years* ago. You HyperCard users are really starting to worry me. Last year I wrote a column about Real Software's RealBasic (www.realbasic.com), praising it for restoring the sense of fun in writing Mac software that I'd been missing ever since HyperCard got whacked. Boy, did I ever hear from the HyperCard community: "A strong community of steadfast users," "HyperCard still works in Classic," "Still a great system for deploying AppleScript solutions," "There's a new beta of [HyperCard-compatible] SuperCard coming for X!"

Folks, there's a difference between *alive* and *lifelike*. It's the difference between moving on and just plain creeping the bejeezus out of people.

So *please* let go of HyperCard. I swear that its demise will have exactly the same impact on you as the death of one of the original Sweatogs: only a callous bastard wouldn't feel a twinge of sadness after all they've done for us, but a moment later you're distracted by a shiny object in the distance, and then, bang, you're over it.

I'll admit that until last year, HyperCard's passing had left a rather serious hole in the Mac landscape. HyperCard was the Yellow Brick Road that eased a person's journey from new Mac user to power user to programmer. It helped thousands of people stop modifying their habits and expectations to suit the limitations of their software, and start modifying that software to suit their habits and expectations. But the hole that HyperCard left has been nicely spackled over with Apple's remarkably mature AppleScript Studio. If you've never written software before, RealBasic shouldn't be your first step. In OS X, the path that transforms a fresh, optimistic, and socially adjusted user into a dedicated propeller-beanie-wearing programmer is paved with AppleScript.

From User to Programmer

Whether it'll take you weeks or years to complete your journey, this is the path you should follow:

1. Acknowledge that you get paid the same whether you complete your assigned duties by the end of the

day or by the start of lunch, and that if they paid you a decent wage, then maybe you'd be motivated to fill any extra time by looking for productive things to do instead of researching trades for your Fantasy Hockey League franchise. So you might as well start using AppleScript to streamline some of your work (see "Amazing AppleScript," December 2002).

2. Get acquainted with Apple's Script Editor application and automate a simple, trivial task by recording a couple of scripts. Not all programs are recordable, but playing with QuickTime Player and Bare Bones Software's BBEdit will get you into the swing of things.

3. Embroider your recorded scripts with lines of hand-coded AppleScript.

4. Get to where you begin a script by writing your code from scratch instead of by recording things. You can still save time by recording certain portions, as long as you chop up those lines in your script so they become just as unreadable and impossible for other programmers to understand as the rest of your code. The latter is a fundamental part of successful programming.

5. Decide that you're too much of a ninja stud monkey to mess with simple AppleScripts any longer and become determined to convert your complicated scripts to actual applications. At this point, you close your eyes, commend your soul to God, and install AppleScript Studio from the Developer Tools CD that came in the OS X box (the tools are also available at <http://developer.apple.com>).

AppleScript Studio gives you a whole new environment for creating scripts; in fact, it's the same system that's used to create full-blown commercial programs in (bless me, Father, for I am about to blaspheme) a "real" programming language, Objective-C. While Studio is a lot to assimilate, it's actually not very intimidating if you've already got a script to start from. Paste your existing old-fashioned script into Studio's code editor. Go into Interface Builder and draw yourself a cool, Aquafied user interface. Each element (a button, text field, or menu, say) can have a script attached to it that automatically executes when the element is activated (clicked on, typed into, chosen, and so on).

In six steps, I can transform a user into a coder.

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