SWITCH!

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Macworld

POWER PLAY

1GHz PowerBook G4; New iBooks for $999

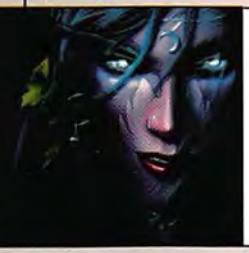
SWEET HARMONY

Pro Audio Finally Arrives on Mac OS X

PLUS | Upgrade Your PowerBook | Maya 4.5 Delivers | StuffIt Deluxe 7 Reviewed

GAME HALL OF FAME

The Year's Best Mac Games



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Incorporating MacUser

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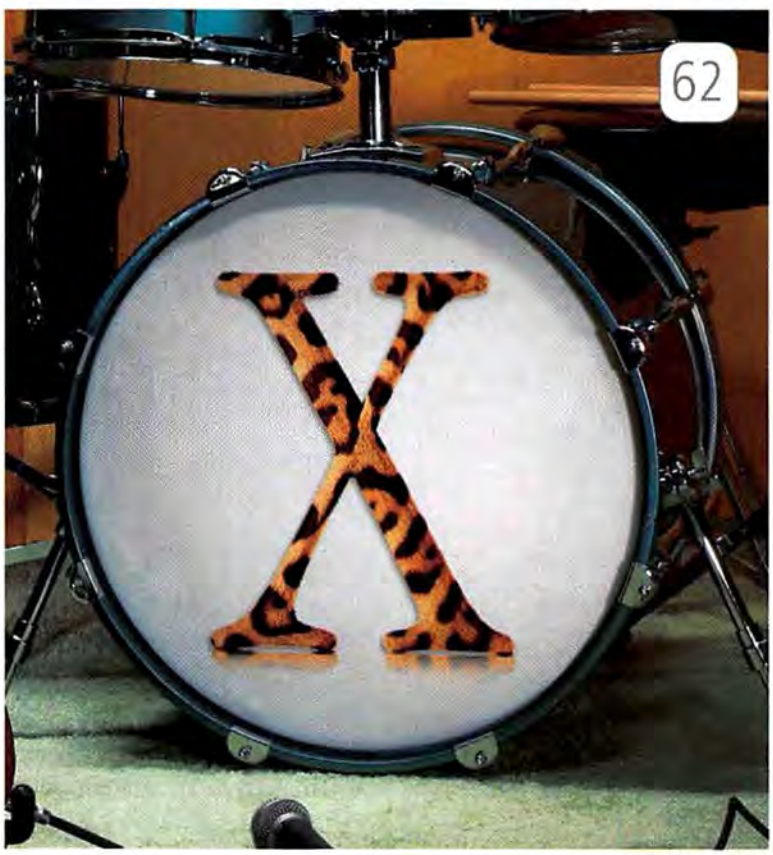

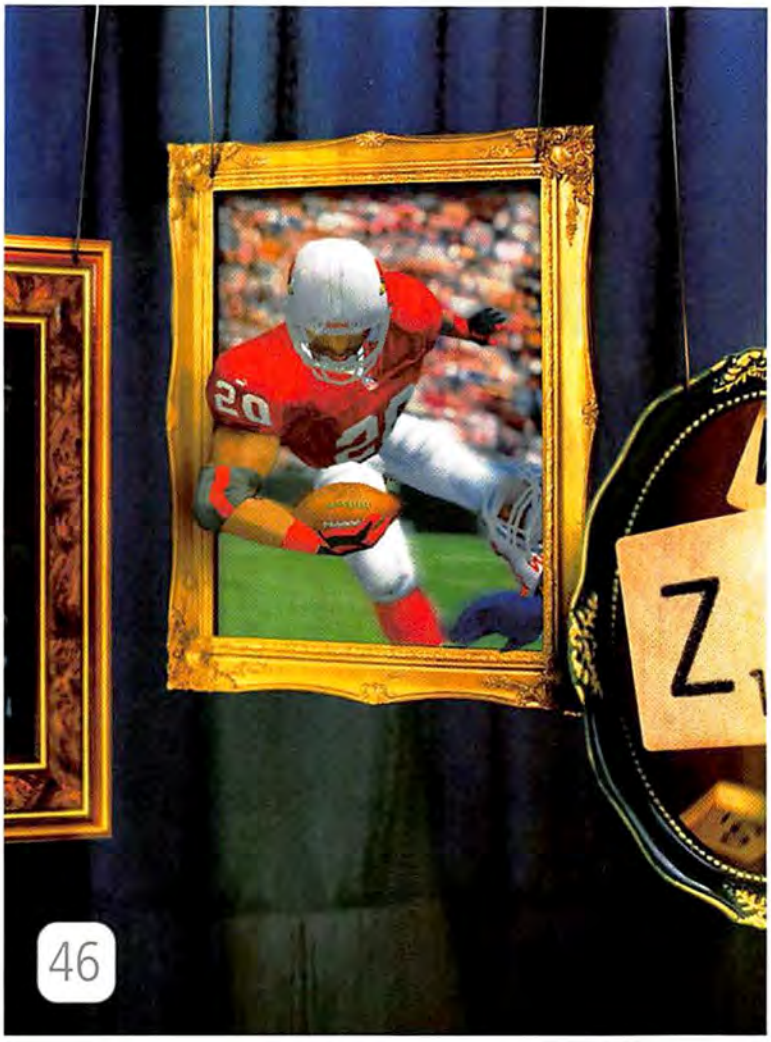

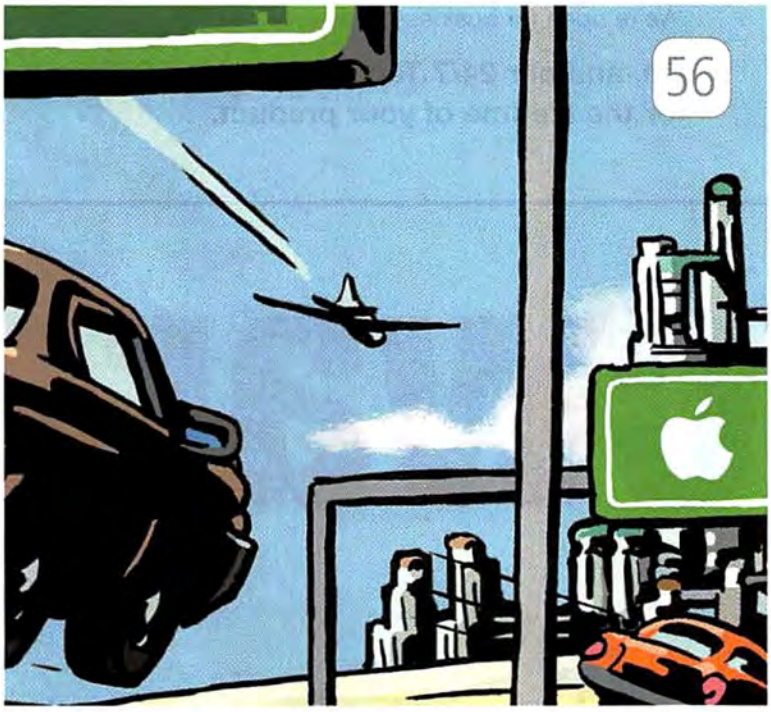

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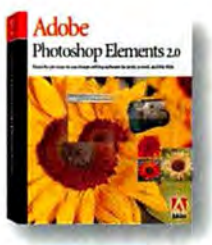

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BY RICK LEPAGE

Is OS X Music Creation Finally Catching Up?

Sights and Sounds

AS MAC OS X HAS EVOLVED, SO HAS THE PRODUCTIVITY OF most people using it. A lot of the business and creative applications we depend upon are now OS X native—the big exception being QuarkXPress, of course. And plenty of cool utilities and applications—from small developers, shareware authors, and big software companies—keep popping up.

But this doesn't mean that Apple can rest; there are still quite a few areas in the OS that need improvement. For example, although OS X 10.2's overhauled scanner and printer support *will* make it easier for developers to publish complete drivers, it's slow going. Many people remain mired in OS 9, waiting until all the holes are filled (and waiting until they've accumulated the money that upgrading everything will take). This month, Contributing Editor Christopher Breen sheds some light on another place where OS X has been incomplete: the creation of music and audio.

The Mac has a tradition of being the leading platform for the creation of digital media, but the Windows market caught up long ago in the music and audio race. As is the case with so many other technologies and OS X, Apple is working hard to regain the lead. In "OS X in Tune," Chris shows us the new support Apple has built for audio and MIDI. He also provides a look at available audio products—and a glimpse of what's coming in the near future.

The Switch Is On

Right now, Apple is going out of its way to woo Windows users—its "Switch" ad campaign is the most prominent marketing blitz from the company in a while. About a third of the Mac users I've spoken with about the documentary-style TV ads think they're stupid, but I think they're more effective than the past few ad campaigns.

The ads were successful enough to get under Microsoft's skin. In a classic bonehead move, Microsoft posted an ad about an alleged Mac-to-PC switcher on a Windows XP promotional site—and then promptly pulled the ad, admitting that the switcher was in fact a paid freelancer (for more, see http://maccentral.macworld.com/news/0210/15.switch.php). Lots of companies make mistakes like this, and some of them even get caught. This time, Microsoft had its hands in the cookie jar.

So is the "Switch" campaign working? There's no way for me to tell for sure, but I *have* seen more Apple hardware being used around me. I fly quite often, and on recent flights, the number of open Titanium PowerBooks and iBooks has been higher than the number of open PC laptops. On a flight just a few weeks ago, there were two people using iPod for Windows within five rows of me (as well as a convert who said he was going to buy one when he got off the plane). When I surf the Net or work at one of the growing number of coffee shops or airport lounges with public wireless access, there are always many new Mac laptops. Plenty of the people I see are longtime Mac users, but I've talked with enough folks to know that there have been quite a few switchers in the past year.

Our old friend David Pogue once again appears in our pages this month, with a look at what people switching from Windows to Mac need to know, including helpful tips that will ease the transition. If you're a recent convert, "PC to Mac" should help; if you're a Mac veteran and you know someone who's beginning his Mac journey, pass the article along—it will be a useful road map.

> With OS X, Apple is working hard to regain the lead in the audio race.

I'm glad that Apple is working to pull in users from the Dark Side, but I worry that the company isn't focusing on those of us who've been with the Mac for a long time. Apple *should* be able to send out multiple messages to different audiences, and many of the Mac faithful still need to be convinced to move to OS X. No number of "Switch" ads will do that—unless they start featuring OS 9 users who have switched to OS X.

Even More Cameras

Last May in our *Reviews* section, we introduced a digital-camera column written by Jeff Keller, editor of the Digital Camera Resource Page (www.dcresource.com). This month, Jeff's column has been redesigned to showcase more cameras and to provide a quick look at each camera's key characteristics.

Every month, a new group of cameras is announced, and each is aimed at a different category of user. We hope the new format will make it easier for you to find the cameras you're interested in, so that when you're ready to buy (or upgrade), you'll have the information you need. □

Let me know what you think about these topics, *Macworld* in general, or anything else related to the Mac. Drop me an e-mail, at rick_lepage@macworld.com, or join in the discussion forums at www.macworld.com.

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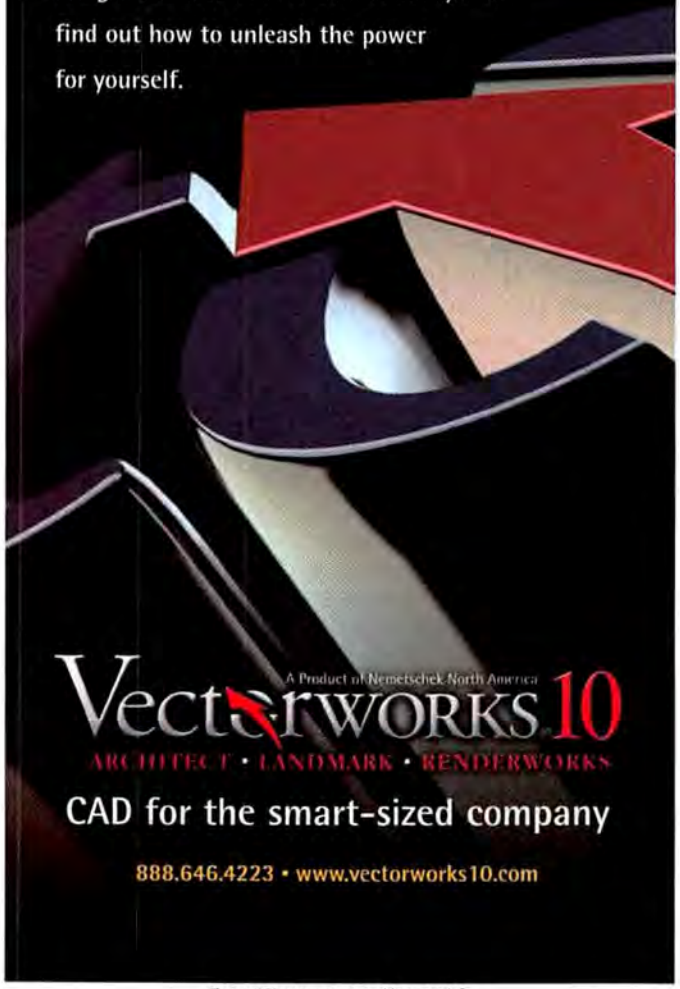

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This retrofit has been advised as a result of two overheating/fire incidents reported on similar products in Japan. After a thorough investigation, the cause of these incidents was determined to be a loose screw at the connection of two conductors that supply primary AC voltage to the fuser assembly. No defects in the design or manufacture of this product were found. Although the probability of overheating/fire occurring in the printer is extremely low, GCC wants our customers to be aware of this issue and the available options.

GCC is making every effort to rectify this situation by offering its customers either a no-cost safety retrofit or a trade-in credit towards the purchase of a new GCC printer. Please contact GCC at 1.800.422.7777 (within the US and Canada) or visit www.gccprinters.com for more information regarding options, limitations and trade-in values. In the meantime, we suggest that the "power save" mode be enabled and that the printer power is off when unattended.

As part of our continuing commitment to you, GCC is making this effort, above and beyond that which is required by law, to notify our customers of this matter. Our company policy is to treat our customers the way we ourselves would want to be treated. We offer our deepest apologies for this inconvenience and remain committed to your safety and satisfaction.

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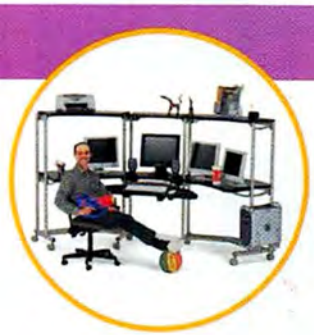

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FEEDBACK

Jaguar: The Cat's Meow?

It's not like *Macworld* readers to act as if the cat had their tongues. So when we ran a seven-page review of Jaguar in our October 2002 issue, we expected to hear from Mac users about the OS X 10.2 update. And sure enough, the fur was soon flying—many readers declared Jaguar the best of its breed, while others greeted its release with the usual round of catcalls. Throw in some catty comments about everything from Jaguar's price to *Macworld*'s OS X e-mail guide, and it's clear that, for this month at least, *Macworld* has not gone to the dogs. □

Cat Fanciers

RONALD E. SMITH

"The Cat's Out of the Bag" (October 2002) was right on the mark. I received OS X 10.2 as a birthday gift in late August and installed it a week after I'd completed a major project. All hell broke loose. Non–OS X apps failed left and right. OS X 10.2 locked up and froze. I couldn't go back to 10.1 without formatting the hard drive. To use OS 9 apps, I had to start up in OS 9.2.2—a major pain. Then *Macworld* arrived. I did the clean install of OS 9, transferred my extensions, rebuilt the desktop, and then did a clean reinstall of 10.2. My problems were solved—a major thank-you.

BILL YERMAL

While I appreciate what Apple has done in creating a new operating system to help secure the future of our beloved Mac platform, I don't think I've seen a lot of honest analysis of OS X. Jaguar may be a boon to developers, software manufacturers, and programmers, but over the last six months, I've seen very little that has made me more productive. While changes in transparency, pulsating buttons, drop shadows, spinning beach balls, and shiny lollipops may make for a pretty interface, my experience on a 500MHz dual-processor G4 has included slower start-ups, sluggish dialog boxes, and general performance decreases in every OS X–native program I have used.

RANDALL WARD

I just finished upgrading my 500MHz G4 desktop to OS X 10.2, and I have to say that all the whining should stop now. I started using Macs at System 7 and used both the OS X beta and OS X 10.1 extensively. Jaguar is unbelievably killer! The speed increases alone have done it for me, but all the changes in the Finder are the icing on the cake. I can finally see and enjoy all the work that has gone into OS X, and my G4 feels at least 200MHz faster.

KEN ZAKOVICH

I installed Jaguar two days before I received your magazine. What a mistake. Yes, Jaguar is much faster in all aspects. Yes, it brought back many of my favorite key commands and pop-up folders. But QuarkXPress 5.01 running in Classic literally sank this incredible update. Now I've got myself into a quagmire that involves QuarkXPress unexpectedly quitting when I save or print, as well as problems with XPress image and photo redrawing. I'm still perplexed about how to group my fonts in XPress without Type Reunion X. I've got scroll-itis from my font list. To try to remedy the problem, our agency upgraded to Suitcase 10, which does not have a grouping feature. However, I do have to commend Suitcase as a beautiful font-management program. How can Adobe translate its entire slew of apps into flawless OS X workhorses while Quark can't seem to get out of the starting gate?

DARYL SHIELDS

I enjoyed your article on Jaguar, but I found your recommendation about running it on a G4-powered Mac a bit misleading. I recently bought a G3 iBook to accompany my Power Mac. I've noticed speed enhancements and faster boot times with the iBook. It should be noted that G3 users, as well as G4 users, may benefit from Jaguar.

MARK WOODS

I like the fact that OS X now has native Windows support. But what about those of us who have to connect to Windows machines using Novell networking protocols? The only program I know of that allows Macs to network using Novell's protocols is NetWare Client, now owned by Prosoft Engineering. This still operates only in OS X's Classic mode, limiting the usefulness of a new Mac in a Novell environment.

Woods's letter arrived just before Prosoft's autumn release of NetWare Client for Mac OS X—IP Edition (www.prosofteng.com), which will allow OS X clients to connect to NetWare 5 and 6 servers.—Ed.

Put On a Happy Face

JOHN-ROBERT LA PORTA

After reading "What Else Is in Jaguar," in your October OS X 10.2 feature, I noticed that you hadn't discovered an extremely subtle nicety that I like to see when I start up my Mac. Upon reaching the blue OS X start-up screen, if you look where the text and bar appear, you'll notice that the first text displayed is "Welcome to Macintosh." For years now, I've been waiting to see those words again when I turn on my computer. Sadly, Jaguar seems to have replaced the smiling Mac that used to display on start-up with a white Apple logo. Oh well, I guess you can't have everything.

ANDY MEADOWS

Honestly, I don't miss that happy Mac face. I never saw much of it in the first place. Since OS X, I've hardly ever had to reboot my machine. It just runs. I close the lid and open it back up several times a day. I travel with it, never shutting it down, and it

always picks up right where I left off. No, this system isn't flawless, but I used to reboot my Mac two or three times a day. These days, even though I'm on my Mac 12 to 16 hours a day, it never fails me. The smiling face is still there every time I boot my Mac. It's just not reflected back by my start-up screen anymore.

Jaguars, Priced to Move

GEORGE A. JEDENOFF

I share Rick LePage's concern about the cost of upgrading to Mac OS X 10.2 ("Paying the Piper," *From the Editor's Desk*, October 2002). I recently installed OS X, and I feel that the upgrade should be available to me, and to everyone else in this category, for no more than $20 to $40.

SCOTT STECKLY

Apple has trained many of its customers to expect things for free—iApps, iTools, OS updates, and so on. People are so used to getting everything for free that they throw up their hands and go on a rampage when they have to pay for something. Remember OS 8? 8.5? 9? We had to pay for those.

Encryption Insecurities

LARRY B. MACY

Glenn Fleishman states that the encryption methods cited in "Protect Your Mac" (October 2002)—SSL/TLS, SSH, and VPN—encrypt and protect e-mail messages when you connect to a mail server. This is not the whole story. What SSL, SSH, and VPN do is encrypt the entire data exchange—including the password and the e-mail message itself—between the sender's mail client and e-mail server. But when that message goes from *mail.yourserver.com* to *mail.myserver.com*, it is no longer encrypted and travels the Internet as plain text. If, as the recipient, I'm using a mail client with SSL (or SSH tunneling or VPN), that message is encrypted in the exchange between my mail client and my server. If I'm not, the message and my password will travel in plain-text format between the server and the mail client. The important part—the password exchange between the sender's e-mail client and *mail.yourserver.com*—is entirely encrypted. The article suggests that the entire message from the sender's computer and mail client is encrypted until it reaches my in-box. This is simply untrue.

You're right—while the article stressed that SSH, SSL, and VPN secure only the connection between an individual computer's e-mail program and a server (or a network, in the case of VPN), the message is decrypted at the mail server or network boundary. Only separately encrypting the contents of an e-mail message can protect it completely on the journey from sender to recipient. The revived MacPGP software for OS X, from PGP (866/747-5483, www.pgp.com), will allow this kind of security using public-key cryptography.—Glenn Fleishman

Don't Panic

TOM FELEDY

Stephan Somogyi is the first writer to discuss the unusual installation of kernel

continues

extensions in Norton Utilities 7.0 (*Reviews*, October 2002). I had a problem with this software that caused me several days of downtime before I figured it out. I had just installed an update to Toast 5.1.4, and when I restarted, I began to get unavoidable kernel panics that reduced my PowerBook to useless junk in a matter of seconds. No matter how many times I restarted, OS X 10.1.5 wouldn't let me get beyond a gray or blue screen without spewing endless lines of code all over the display and then freezing. After hours of hair pulling, I read through some of the verbiage during these kernel panics and saw the word *Norton* prominently featured. Then I found a tech article at Apple's Web site that suggested, among other things, removing any third-party start-up files. So I removed the three start-up files mentioned in the review. All of a sudden, my PowerBook worked again. Thanks for confirming my suspicions about Norton's flaky software.

VAN E. MATTHEWS

Stephan Somogyi's left something very important out of the last paragraph in his informative review of Norton SystemWorks 2.0—that the system requirements for Mac OS X exclude beige G3s. I just bought SystemWorks for repairing OS 8.6 and 9. I have OS X 10.1.5 on my 300MHz beige G3, and SystemWorks 2.0 will not recognize it. If you need to repair OS X on a beige G3, you might try DiskWarrior, which Alsoft claims can repair OS X, or Micromat's Drive 10, which will work on a beige G3 running OS X.

Drivers Wanted

CHRIS FENNER

In "Parts Is Parts" (*Mac 911*, October 2002), Mac user Kevin Cook indicates that Epson hasn't yet provided an OS X driver for the Epson Stylus Photo 1200. Kevin has probably been looking at Epson's OS X support page, which isn't entirely accurate. I'd been waiting for the same driver, but I happened to stumble upon it in an obvious yet frequently overlooked place. Follow the links to the list of drivers for Epson's entire printer line, and click on the Stylus Photo 1200: Abracadabra! There's the OS X driver. I have been using my printer in OS X for at least a month now without any problems.

E-mail Call

JAMES PLATT

I'm disappointed that you rated Sono Software's Musashi so poorly in "Mac OS X E-mail Guide" (October 2002). I wonder how you missed the fact that Musashi has Sherlock-like searching with the ability to use multiple terms, including existing filters, and to limit searches to specific boxes. Musashi's multiple-user feature is more advanced than others' and will even password-protect already-downloaded mail from other users. I see full support of HTML e-mail as a security risk, particularly with clients that make it hard to delete a message without viewing it, such as Netscape. Musashi can display an HTML message's plain-text content, and you can extract the HTML as an attachment and open it with a Web browser to see the rest. Musashi may have poor documentation, but it's very intuitive to use and the easiest multiple-user environment to set up.

There's no question that Musashi is a decent e-mail program with interesting features. But multiple-user features are less interesting in OS X, where most e-mail programs simply inherit the ability to support multiple users from the operating system. As far as the security risk of HTML mail goes, that's something users must decide for themselves.—Adam C. Engst

The School of Hard Knocks

CARL WALTHER

Macworld reader Jason Brabander completely missed the boat in his criticism of the eMac (*Feedback*, October 2002). He complained about its weight, which is one of the things that make the eMac desirable for classroom use. You have no idea what it's like to see a laptop go flying off a desk because kids were not paying attention. A 50-pound computer stays put. And most schools want CRTs. You may be surprised to learn that many students read their computer screens with their fingers (often not clean). With a CRT, spraying glass cleaner and wiping with a towel at the end of the day takes care of it. Try that on an LCD.

Gefen Responds

HAGAI GEFEN (GEFEN, INC.)

Gefen was pleased to see a review of its ex-tend-it VGA-to-ADC conversion box in *Macworld*'s October 2002 issue (*Reviews in Brief*). However, we'd like to clarify some of the product's capabilities for your readers.

Gefen's VGA-to-ADC conversion box enables the connection of any VGA-equipped computer to Apple's flat-panel displays, resulting in an outstanding reproduction of high-resolution graphics.

Your review concluded that while the product worked well, it did not support multiple resolutions. The reason for this is that Apple flat-panel displays are digital-only monitors; they work correctly only in the monitor's native resolution. While some G4 video graphics cards do support "scaling" resolutions, external scalers typically cost between $2,000 and $5,000 each, far above the price of our product.

You also failed to note the reason we created the product, which was introduced almost a year before your review appeared. Before the release of the PowerBook G4 with DVI output, there was simply no way to connect any Apple flat-panel display to a PowerBook G4 or any other VGA-equipped computer. Gefen offered the only solution: our VGA-to-ADC conversion box.

Should your readers have additional questions about Gefen's products and future developments, they can e-mail us directly, at gsinfo@gefen.com.

Post comments on our forums (www.macworld.com); send them by mail to Letters, *Macworld*, 501 Second Street, 5th Floor, San Francisco, CA 94107; or send them by e-mail to letters@macworld.com. Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters and posts. All published letters and forum comments become the property of *Macworld*.

CORRECTIONS

In our review of MacJournal 2.1 (*Reviews in Brief*, November 2002), we printed an incorrect mouse rating. The product's correct rating is ♦♦♦½.

In our review of FireWire CD-RW drives (December 2002), we printed an incorrect price for the LaCie 48×12×48 d2 CD-RW drive. It costs $179.

(it's not a hard drive)

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GIGAHERTZ PROCESSOR AND SUPERDRIVE TAKE CENTER STAGE IN POWERBOOK UPDATE

One for the Books

WHAT'S NEXT

The Consumer Electronics Show usually doesn't garner much attention from Mac users. But the trade show, running January 9–12 in Las Vegas, figures to introduce plenty of digital devices with Mac-market appeal.

With each successive upgrade, Apple's PowerBooks move closer to narrowing the performance gap between portable Macs and their deskbound brethren. Just this spring, Apple fitted its professional laptops with a faster system bus and Level 3 (L3) cache to help PowerBooks act more like Power Macs. Thanks to those performance gains, tasks that used to be chained to desktops—editing digital video, for example—can now go on the road. And increasingly, Mac users can opt for laptops as their primary computers.

But even with the leaps in portable Macs, Power Macs maintained superiority in a few key areas, including processor speed and DVD-burning capabilities. If you wanted a computer equipped with both a processor that hit the gigahertz mark and an optical drive that burned DVDs, you pretty much had to restrict yourself to a Power Mac. A PowerBook just didn't fit the bill.

Or at least, it didn't used to. After Apple's latest round of updates to its PowerBook line—highlighted by the addition of a faster G4 processor topping out at 1GHz, and a slot-loading DVD burner—the number of differences between Apple's top-of-the-line desktops and laptops has shrunk by two.

PHOTOS COURTESY OF APPLE

Gigahertz Matters

Most Mac users will immediately notice the latest PowerBooks' greater clock speed—and that's understandable, since the high-end model is the first Apple laptop to reach the gigahertz milestone. In addition to the 1GHz PowerBook G4, a model powered by an 867MHz G4 processor is also available. Previously, the PowerBook came with either an 800-MHz or 667MHz chip.

But the new PowerBooks retain an important addition from those earlier models: L3 cache with 1MB of DDR (double data rate) RAM. L3 cache offers quick access to data en route to the processor. Meanwhile, DDR memory pushes data through on both the rise and fall of the clock signal. The result is an overall performance boost, even for a machine that's powered by a 1GHz processor.

Inside the updated PowerBooks is an entirely new graphics processor—the ATI Mobility Radeon 9000, similar to the graphics chip found in Apple's two high-end desktop models. With as much as 64MB of dedicated DDR video SDRAM (32MB in the 867MHz configuration), the ATI graphics chip provides serious graphics and 3-D performance for video pros and gamers alike.

The 867MHz PowerBook G4 features 256MB of RAM and a 40GB hard drive. The 1GHz model ships with 512MB of memory and 60GB of storage space; it also features a preinstalled AirPort card for wireless networking. (The 867MHz configuration is AirPort ready, with integrated antennas but an empty card slot.) Both PowerBook models can be upgraded to include 1GB of RAM.

Burning Desires

While the 867MHz PowerBook G4 includes a DVD-ROM/CD-RW Combo as its optical-drive option, the 1GHz version features a SuperDrive that reads and writes both CDs and DVDs, making it the first Apple portable to feature this capability. Adding a SuperDrive to the PowerBook presented Apple with the dual challenge of obtaining an optical drive small

APPLE CUTS PRICES, ADDS FEATURES IN UPDATED iBOOK

More Bang, Less Bucks

For years, Mac fans waited for the price of a Mac to drop below the psychological barrier of $1,000. That barrier was broken long ago, but with Apple's latest iBook revision, Mac users can finally boast that an Apple laptop is available for the magic price of $999. And that laptop also happens to run at 700MHz.

More important for anyone in need of an affordable laptop, Apple didn't strip away features as it slashed prices. Instead, the company boosted the processor speed on all three iBook configurations and upgraded the graphics controller—two moves that could bolster the appeal of a machine that accounted for 22 percent of Apple's hardware sales in 2002.

iBooks remain, along with the $799 CRT iMac, the last Apple systems to use the older G3 processor. But that processor has gotten a 100MHz speed boost: the iBook now comes in 800MHz and 700MHz versions. The G3 processor in the updated iBook continues to feature the 512K of on-chip Level 2 cache introduced in the previous revision (see "The iBook Caches Up," *Mac Beat*, July 2002).

The ATI Mobility Radeon graphics processor introduced in the iBook is gone, replaced by the more powerful ATI Mobility Radeon 7500. That's the same graphics accelerator formerly used by Apple's PowerBooks. The graphics processor in two iBook configurations now features 32MB of dedicated video memory—up from 16MB in the last revision—and AGP 2× support. (The graphics processor in the base model still comes with 16MB of RAM.) With the improved graphics controller, the iBook can take advantage of Quartz Extreme, a feature introduced in Jaguar that lessens the burden on the Mac's processor by using the graphics engine to perform screen calculations for improved performance.

The $999 iBook comes with a 700MHz G3 processor, 128MB of RAM, a 20GB hard drive, a CD-ROM drive, and a 12.1-inch active-matrix TFT display. The $1,299 iBook features a 12.1-inch screen, an 800MHz G3 processor, 128MB of RAM, 30GB of storage space, and a DVD-ROM/CD-RW Combo drive. The top-of-the-line $1,599 iBook has a 14.1-inch screen, an 800MHz G3 processor, 256MB of RAM, a 30GB hard drive, and a Combo drive. A custom-built option for the 14.1-inch iBook includes a 40GB hard drive and 640MB of memory for an extra $250.—PHILIP MICHAELS

By the Book

MODEL	PRICE	MEMORY	HARD DRIVE	OPTICAL DRIVE	VIDEO PROCESSOR/ MEMORY	DISPLAY
700MHz iBook	$999	128MB	20GB	CD-ROM	ATI Mobility Radeon 7500/16MB	12.1 inches
800MHz iBook	$1,299	128MB	30GB	Combo	ATI Mobility Radeon 7500/32MB	12.1 inches
800MHz iBook	$1,599	256MB	30GB	Combo	ATI Mobility Radeon 7500/32MB	14.1 inches

enough to fit into the PowerBook's ultra-slim design and making it a slot-loading drive to meet customer demand.

There's no doubt that to get a SuperDrive that met the battery demands of a portable while fitting within the PowerBook's dimensions, some changes to the optical drive had to be made. The PowerBook's SuperDrive burns DVDs at 1×, compared with 2× on the SuperDrives in Apple's desktop models. (Speeds for reading DVDs and reading and writing CDs are identical to those of the SuperDrives in Power Macs.) That means it will take about an hour to burn an hour's worth of DVD video on a SuperDrive-equipped PowerBook, compared with about 30 minutes on a Power Mac. Still, Apple contends that the MPEG-2 encoding capabilities in the 1GHz PowerBook G4 will exceed what you'll find in Sony and Toshiba portables equipped with DVD burners. But you probably won't want to burn a DVD on a PowerBook that isn't plugged in, because of the time and power required for the job.

Priced to Move

Apple introduced one other change in this round of PowerBook updates: the price. Previously, the top-of-the-line model—an 800MHz PowerBook G4 with 512MB of RAM, 40GB of storage, and a Combo drive—cost $3,199. The new high-end configuration, with its faster processor, bigger hard drive, and DVD-burning capabilities, costs $2,999—a $200 drop. The new 867MHz configuration also sells for $200 less than its 667MHz counterpart, at $2,299. Both PowerBook versions should be available by the time you read this.

The update to the PowerBook line will keep the desktop-versus-laptop debate as lively as ever (see "Power Users" for a product-line comparison)—and the PowerBook price cut may swing the pendulum over to the portable side. Then again, Power Macs boast dual-processor configurations, DDR RAM for main memory, and multiple optical and hard-drive bays—things you won't find in any of Apple's laptops. Of course, there's always the *next* update.—PHILIP MICHAELS

Power Users

MODEL	PRICE	PROCESSOR SPEED	MEMORY	HARD DRIVE	SYSTEM BUS	L3 CACHE	OPTICAL DRIVE	VIDEO PROCESSOR
PowerBook	$2,299	867MHz	256MB SDRAM	40GB	133MHz	1MB	Combo	ATI Mobility Radeon 9000
	$2,999	1GHz	512MB SDRAM	60GB	133MHz	1MB	SuperDrive	ATI Mobility Radeon 9000
Power Mac	$1,699	dual 867MHz	256MB DDR RAM	60GB	133MHz	1MB	Combo	Nvidia GeForce4 MX
	$2,499	dual 1GHz	256MB DDR RAM	80GB	167MHz	1MB	SuperDrive	ATI Radeon 9000 Pro
	$3,299	dual 1.25GHz	512MB DDR RAM	120GB	167MHz	2MB	SuperDrive	ATI Radeon 9000 Pro

IBM'S POWERPC 970 SEEMS IDEAL FOR THE MAC—WILL APPLE ADOPT IT?

Coming Attraction?

Pop open any Mac made in the past two years, and chances are you'll find a Power PC chip made by Motorola inside. But that could change, courtesy of a new processor—recently unveiled by IBM—that may soon make its way to a Mac near you.

Neither Apple nor IBM will comment on whether the chip, the PowerPC 970, is slated for Macs. But industry analysts aren't nearly so reticent. "They can't say Apple, but we can—speculatively, of course," said *Microprocessor Report* senior analyst Tom Halfhill shortly after the PowerPC 970's October introduction.

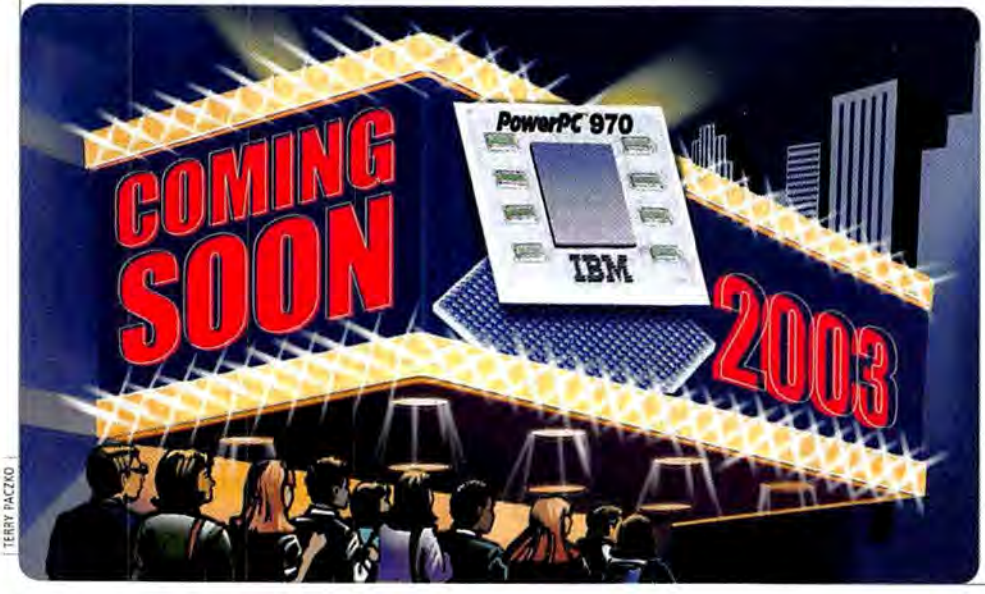
Welcome to the Family

The PowerPC 970 is the first in a new family of processors from IBM. Based on IBM's Power4 server processors, the PowerPC 970 combines higher-end server features with a processor that's compatible with current PowerPC instructions. The new processor is expected to operate at between 1.4GHz and 1.8GHz. The fastest Motorola PowerPC processor operates at 1.25GHz.

The PowerPC 970's current design provides no connectors for L3 cache. But it has 512K of on-die L2 cache that will run at the same speed as the processor. Instead of L3 cache, the PowerPC 970 has a new memory-bus architecture with a theoretical bandwidth of 7.2GB per second. Even with overhead, the actual peak memory bandwidth remains an impressive 6.4GB per second.

To further improve performance, IBM engineers tripled the PowerPC 970's processing pipeline. While some reduced-instruction-set purists question this move, both AMD and Intel have been able to substantially increase the frequency of their processors by increasing pipeline depth. Moreover, the PowerPC 970's pipeline is still shorter than many offerings from AMD and Intel.

The PowerPC 970 is also IBM's first PowerPC processor to include a Single Instruction Multiple Data (SIMD) unit. IBM's SIMD implementation uses the same 162 instructions as the AltiVec technology built into Motorola's G4 chips. This means that someone using an AltiVec-enabled application, such as Adobe Photoshop, on a PowerPC 970–powered machine should see performance boosts similar to those that Mac users currently enjoy with a G4 processor.



TERRY PACZKO

The 64-Bit Question

The PowerPC 970 is scheduled to ship in the second half of 2003. At that time, the chip's top clock speed of 1.8GHz would still leave Mac users with Wintel-inspired gigahertz envy. But *Microprocessor Report* editor Peter Glaskowsky notes that the PowerPC 970's performance would be only 20 to 30 percent behind the performance of AMD's and Intel's top offerings, putting Apple's computers closer to their PC competition than they've been in years. Glaskowsky adds that with a machine powered by two PowerPC 970 processors, Apple could claim performance superiority with more legitimate metrics than the company uses now—assuming, of course, that Apple adopts the new chip.

"I'm really looking forward to getting a Power Mac with a 970 in it," Glaskowsky says. "It's been a few years since Apple has had a Mac that is competitive with the best you can get on the PC side."

Since the PowerPC 970 is a 64-bit processor, adopting the chip would require that Apple make small, low-level changes to Mac OS. However, the new processor can operate natively in a 32-bit mode, so if Apple does make those changes, all other 32-bit software should operate seamlessly.

With 64-bit addressing, applications may use more than 4GB of memory. Glaskowsky says that database programs commonly benefit from 64-bit addressing, which brings significant performance gains because it allows an entire database to be stored in memory,

rather than in an index. Since servers would see big performance gains from that capability, analysts speculate that the likeliest destination for the PowerPC 970 is Apple's Xserve, especially given the company's current interest in servers running OS X. Further fueling speculation is the PowerPC 970's background as a Power4 server processor, along with a memory architecture and cache implementation that lend themselves to multiprocessor configurations.

PowerPC 970 Inside?

Glaskowsky says that if Apple decides to go with the PowerPC 970, it will also have to adopt IBM's proprietary memory controller. While Apple typically builds its own memory controllers, this would not be a trivial task—the switch would amount to a "strategic commitment" on Apple's part to use the new processor family, according to Glaskowsky.

Adding the PowerPC 970 to Macs would also require a fundamental change in the way Apple operates, Glaskowsky says, particularly if the company hopes to attract big-name server clients. Developers of server software must know what hardware suppliers will be doing down the road. That's why both Intel and IBM provide strategic road maps—and Apple would have to do the same. "If Apple wants to be taken seriously by developers of server software, it's going to have to publish its system road maps very far into the future," Glaskowsky says.

Of course, Mac users have different concerns: when they pop open their computers in a few years, will they see a new processor running the show? Because of the PowerPC 970's inherent strengths, Glaskowsky sees Apple using it first in the Xserve and then in high-end desktop systems. But he adds that because of its expense, you shouldn't expect to see the PowerPC 970 in the iMac or portable lines—at least, not initially.—DAVID READ

DEVELOPER REVEALS PLANS FOR NEXT VERSION OF INTERNET-SERVICES APP

What's Next for Watson?

A year ago, Dan Wood was on top of the world. The president of Karelia Software (www.karelia.com), he had a potential hit on his hands with Watson, an innovative OS X–only application. Designed as a companion to Apple's Sherlock, Watson helped users easily access a variety of Internet services; it made a splash at the January 2002 Macworld Expo, and Wood became the poster boy for Cocoa, Apple's object-oriented programming environment.

But Wood's elation turned out to be short lived. About five months after Expo, Apple announced that OS X 10.2's Sherlock would have support for Internet services. The updated Sherlock 3 offers modules for services such as eBay auctions, flight information, movie listings, phone numbers, and stock quotes—exactly the same services found in Watson.

The Game Is Afoot, Watson Undaunted by the release of Sherlock 3, Karelia Software plans to release Watson 2 in the first part of 2003. It will feature better performance than earlier versions.

The Sherlock 3 changes have raised some eyebrows in the Mac community: some wonder whether the update was a natural evolution of a program or a wholesale appropriation of features. Apple declines to comment on the issue. For his part, Wood feels that "the similarities went too far."

Still, despite the brouhaha—or perhaps, in some part, because of it—Watson orders have continued to climb. In online discussions, users praise Watson for its speedier performance and an expanded list of services, such as package tracking, television guides, and sports coverage. And more services will follow.

While reluctant to disclose many details of forthcoming modules, Wood gave *Macworld* a peek at some features slated for Watson 2, due in early 2003. (At press time, Karelia had just released Watson 1.6, adding integration with Apple's iCal, OS X's Address Book, and El Gato Software's EyeTV.) Certainly, one new module will provide a convenient interface for comparison shopping on the Internet.

In addition, the update will focus on boosting the functionality of current modules while improving Watson's already solid performance. For example, the revamped Stocks module will let users track the net worth of an entire portfolio throughout each day's session. The Phone Book module will contain the Yellow Pages directory. Users of the Packages module will be able to see more details about deliveries.

Wood predicts that Watson users will also appreciate version 2's closer integration with standard OS X applications: they'll be able to add automatic reminders for television shows to iCal, and drag contact information uncovered in a Phone Book search over to OS X's Address Book.

While Karelia has funded the development of Watson's current set of modules, interest in the program is growing among independent programmers and even in-house developers. Unlike Sherlock plug-ins, which require that a developer use a combination of scripting languages, Watson plug-ins are small Cocoa applications, easily crafted in a familiar programming environment. This same architectural difference gives Watson the performance edge, according to Wood.

Acknowledging the speculation about a Windows version, Wood admits that he's seeking partners. However, he adds that there's a big step from the possible to the probable: "Everything is a possibility, right? There *could* be an Amiga version. But there won't."—DAVID MORGENSTERN

PRODUCTIVITY BEAT

Software

Programming

Revolution 2.0, from Runtime Revolution (www.runrev.com): The latest version of the cross-platform development software, which runs on both the classic Mac OS and OS X, adds a Jaguar-friendly user interface, support for XML, Unicode-text entry and editing, spreadsheet fields, and database access (Professional Edition, $995; Small Business Edition, $299; Student-Teacher Edition, $99).

SuperCard 4.0, from Solutions Etcetera (530/644-7382, www.solutionsetcetera.com): The updated application-authoring system adds OS X compatibility; it continues to run on OS 8.6 and higher. The update also breaks the 32-kilobyte limit for text fields and scripts, and it features simplified scripting for interface items in Aqua and Platinum ($179; upgrade, $129).

Research

Boswell 3.0, from Copernican Technologies (831/429-1775, www.boswell.com): The archiving and organizational tool for e-mail, Web clippings, research, and other text has a revised user interface and simplified technology. Version 3.0 runs on OS 8 and OS 9; it marks the final feature-set changes before the code conversion to an OS X–native version. Boswell 3.0 purchasers will be entitled to a free upgrade to the OS X version ($50; upgrade, free).—COMPILED BY PHILIP MICHAELS

STORAGE BEAT

Hardware

External Drives

USB flash-storage devices from Memorex (562/906-2800, www.memorex.com): The **USB ThumbDrive** is a portable flash-storage device that fits on a keychain and plugs in to a USB port. It comes in 64MB ($60) and 128MB ($100) capacities.

External hard drives from WiebeTech (316/744-8722, www.wiebetech.com): The **SuperDesktopGB FireWire** external drives now come in 180GB ($550) and 200GB ($600) capacities. The 7,200-rpm drives manage the larger capacity by offering ATA compatibility. They include improved PowerBridge bus-powering circuitry, eliminating the need for external power on most Macs, and come bundled with MediaFour's MacDrive 5, for transferring formatted files between Macs and PCs.—COMPILED BY PHILIP MICHAELS

INTERNAL HARD DRIVES NOW TOP 200GB—AND WORK WITH YOUR MAC

Supersizing Your Storage

If you spend a lot of time creating movies with Apple's authoring software—or performing any storage-intensive task, for that matter—you know that a hard drive can fill up faster than a theater on a summer blockbuster's opening weekend. If a 60GB drive seems puny and even a 120GB drive leaves you with little room to spare, a new generation of hard drives with drastically larger capacities might fit the bill.

Many hard-drive manufacturers are now offering jumbo-capacity IDE drives (see "Storage to Spare"). Western Digital's WD Caviar hard-drive line now tops out at 200GB of storage. The standard version of this 7,200-rpm drive, nicknamed Drivezilla by the company, has 2MB of cache and sells for $379; a Special Edition version, featuring 8MB of cache, costs $20 more. Maxtor, the first company to produce a 160GB drive, followed Western Digital's release with its competing Maxtor Ultra series—which includes a 200GB, 7,200-rpm drive with an 8MB buffer. While the Western Digital models have been shipping since fall of 2002, Maxtor's $399 drive should hit the market by the time you read this. (As this issue went to press, Maxtor announced a 250GB, 5,400-rpm drive priced at $400.) Meanwhile, IBM is entering the jumbo-drive fray—albeit with a product line that maxes out at 180GB: its 7,200-rpm Deskstar 180 GXP costs $360 and has 8MB of cache.

To allow for the huge capacities of their new drives, manufacturers have moved from traditional 28-bit addressing, which limits drive size to 137GB, to 48-bit addressing, which has the staggering theoretical maximum size of 144 petabytes (a petabyte is one million gigabytes).

But there's a catch. The ATA/60 and ATA/100 connections used in today's Macs support only 28-bit addressing. So before you rush to buy one of these drives for your Power Mac, you'll need to pick up an ATA/133 controller card (see *Reviews*, June 2002, for our picks), which will add 48-bit addressing capability to your system.

If your Mac doesn't accept PCI cards, you could opt for an external FireWire solution. Other World Computing's 200GB Mercury Pro FireWire drive ($499; 800/275-4576, www.macsales.com) is based on the Western Digital drive. FirewireDirect sells a 160GB drive, the SlimLine Ultra III ($399; 512/302-0012, www.firewiredirect.com), based on Maxtor's 5,400-rpm DiamondMax Plus. (At press time, WiebeTech introduced a 200GB external drive; see "Storage Beat.") You can also outfit the new jumbo drives from Western Digital, Maxtor, and IBM with a FireWire enclosure—as long as the case includes an Oxford 911 chip that supports supersized drives. (The Oxford firmware upgrade technically provides only 32-bit addressing, but the four additional bits give them the headroom to accommodate the newer drives.) You can find suitable enclosures through Other World Computing, FirewireDirect, and Granite Digital (510/471-6442, www.scsipro.com). Whatever option you choose, these bigger drives will expand your multimedia-packed Mac's capacity beyond standing room only.—ANTON LINECKER

The Western Digital WD Caviar IDE drive

Storage to Spare

COMPANY	PRODUCT	PRICE	CONTACT	MAXIMUM CAPACITY
IBM	Deskstar 180 GXP	$360	888/746-7426, www.ibm.com	180GB
Maxtor	Ultra	$399	800/262-9867, www.maxtor.com	200GB
Western Digital	WD Caviar Special Edition	$399	949/672-7000, www.westerndigital.com	200GB

MULTIMEDIA-AUTHORING APP GETS MACROMEDIA'S MX TREATMENT

Director Takes Action

Throughout 2002, Macromedia (800/470-7211, www.macromedia.com) rolled out updates to its Web-development tools—giving them a common interface and tighter integration—under the MX brand name. Now it's Macromedia Director's turn to assume the MX label. Like other recent Macromedia updates, Director MX sports a familiar interface, with collapsible, dockable panels. A unified Script And Debugging window lets users debug, browse, and edit scripts in one window—which displays variables whose values have changed in red, for immediate visual feedback.

Director MX works seamlessly with other MX products, such as Flash. It imports Flash MX files, and double-clicking on a SWF file launches Flash. Roundtrip editing lets users edit a SWF file, save it, and then bring it back into Director. The new version also provides control over Flash MX objects, with Lingo, Director's object-oriented scripting language.

Power-tool additions to Director include an Object Inspector with data-browser functionality, as well as time-saving new buttons in the Script and Message windows. Director MX also lets users create content that meets federal accessibility guidelines such as Section 508 standards.

For Mac users, Director gains more than an *MX* in its name. The latest version adds OS X compatibility, running exclusively on OS X 10.1 and higher. Playback of Director-created material still requires the Classic environment. Macromedia's Shockwave Player 8.5.1 can show content created in Director MX.

New Direction In Director MX, users can import Flash MX files and launch Flash by double-clicking on a SWF file.

Director MX should begin shipping in mid-December, at a price of $1,199. Users of versions 8 and 8.5 can upgrade for $399.—PHILIP MICHAELS

COMPANY'S LATEST OFFERING BRINGS TECH SUPPORT TO YOUR BROWSER

Netopia's eCare At Your Service

Real-time collaboration via the Web may be cozily familiar on Windows, but Mac users can find themselves left out in the cold when browser clients don't work with the platform. Netopia (510/814-5100, www.netopia.com) wants to ensure that all Web users are treated equally. eCare, the networking developer's browser-based technical-support software, enables live, on-demand online collaboration between an organization's call centers or help desks and its customers, whether they're using dial-up modems or DSL. And unlike online-conferencing products such as WebEx and Symantec's pcAnywhere, eCare has been specifically designed for the Mac, with customized clients for OS 9 and OS X—it detects whether a customer is using a Mac or a PC and automatically offers the appropriate client-installation option.

Netopia based eCare on its Timbuktu technology, for remote-control desktop access, and its eSite and eStore Web-enabled products. The eCare client won't take up much space; Netopia claims that, at 400K, it's the slimmest remote-control client on the market.

In-house licenses start at $50,000 for companies that want to host eCare. Businesses can also purchase eCare on a monthly subscription basis at a cost of $300 per support agent. For companies that want to serve all their customers, no matter which platform they're using, that may wind up being a small price to pay.—JILL ROTER

INPUT-DEVICE BEAT

Hubs

A USB hub from Iogear (866/946-4327, www.iogear.com): The **MicroHub** ($15) is a four-port hub that measures 0.7 inches tall, 1.8 inches wide, and 2.5 inches long.

Keyboards

A rack-mounting keyboard from Marathon Computer (800/832-6326, www.marathoncomputer.com): The **RKeyboard** ($100) is a USB keyboard, with a built-in touchpad, that was designed to be mounted in a rack. It measures 15.3 inches wide, 5.5 inches deep, and less than 1.6 inches high. Marathon also bundles the keyboard with its **RKey** heavy-duty rack-mounting keyboard drawer ($375).

Mice

Two wireless mice from Kensington (800/235-6708, www.kensington.com): The **Studio-Mouse Wireless** ($90) features a touch-sensitive Scroll Sensor for scrolling up and down. The three-button mouse is powered by a rechargeable battery, and it comes with a recharging base for when it isn't being used. The **PocketMouse Pro Wireless** ($50) is a wireless version of the PocketMouse Pro; instead of a retractable USB cord, it features a node for holding a stowaway USB receiver that provides wireless connectivity from as far as three feet away.

Three mice from Microsoft (800/426-9400, www.microsoft.com): The **Optical Mouse Blue** ($35) features an astral-blue finish and a wider scroll wheel. The **Wireless Optical Mouse Blue** ($45) offers wireless connectivity. The **Notebook Optical Mouse** ($35) is the first optical mouse designed specifically for laptops; it includes a red scroll wheel and side grips.

Remote Controls

A wireless presentation control from Interlink Electronics (805/484-8855, www.interlinkelectronics.com): With buttons for moving forward, moving backward, and hiding slides, the **RemotePoint Navigator** ($149) lets users control Microsoft PowerPoint presentations. It also features a laser pointer. The remote uses radio-frequency wireless technology, which allows it to work from as far as 50 feet away from a USB-equipped Mac running OS 8 or higher, including OS X.

Switches

A device for sharing ADC-equipped displays between two Macs, from Dr. Bott (877/611-2688, www.drbott.com): The **MoniSwitch ADC** ($299) allows two computers with digital-video output to share an Apple flat-panel display with ADC (Apple Display Connector) connections.

A KVM switch from Gefen (800/545-6900, www.gefen.com): The **USB Switcher** ($299) connects two computers to a single analog monitor, keyboard, and mouse. It comes with two DVI-A/VGA cables, two USB cables, and a 12-volt power supply.—COMPILED BY PHILIP MICHAELS

iCURVE, LAPVANTAGE OFFER STYLE WITH COMFORT

Laptops Make Their Stand

Thanks to increased processing power and easy portability, Apple's laptops may match the performance of a desktop machine, but they're still no match for the desk itself. Prolonged use of a laptop sitting flat on a desk can stir up a hornet's nest of ergonomic woes. A laptop stand can alleviate those problems, lifting the screen to eye level while freeing up desk space for an external keyboard. Two companies have come out with stands that provide functionality without ignoring form. Take the iCurve, from Griffin Technology (www.griffintechnology.com): "It's something that complements the beauty of Apple laptops instead of embarrassing them," says Andrew Green, Griffin's vice president of marketing, about the $40, rounded, clear plastic stand. Two acrylic prongs rise from the iCurve's horseshoe-shaped base to support any Apple laptop. A keyboard tucks underneath the iCurve, keeping you at an ergonomically safe arm's length from your screen. The Lapvantage Dome, from The Plasticsmith (800/394-3774, www.plasticsmith.com), offers many of the those features in a design immediately recognizable to anyone familiar with a flat-panel iMac. The $80 deluxe model lets you adjust for height and features a swiveling base; Plasticsmith also sells a $50 Lapvantage. No matter which stand you favor, both the iCurve and the Lapvantage offer the same message—laptop users should be able to work in style as well as comfort.—PHILIP MICHAELS

The iCurve

The Lapvantage Dome

UPDATED FONT EDITOR ADDS SUPPORT FOR JAGUAR, OPENTYPE

FontLab's X Experiment

Graphics pros using Mac OS X have had to do without a native font editor for customizing existing fonts or designing new ones. But that's about to change. After releasing an updated Windows version of its flagship font editor this past fall, FontLab is preparing a Mac edition of FontLab 4.5 (877/366-8522, www.fontlab.com)—and this release will run natively in OS X 10.2. (FontLab 4.5 should be in beta testing by the time you read this.)

Besides adding OS X 10.2 support, FontLab 4.5 will be able to produce new fonts and convert older ones into OpenType, the Unicode-based format created by Adobe and Microsoft to address the typographic and cross-platform shortcomings of the venerable Type 1 and TrueType formats.

FontLab 4.5 will also add support for Python—a scripting language well known in the type-design field—and a revamped user interface. The latter change tackles a long-standing criticism of FontLab—an intimidating and complex interface, especially compared with the look-and-feel of its main competition, Macromedia's $349 Fontographer (which, as of press time, does not run on OS X).

FontLab 4.5 will sell for $545, with upgrades from version 3.1—the last revision on the Mac side—priced at $199. Fontographer users can also switch to FontLab for $199.—TERRI STONE

PRO FILE | Q&A WITH LORIN RIVERS

BACK TO BASICS

Longtime Mac developers who've opted to come out with Windows versions of their products can usually count on some howls of protest from users who accuse the company of abandoning the Mac platform. That hasn't happened to Real Software, which announced in October that the next version of its RealBasic development software, due out in early 2003, would run on both Mac and Windows platforms. That doesn't surprise Lorin Rivers, Real Software's vice president of marketing, who believes that a Windows version of RealBasic will make the Mac edition even stronger. He explained how in a recent interview with *Macworld*.—PHILIP MICHAELS

AT A GLANCE

LORIN RIVERS
Vice President of Marketing, Real Software
MAC: 667MHz Titanium PowerBook G4
SOFTWARE: Omni Outliner, Creo Six Degrees

Why are you adding Windows compatibility in the next version of RealBasic?

The primary reason is because our customers asked us to do so, and they've been asking us to do that since we first released a version of RealBasic that compiled for Windows [in 1999 with RealBasic 2]. One of the challenges of doing cross-platform development is the debugging stage. Not having the debugger on the other platform, which would require that the whole [development environment] be over there, made it quite a bit more difficult to debug Windows apps. So that's a big motivation right there—we want to make the quality of Windows apps better, and we want to make it easier to do them well. Another reason our customers want RealBasic on Windows is because a lot of people use a Mac at home and a PC at work. It's a lot easier for them to use RealBasic in their jobs [if they] have a Windows version.

You mentioned better-quality Windows apps. Can the same be said on the Mac side, that this move will result in better Mac apps?

I really think it will, because the Mac is so forgiving. Things that are technically incorrect, the Mac will just kind of deal with those and keep on going, even if it's technically a bug or bad code or what have you. Windows, on the other hand, tends to be much less forgiving. As we're going along, doing the development in parallel, the alphas are coming out within minutes of each other on Windows and on Mac. And the work that we're doing on the Windows [development environment] is making the Mac [version] better because we're having to fix things we didn't even know were broken. They were fine on the Mac but not fine on Windows.

More Info:

www.macworld.com/2003/01/macbeat/rivers/index.html
In our online interview, Lorin Rivers talks in-depth about the new compiler coming to RealBasic 5.

There's a better way to deal with your computer problems...

Even the best computer in the world can sometimes run into problems. That's why Micromat developed TechTool Pro® and Drive 10™. TechTool Pro contains everything you'll need to diagnose and repair almost any problem that ails your Macintosh. Drive 10 offers you the most comprehensive drive repair and defrag utility native to Mac OS X. With tools like these, you'll be able to keep your computer out of the can for a long, long time. Learn more at www.micromat.com.

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PUBLISHING BEAT

Software

Plug-Ins

SkinnyEPS 2.0, from Ultimate Technographics (800/363-3590, www.ultimate-tech.com): The Photoshop plug-in produces CMYK images that are an average of 15 times smaller than normal EPS files. It requires OS X and Adobe Photoshop 6.0 or higher ($195).

Productivity

TextSpresso 2.0, from Taylor Design (www.taylor-design.com): The updated text-processing utility now supports OS X while remaining backward-compatible with OS 8.6 and higher. TextSpresso uses filters to make text pulled from e-mails, Web sites, and a wide variety of applications more readable ($30; upgrade, free).

Workflow

TruEdit 2.0, from Managing Editor, Inc. (800/638-3347, www.maned.com): The updated workflow-management program, which works in conjunction with Adobe InDesign 2.0 and InCopy 2.0, adds several new features, including metadata support, file previews, and a search engine. It runs in OS 9 and OS X ($249 per user; upgrades, free).—COMPILED BY TERRI STONE

NETWORKING BEAT

Hardware

A dual-band wireless access point from Linksys (800/546-5797, www.linksys.com): The **Instant Wireless Dual-Band Wireless Access Point** ($299) supports as many as 64 users, providing an advanced user-authentication feature and encryption of up to 152 bits. It unites two access points for communication with both IEEE 802.11a and IEEE 802.11b wireless network devices in the 2.4GHz and 5GHz bands.

An eight-port copper gigabit Switch from Netgear (888/638-4327, www.netgear.com): The **GS108** ($700) provides eight 10/100/1000-Mbps auto-switching ports, each with Auto Uplink capability.

A wireless-ready router from Actiontec Electronics (408/752-7700, www.actiontec.com): The **Dual-Mode Wireless-Ready Cable/DSL Router** ($100) lets multiple computers share high-speed Internet access. The router also enables multiple users to log on to America Online simultaneously via the same Internet connection. It offers two WAN ports and three LAN ports, with built-in firewall and 64- and 128-bit encryption.—COMPILED BY JILL ROTER

THE READERS SPEAK: OS X ADOPTION SHOULD CONTINUE INTO NEW YEAR

Year of the Jaguar?

Apple hoped to enter 2003 with more than five million active OS X users. If the plans of participants in the Macworld Reader Panel pan out, you can expect that number to rise throughout the year.

The survey of 937 *Macworld* readers, selected at random by market-research firm Karlin Associates, tackled a number of questions, including OS X adoption. Panelists were asked how much they used Apple's new operating system in 2002 and how much they planned to rely on OS X in the coming year.

Nearly three-fourths of the respondents—70 percent—said that they expect to use OS X either all or most of the time in 2003. That's up from 54 percent who reported using the new OS all or most of the time in 2002. More encouraging to Apple, only 7 percent of the panelists don't expect to use OS X in 2003, a steep drop from the 25 percent who didn't use OS X in 2002.

Not surprisingly, then, when asked to name the top issue facing Apple in 2003, 30 percent of the Macworld Reader Panel cited ongoing OS X migration—more than twice the percentage of the next most popular response. Responses were nearly evenly divided among the next four choices. New consumer electronics devices and new i-apps each garnered support among 13 percent of our panelists. New desktops and laptops were both favored by 12 percent.

As for the more immediate future, the Macworld Reader Panel has hardware on its mind. Asked which product they'd like to see introduced at January's Macworld Conference & Expo in San Francisco, 38 percent of our panelists cited new Macs, with 20 percent calling for upgraded desktops and 18 percent wishing for new laptop offerings. (After hardware, an Apple-branded PDA was the next most popular response, garnering support from 22 percent of our panelists.) And our survey took place just before Apple unveiled its new portable offerings, so the 18 percent hoping for updated PowerBooks and iBooks may have been satisfied before Expo even began.—PHILIP MICHAELS

More Info:

http://www.macworld.com/2003/01/macbeat/poll/index.html
The Macworld Reader Panel issues its report card for Apple's 2002 product releases. Find out which new products made the grade at Macworld.com.

Which area do you think Apple should put the greatest emphasis on in 2003?

Ongoing migration to OS X	30%
New consumer electronics devices	13%
New i-apps (iCal, iSync, iPhoto, etc.)	13%
New laptop releases	12%
New desktop releases	12%
Don't know	5%
Other	15%

Total respondents: 937

Which product would you like to see debut at Macworld Expo in January?

Apple PDA	22%
New desktops (Power Mac, iMac, eMac)	20%
New laptops (PowerBook, iBook)	18%
New Apple software	15%
Another major OS X update	9%
Don't know	4%
Other	12%

Total respondents: 937

OS X Use, Now and Later

	I currently use OS X	In 2003, I expect to use OS X
All of the time	28%	42%
Most of the time	26%	28%
Half of the time	6%	7%
Some of the time	8%	8%
Rarely	7%	5%
Never	25%	7%
Don't know	0%	3%

Total respondents: 937

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MULTIMEDIA BEAT

Hardware

A USB MIDI keyboard from M-Audio (800/969-6434, www.m-audio.com): The **Radium Midiman Keystation** ($299) is a controller with eight MIDI-assignable knobs and eight MIDI-assignable sliders on a 61-note keyboard. It's compatible with both OS 9 and OS X.

Software

Audio

Cubase SX, from Steinberg (818/678-5100, www.us.steinberg.net): This version of the audio-MIDI sequencer is the first from Steinberg to run natively in OS X. Features include unlimited undos and redos, offline process history, and a 32-bit floating-point mixer with surround-sound mixing and panning controls ($799; upgrade from Cubase Audio VST/32, $149; from Cubase Score, $199, from Cubase Standard, $299; from Cubasis VST, $399).

Pro Tools 6.0, from Digidesign (650/731-6300, www.digidesign.com): This update adds OS X support to the industry-standard music-production program that works with Digidesign hardware. It will ship in early 2003 (pricing not set at press time).

Plug-Ins

Magic Bullet Suite 1.0, from The Orphanage (323/933-8262, www.theorphanage.com): The suite is a series of Mac-only After Effects 5.5 plug-ins for converting high-quality digital video to 24 frames per second, making it look more like film footage (SD version, $995; HD version, $1,995).

Übercolor 1.0, from Fnord Software (info@fnordware.com, www.fnordware.com): The color-management tool for OS 9 and OS X uses Apple's ColorSync technology to apply ICC color management in After Effects, imbedding profiles in projects to increase portability. The plug-in is optimized for After Effects 5.0 and later ($99).

Video

CatDV Pro 3.0, from Square Box Systems (sales@squarebox.co.uk, www.squarebox.co.uk): The updated logging and cataloging tool for digital video is a multi-user application, for both OS 9 and OS X, for keeping track of digital video clips. Clip data can also be shared on a network via a centralized server ($275; upgrade from CatDV 2.5, $199; from CatDV 2.0, $225).

Announced

The discontinuation of Mac support by Musicmatch (www.musicmatch.com): The maker of **Musicmatch Jukebox** will discontinue its **Mac Radio MX** service and cease support of Macintosh software altogether. Musicmatch, which makes the software included with Apple's iPod for Windows, will focus development on the Windows platform.—COMPILED BY JONATHAN SEFF

PARODIES OF APPLE ADS ABOUND ONLINE

The Ol' Switcheroo

It's too early to tell whether Apple's "Switch" ads—those ubiquitous TV spots in which recent converts sing the Mac's praises—will inspire others to jump to the Mac platform. But the TV commercials have been a source of inspiration to at least one segment of the population—online animators, satirists, and other pranksters have flooded the Internet with "Switch" takeoffs. Here are a handful of parodies worthy of recognition.

Most Likely to be Served with a Cease-and-Desist Order Kevin Fox scores points for passion with "Bait and Switch" (www.fury.com/article/1386.php), a sharp rant slamming Apple's move from free iTools to subscription-based .Mac services. Still, don't expect Fox's parody to earn kudos from Cupertino.

Watching Big Brother William Levin's "Switch" parody marks the return of this familiar face, from a 1984 Mac ad.

Best Shout-out to an Island Nation It's probably safe to say that Übergeek's Flash-animated takeoff (www.ubergeek.tv/switchback) is the only parody that incorporates parasailing, iBooks, sadistic fathers, and a slogan that would make the Iceland Chamber of Commerce proud.

Best Performance by a Primate Jason Gottlieb didn't pick the star of his ad (http://homepages.nyu.edu/~jgg221), a claymation chimp, as a subtle dig at the intelligence of the average Windows user. "I tell people all the time when they are trying to figure out ideas to animate, 'Do a monkey. People like monkeys,'" Gottlieb says. The NYU film student animated the chimp himself over a weekend and then edited the spot with Final Cut Pro on a Power Mac G4.

Best 1980s Nostalgia Parody William Levin's trilogy of "Switch" parodies (www.macboy.com) includes a spot that incorporates Big Brother from the 1984 ad that introduced the Macintosh. Levin, perhaps the only animator to get his start while stuck on jury duty, used Flash 5 and Illustrator 10 to create the spots on an old Power Mac 8600/300. The other two ads feature Bill Gates and the annoying dimwit who pitches Dell computers. At the Apple Store opening in New York, Levin showed an Apple executive a postcard of the Bill Gates ad. "He didn't seem all that amused," Levin says. "But he did confess, 'Yeah, I've seen this.'"—GREGG WRENN

JAVASCRIPT BOOKMARKS CAN SPEED UP WEB SEARCHES

Searching Beyond Google

Google reigns as the king of search engines. Still, if you think that repeatedly loading the home page is a royal pain, there are a couple of ways to perform quicker Google searches.

One of the best search-engine add-ons involves nothing more complicated than a *bookmarklet*, or *favelet*: a bookmark written in JavaScript and kept in a browser's Favorites bar. Clicking on that bookmark displays a dialog box; just type your search term and get the results from Google.

To make your own bookmark, create a bookmark in your browser with this:

```
javascript:void(q=prompt('Enter%20text%20to%20search%20using%20Google.',''));if(q)void(location.href='http://www.google.com/search?client=googlet&q='+escape(q))
```

You can also go to www.macworld.com/2003/01/macbeat/google/index.html for a link that you can drag into Internet Explorer's Favorites bar. Other bookmarklets are available at www.bookmarklets.com and www.favelets.com.—JEFF CARLSON

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COLOR REFERENCE SYSTEM

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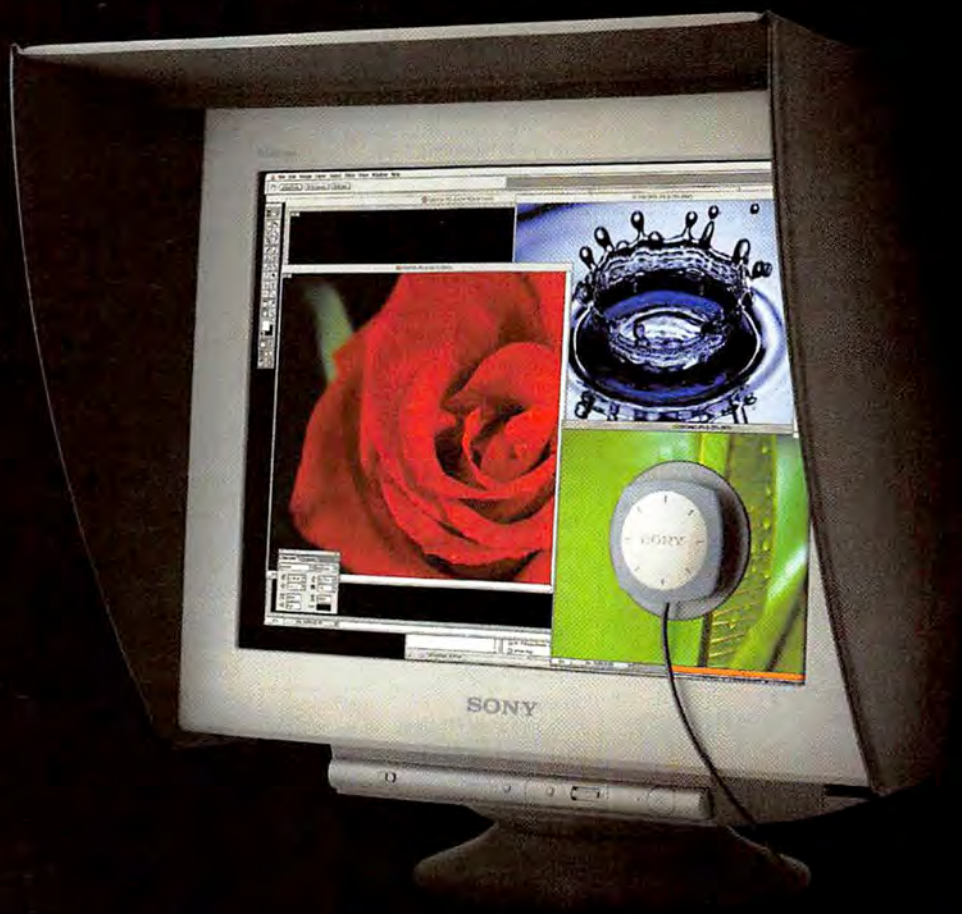

COLOR ACCURACY

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ARTISAN™ SOFTWARE

ARTISAN™ SENSOR

THE DIFFERENCE IS WHITE & BLACK

Setting red, green and blue accurately sounds simple enough. Yet creative professionals know how easily the process can go wrong. That's why you need Sony's new Artisan™ Color Reference System.

With one-touch calibration, Sony carefully sets and maintains not just white, but also black — providing the constant contrast ratio and neutral gray balance required for faithful color reproduction. That means Artisan displays are color-consistent, day-to-day. And multiple Artisan displays can be accurately matched, across the hall or across the country, for color proofing you can count on.

Sony's Artisan Color Reference System is an integrated three-part solution. World-famous FD Trinitron® CRT technology, sophisticated software that adjusts internal electronics of the display itself and state-of-the-art colorimetric sensor, factory-tuned to Sony display phosphors. It's a combination that achieves remarkable color precision with applications like Adobe® Photoshop® - an advantage ahead of its class.

Sony Artisan Color Reference System. The difference is White and Black.

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WHAT'S HOT

A Quick Look at the World of Macs

1. **Embarrassed Microsoft executives admit a Mac-to-Windows switcher's testimonial ad is a fake.** *Sheepish Microsoft officials also confess that Steve Ballmer is little more than a collection of stock photographs and a Perl script.*

2. **Apple balks at coming to Macworld Expo when it moves to Boston.** *If Apple doesn't attend, a Kennedy chosen at random will give the Expo keynote address.*

3. **Apple releases PowerBooks equipped with SuperDrives.** *Cocky Apple designers vow to add DVD-burning drives to Newton handhelds by year's end.*

4. **Dell Computer begins selling iPods.** *In a conciliatory gesture, Steve Jobs calls Michael Dell and offers to "start selling some of your junk."*

Mac OS X Updates

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4D Webstar V 5.2.2
Server-software suite

Adobe Acrobat Reader 5.1
PDF navigator and viewer

Aladdin iClean 5.0.1
Adds Jaguar compatibility

Apple iMac SuperDrive Update 1.0
Fixes 4× DVD-R and 2× DVD-RW media incompatibility

Apple QuickTime 6.0.2
Performance for digital-media software

ASM 2.1b1
Customizable app-switcher menu as in classic Mac OS

Bugdom 2 1.0.2
Adventure-game sequel

Carrara Studio 2.1
3-D–modeling and –rendering tool

Drop Drawers X 1.6
Floating drawers that store text, URLs, pictures

Drumbeat X 1.6
File-sharing and MP3 search tool

Epson TWAIN 5.75T4
Scanner module for most Perfection scanners

Eudora 5.2b14
E-mail–client beta

Font Reserve 3.1.1
Fixes Adobe InDesign 2 plug-in

HP DeskJet 2.0f
OS X printer drivers for most models

Intuit Quicken 2003 R3 12.0.2
Finance-management software

IomegaWare 4.0.2
Zip and Jaz drivers and software tools

Kensington MouseWorks 2.1b2
Jaguar update for mice and trackball driver

Microsoft IntelliPoint X 3.1
IntelliMouse driver

Microsoft Office v. X 10.1.2
Combined updater for suite

MidiKeys 1.1.1
Virtual MIDI keyboard

MultiAd Creator Desktop Pro 6.5.1
Advertising-layout software

netOctopus 4.1.1
Network-management tool

OmniOutliner 2.1.1b1
Increased Jaguar compatibility for outlines

Photo to Movie 1.0.8
Movie-effects application for photos

RealBasic 4.5.2
Jaguar update for programming software

SoundStudio 2.0.6
Audio-recording and -editing tool

ThinkFree Office 2.1
Word processing, spreadsheet, and presentation suite

Transmit X 2.0
SFTP support for FTP client

URL Manager Pro 3.0.1
Browser-bookmark manager

VersionTracker Pro X 2.1.2
Desktop component of TechTracker

XPostFacto 2.2.4
OS X–installation utility for old Macs

For these and other current updates, visit:
www.macworld.com/subject/updates
Macworld.com has the latest from VersionTracker.com.

CHARISMAC LOOKS TO RULE DESKTOP WITH FIREDINO HUB

All Hail the Lizard King

The adjective *ferocious* is seldom used to describe computer peripherals. Charismac Engineering (530/885-4420, www.charismac.com) aims to change that, with FireDino, a four-port FireWire hub grafted into the back of an eight-inch-tall beast bearing a certain resemblance to a monstrous thunder lizard that once menaced Tokyo. "We were talking about FireWire products, FireWire drives, fire this and fire that, until someone joked about fire-breathing dragons," says Tony Overbay, vice president of sales and marketing for Charismac. The $75 hub is FireWire-compliant, free of software drives, and completely bus-powered (although you can order an optional $10 power adapter). FireDino's glowing red eyes let you know when it's plugged in to a FireWire source—or when it's planning to go on another rampage across your desktop. Does Charismac have any plans for a USB version? Maybe, Overbay says. "A lot of people are asking for a counterpart USB hub," he adds. "And we're always looking for innovative products that will stand out." No word yet on whether that hub will take the form of Mothra.—ANTON LINECKER

ICONS: WWW.ANDYMARTIN.UK.COM

INTERNET BEAT

Software

Internet Telephony

Mac2Phone Basic and **Mac2Phone Pro**, from Nikotel (888/249-1010, www.nikotel.com): The two Internet telephony products use voice-over-IP to let users of OS X Macs place phone calls over the Internet to other people running Mac2Phone software. Users set up an account with the company, which then charges for calls placed using the software. Charges vary based on location (Basic edition, free; Pro edition: $20).

Videoconferencing

SquidCam 1.1, from SquidSoft (720/747-1840, www.squidsoft.com): The videoconferencing application for OS X extends videoconferencing and messaging capabilities to users who are still dependent on dial-up modems, as opposed to higher-speed broadband Internet connections. Version 1.1 also adds Video Answering Machine, which lets users record a custom video or audio greeting, and NetPhone support ($25 per-seat license).

Utilities

AlwaysOnline 3.0, from Rampell Software (www.rampellsoft.com): The utility stops America Online and other modem-based Internet providers from logging users off due to inactivity. Version 3.0 runs in OS 9 and earlier; a separate $19 version runs on OS X ($19; upgrade, $14).

Web Design

MacASP 1.0, by Liane (www.macasp.com): The Common Gateway Interface (CGI) tool allows Mac users to create dynamically generated Web sites. It runs on OS 8.6 and higher, including OS X. Although MacASP isn't compatible with Microsoft's Active Server Pages, it does rely on scripting for its features and supports AppleScript (free to $299).

WebDesign 1.8, from Rage Software (www.ragesw.com): The updated Web-authoring tool can now use full PHP syntax to edit PHP files, thus allowing users to update an entire Web site simply by adjusting one Include file ($30; upgrade, free).

WebMerge 2.0, from Fourth World Media (323/225-3717, www.fourthworld.com): The updated tool for generating dynamic Web sites from database or spreadsheet files works in OS 8 and higher, including OS X. The new version adds options for specifying how pages are generated and supports more than a dozen new tags for assembling and linking Web content (single-user license, $79).

Web Publisher Pro, from Canto (415/703-9800, www.canto.com): The new application allows users to take the multimedia data archived in Canto's Cumulus and publish them as Web catalogs. Web Publisher Pro uses Cumulus's format-conversion functions, so assets can be converted into other file formats, color spaces, and resolutions before downloading ($1,495).—COMPILED BY LISA SCHMEISER

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(Editors' Choice, Seybold 2002)

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LOGIC PLATINUM 5.3

Veteran Program Brings Professional Music Production to a Mac OS X World

BY DAVID LEISHMAN

Almost two years to the day after Apple released the beta of its Unix-based operating system, Emagic (now owned by Apple) introduced Logic Platinum 5.3 for Mac OS X, the first professional digital-audio–production application to work in the new OS. Of Logic's chief competitors—Digidesign's Pro Tools, MOTU's Digital Performer, and Steinberg's Cubase—only Cubase was OS X native at press time. The other two products should be OS X native by the fourth quarter of 2002.

The OS X–native Logic (available as an update on Emagic's Web site) is great news for the Mac and gives Logic users temporary bragging rights, but it's still gearing up for prime time. Emagic's subsequent release of an OS 9 version ensures that longtime Mac users—and those switching from Windows—will have a rich, full-featured production environment to work with as they migrate to OS X. (Although Emagic hasn't made any announcements regarding further OS 9 development, it seems inevitable that the company will concentrate on moving to the new platform.) And you can move files easily between the two versions, which are similar except for some OS X–specific issues.

More Power, New Gear

Logic Platinum 5.3, the fifth update to a massive 5.0 upgrade released in February 2002, adds minor tweaks and bug fixes to a host of new features. A key to its power is the addition of AltiVec-based DSP optimization, which means that you can work with more simultaneous tracks and plug-ins on G4-based machines than you can on other Macs. Logic's Audio Engine also has been significantly beefed up and can now handle 128 audio channels, with 64 auxiliary channels for 128 stereo tracks; 15 inserts per track and bus; and 64 buses—enough signal-routing control to satisfy even a seasoned studio professional.

New timesaving features include the ability to control real-time track-based automation within Logic's main Arrange window—the old process of moving between windows was tedious, especially as tracks stacked up—and the addition of multiple undos and redos, which can be lifesavers. Logic's new series of plug-ins enables you to output mastering-quality recordings: two personal favorites are DeEsser, used to reduce harsh *S* sounds in vocals, and Multipressor, a highly customizable multiband compressor. And you can now monitor plug-ins on a track you're recording without affecting the sound that's captured—from a musician's standpoint, you get to hear the sound you want, and from an editor's or producer's standpoint, you get a clean track for subsequent processing. This is invaluable.

Your Main Axe Logic's Track Mixer mirrors a studio mixing console to let you record, as well as choose input sources, signal paths, and effects plug-ins.

One more new feature merits mention: real-time sample-rate conversion, which lets you move high-resolution audio files between your desktop and your laptop and get excellent sound on either.

Making Tracks

While Logic Platinum 5.3 makes it easy to record your tracks, it's a complicated program with enough power and control to allow you to express even your most complex sonic visions. You'll begin to appreciate what the phrase *tough learning curve* means as you work with the menus that appear in the editing windows. Be prepared to spend some quality time with the manual and the help section to get the most from your investment.

Logic's installation process follows the standard double-click-and-choose-your-drive-or-partition method, but it's followed by a bout with Emagic's latest copy-protection system, which at best is a double-edged sword. It requires going back and forth via e-mail with Emagic for your XSKey Authorization number, and it requires that you use a small USB key, or *dongle*, for storing the access code. Since your authorization resides in the dongle, not in the computer, you can install Logic on any USB-enabled Mac and activate it by inserting the dongle. This is fine, but if you lose it, you'll be not only out of a dongle but also out the $349 it costs to replace it.

After this hassle, though, it's a pleasure to finally reach Logic's home base, the straightforward Arrange window, where you can record audio and MIDI tracks quickly. (You can also import files—including Sound Designer II, AIFF and WAV, and standard MIDI files—that were recorded in another program.) If you've used a music sequencer, or even a VCR, the interface will be reassuringly familiar.

You can also record tracks in the Track Mixer window, where you can add any of Logic's nearly 60 on-board plug-ins, either during the take or in subsequent editing, until you find the right sound. And as your track load increases, you can group tracks that you want to affect in the same way (with the same amount of reverb, for example) and apply the plug-in there; this will help reduce the load on your CPU as tracks mount up.

32 Music-production application
Logic Platinum 5.3

33 3-D–graphics package
Maya Complete 4.5

35 CRT-calibration system
Sony Artisan Color Reference System

37 Compression utility
Stuffit Deluxe 7

38 All-in-one backup system
ABSplus

39 Speech-recognition software
iListen 1.5

40 Bibliography program
EndNote 6

41 Sound-output device
M-Audio Sonica

41 6.1-megapixel SLR camera
Nikon D100

42 Network-troubleshooting and -management program
LANsurveyor 7.0

44 Removable-media storage
Zip 750MB FireWire External Drive

44 Electronic encyclopedia
Britannica 2003 Ultimate Reference Suite

45 Compact DV camera
Panasonic PV-VM202

45 Reviews in Brief
A New Kind of Science Explorer, Consistency 1.0

36 This Month in Digital Cameras
Canon PowerShot G3, Fuji FinePix F401, Kodak EasyShare LS443, Minolta Dimage 7Hi, Nikon Coolpix 4300, Nikon Coolpix 5700, Sony Cyber-shot DSC-F717

OUTSTANDING: ●●●●● VERY GOOD: ●●●● GOOD: ●●● FLAWED: ●● UNACCEPTABLE: ●

X Time?

The release of Logic Platinum 5.3 for OS X is great news, and Logic users should download both the OS 9 and the OS X versions if they've moved to OS X. Emagic recommends that you install the program on the boot volume, but we ran it successfully across drives and partitions. The application didn't crash during our testing, and it looks more attractive in Aqua. We got snappier response in OS X 10.2.1 than in 10.1.5, but track counts for both ran slightly behind OS 9's. There's support for Apple's built-in Sound Input and Output and most of Emagic's hardware, and many developers have released OS X–based drivers. (Our M-Audio Delta 1010LT audio card seamlessly routed MIDI and audio data.)

While the OS X version is fine for moderate usage, you'll likely have to boot into OS 9 for final production. Logic for OS X is an unfinished product, missing a lot of OS and interapplication communication. And as of press time, there was no OS X–specific manual—a real pain. After an hour of frustration with Jaguar's new Audio MIDI Setup utility, a quick call to Emagic's excellent tech support revealed that it isn't supported yet. (It should be noted that Apple doesn't include a help section for the utility, either.)

Unsupported formats and protocols in version 5.3 include Rewire import and export, Rex import and export, OMF (Open Media Framework), OpenTL, and Apple's own Audio Units technology for using plug-ins and soft synths in OS X, but the real kicker is the lack of VST support.

Many people who create digital music have more money invested in VST tools than in a music sequencer, and they're watching the market for VST plug-ins closely. Emagic has promised to release a free library that will enable VST developers to quickly and easily port their products to Apple's format. This would be great because Audio Units promises systemwide plug and play for products from different manufacturers, which means greater performance capability for you. (Emagic released Logic Platinum 5.4 exclusively for OS X 10.2 at press time. We were able to check this version and confirm that it worked with Audio Units and Rex file import. We also found a bug; Logic 5.4 would hang while recognizing the MIDI hardware each time we relaunched the program. Emagic's tech support suggested that this was due to a problem with Jaguar's Core MIDI technology, and they told us to reinstall our audio-card drivers. We did, but to no avail.)

Macworld's Buying Advice

Logic Platinum 5.3 offers a comprehensive set of tools for digital-audio production, and it's very stable. If you currently use Logic, version 5.3 is a must-have upgrade, and the program is a worthy, if complex, choice for those new to music sequencing. But if you use a competing product, you may want to wait for the verdict on its OS X–native version before you decide to switch to Logic. □

RATING: ●●●●

PROS: Approachable but professional-level program; stable; great included plug-ins.

CONS: Copy-protection dongle is a liability; no OS X–specific documentation; no OS X support for system technologies and third-party formats.

PRICE: $949; upgrade from version 4 or 5, $149; upgrade from version 1, 2, or 3, $399

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Emagic, 530/477-1051, www.emagicusa.com

MAYA COMPLETE 4.5

3-D System's Second Release for Mac Gets Real, Offers Subdivision Surface Modeling

BY SEAN WAGSTAFF

The combination of tightly integrated and completely scriptable modeling, character animation, physics-based dynamic and particle simulation, and remarkably flexible rendering in Alias|Wavefront's Maya is unmatched by most other 3-D–effects packages, including NewTek's LightWave 3D and Electric Image's Universe. So when Alias|Wavefront shipped Maya for Mac OS X 3.5 late last year (*Reviews*, January 2002), we were delighted to see it running on the Mac for the first time, despite concerns about the program's performance. When we reviewed Maya again in June, most of its bugs had been worked out and its price had dropped significantly, but the Mac version still hadn't caught up to its Windows and Linux counterparts.

But with Maya Complete 4.5, the wait for a no-compromises version of Maya is finally over. Version 4.5 addresses nearly every criticism we had of version 3.5. What's more, it's a smooth, stable performer in OS X 10.2 (it doesn't run in OS 9).

Maya 4.5 borrowed its most significant feature addition, subdivision-surface modeling, from Maya Unlimited ($6,999, for Windows or Unix only). And for animators and effects artists, the Mac version offers vital new features of its own, in addition to a much better interface and performance improvements that make it ready for prime time—literally.

Maya's New Skin

The headline feature in version 4.5 is subdivision-surface modeling, a tool that has long been standard in LightWave 3D. Subdivision surfaces let 3-D artists build lifelike characters, as well as smoothly blended organic creatures and surfaces, using simple polygonal modeling. They often produce better results in less time than NURBS (nonuniform rational B-splines), which are also used for modeling organic surfaces. Combined with Maya's top-of-the-line character-animation tools (including a new Jiggle Deformer for realistic flab), this feature allows artists who use Macs to readily create characters with the same type of detail and lifelike movement seen in animated films such as DreamWorks' *Shrek* or television programs such as ABC's *Dinotopia*.

Character modelers will particularly appreciate a new Cut Faces tool that makes polygonal modeling—and by extension, subdivision modeling—much easier to do. Furthermore, this release introduces simple, one-

continues

RATING: ●●●●½

PROS: Timesaving subdivision-surface modeling; incredibly flexible dynamic simulations; lifelike character animation; improved performance and interface; cross-platform compatibility; low price.

CONS: No rendering queue or network rendering; speed and quality of rendering needs improvement.

PRICE: $1,999; upgrade from 3.5 node-locked license, $699; upgrade from 3.5 floating license, $839

OS COMPATIBILITY: Mac OS X

COMPANY: Alias|Wavefront, 877/405-6645, www.aliaswavefront.com

step conversion of subdivision models to NURBS patches, so even studios that need NURBS in their pipelines have a powerful, timesaving alternative to patch modeling.

Maya's renderer lacks some advanced effects, such as global illumination and caustics, and its speed is sometimes criticized when compared with LightWave 3D and Universe. However, the vast majority of users will be quite pleased with Maya's out-of-the-box rendering capabilities, which include a rich selection of lighting types, as well as an impressive tool set for working with and managing shades and textures.

There is at least one major problem that has not been addressed, though: Maya's so-called Batch Renderer, which can neither queue more than one animation on a single machine nor manage rendering over multiple networked computers. These functions are essential in environments where renderings are measured in many minutes or hours per frame, and where productivity calls for offloading the process from the artist's workstation as much as possible.

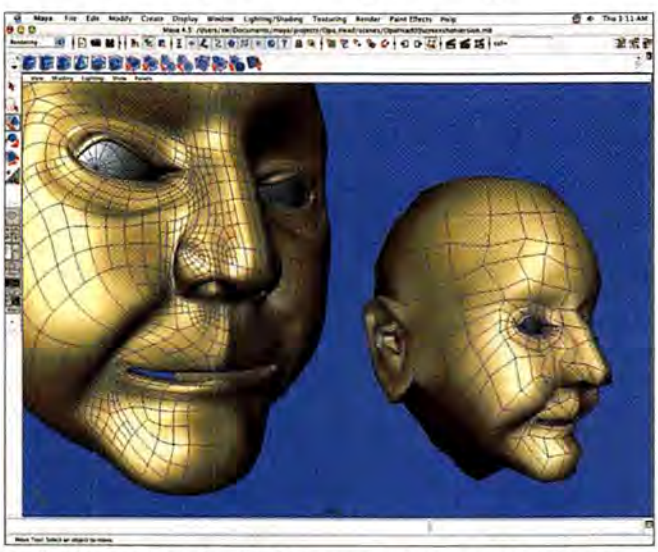
But much to the relief of artists who have an eye for nuance, a Mac-compatible version of Mental Image's Mental Ray plug-in rendering engine is in the works. We anticipate that it will address the majority of Maya's rendering issues. Furthermore, Alias|Wavefront will offer this $3,995 plug-in—nearly double the price of Maya alone—for free to all version 4.5 users. (According to Mental Image, the Mac version of Mental Ray is expected to ship this winter.)

Smooth Sailing

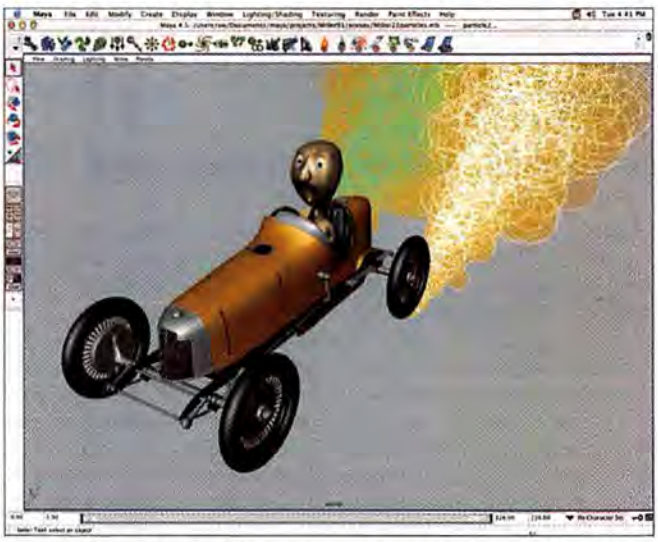
Overall, Maya is now much easier to use, thanks to a number of minor additions and interface enhancements throughout the program. For example, it offers many new snapping options, including the ability to snap objects to one another based on multiple snapping points. Also new is a set of Align tools and many added constraints in the Transformation tools, such as the ability to scale an object on two axes while locking its third axis.

Also to improve ease of use, Maya now ships with a nicely designed set of ready-made Shelves (Maya's customizable tool palettes), and its Marking Menus (pop-up menus that give you access to commands) offer many new options and features.

The Mac version of Maya has reached parity with Maya's Windows, Irix, and Linux versions; this will be of major importance in production environments where Macs and PCs share studio space. We had no trouble either sharing files or working and rendering interchangeably on Windows systems and Macs; however, negotiating the differences in keyboard layouts for standard key commands was a minor annoyance. More problematic is the unavailability of a vast library of plug-ins for Mac users, including Alias|Wavefront's Real-Time Author and Right Hemisphere's Deep Paint, as well as dozens written by small, independent developers.



Double Feature Maya Complete 4.5 supports dual processors and readily crosses platforms, but subdivision-surface modeling is the star of this release: by building a simple polygonal model (right), you can easily create smooth, detailed characters (left).



Dynamic Dynamite Maya's Dynamics engine is among the best. In this OpenGL-shaded preview, shapes attached to the rear wheels emit dust clouds; the size and transparency of the sphere-shaped dust particles are driven by their randomized life spans.

Command Performance

Of all the usability enhancements in Maya 4.5, the most significant are its gains in performance. Although Maya now supports dual processors for rendering and other computation-intensive functions, users will notice mainly that the program is simply faster and more fluid than it was, even on single-processor Macs. Actions such as painting 3-D textures onto surfaces with Maya's delightful Paint Effects brushes are now fast and fluid. We enjoyed running Maya on an 800MHz Titanium PowerBook G4, whose ATI Radeon Mobility 7500 chip set was able to keep up with Maya.

Part of the reason for the change in speed and flow is the fact that we were running OS X 10.2; the other part is Maya's greatly reduced dependence on specialized graphics cards with hardware overlays. To give credit where it's due, we should say that we tested version 4.5 with the newest OpenGL cards—including ATI's Radeon 8500 and the Nvidia-based GeForce4 Titanium, from Apple—on a dual-800MHz Power Mac G4. Both cards offered big performance gains compared with older cards and finally laid to rest our criticism about OpenGL on the Mac. We highly recommend adding a top-end OpenGL card to any Maya purchase.

Macworld's Buying Advice

It's true that Maya's rendering features and performance need some work, and it will be some time before Mac users have access to the variety of plug-ins available to users on other platforms. But despite these relatively minor gripes, Maya Complete 4.5 is a must-have program for graphic artists or animators who are serious about 3-D animation. At a great price, the program adds many improvements—including cross-platform compatibility, subdivision surface modeling, and vastly improved performance—to an already impressive feature set. □

SONY ARTISAN COLOR REFERENCE SYSTEM

New CRT Provides Accurate, One-Button Calibration in a Sleek, 21st-Century Package

BY BRUCE FRASER

For Apple, the CRT may be dead, but for those of us who need accurate, stable, predictable color, the CRT not only is alive and well but also continues to improve. The Sony Artisan Color Reference System is a case in point. This $1,729 21-inch monitor-and-calibrator bundle provides rock-solid contrast and color without the viewing-angle problems and lack of uniformity that plague LCD monitors. And with a maximum resolution of 2,048 by 1,536 ppi, it also displays more pixels than current LCDs.

The Artisan runs in both OS 9.2 and OS X 10.1, and it offers one-button calibration for people who rely on a monitor when making critical decisions about tone and color—such as digital photographers, designers, and prepress technicians. The entire package is beautifully designed—from the neutral gray monitor case and its padded hood, to the software's look-and-feel, to the sensor's exquisite industrial design. Developed by Dr. Karl Lang, father of the Radius Pressview, the system acts like a Pressview manufactured start to finish by Sony with the benefit of five years of hindsight, rather than one put together by Radius.

Start with a Monitor

The heart of the Artisan system is the Sony GDM-C520K monitor, a state-of-the-art 21-inch flat-screen Trinitron with a low, 0.24mm aperture-grille pitch that supports horizontal scan frequencies from 30kHz to 130kHz and vertical refresh rates from 48Hz to 170Hz—all of which adds up to sharp, flicker-free performance even at high resolutions. It has all the advanced controls you'd expect from a high-end monitor, including individual red, green, and blue gain and bias controls, and separate convergence controls for top, center, and bottom, conveniently accessible through a joysticklike control on the front bezel. But what makes the Artisan system much more than just another monitor is the Artisan sensor and calibration software.

Sleek and Simple To calibrate the monitor, just choose a target color space, click on the Calibrate button, and follow directions to attach the sensor to the screen.

Marry It to a Sensor

The Artisan sensor is a very sensitive colorimeter whose filters are matched to the phosphors used in the GDM-C520K monitor. Therefore, it provides very accurate data to base the monitor profile on—it won't work particularly well on monitors with different phosphor sets, but on the GDM-C520K, it's more accurate than any general-purpose instrument. The Artisan sensor also avoids the major weakness of most affordable third-party monitor calibrators: their inability to accurately measure black.

The Artisan software communicates directly with both the sensor and the monitor through USB connections. The software uses the feedback from the sensor to adjust the monitor's RGB gain and bias to the desired color and luminance of white and black, instead of simply adjusting levels in the video card's lookup table. Some third-party calibrators let you do this manually, but with the Artisan it's automatic. Moreover, it's extremely accurate. After calibrating the monitor, we could see a difference between each level from 0 through 10, and as we cycled through the levels, the grays remained dead-on neutral.

Before we encountered the Artisan, the only monitors that had passed this extreme-torture test with flying colors sported a Barco logo. The upshot is that you get reliable calibration with a predictable contrast range, which is essential for making fine judgments about tone and color.

Control It with Software

The Artisan Color Reference System is also easy to use. Setup is a breeze—the only part that's even slightly tricky is that one end of the monitor cable has both a D-Sub 15 and a USB connector, and you have to make sure to plug that end into both the video card and one of the USB ports on the Mac. (Unlike many competing CRTs, such as the LaCie electron22blue III and NEC-Mitsubishi's 22-inch SpectraView models, the Artisan monitor doesn't have a built-in USB hub.)

The software's interface has a modern look-and-feel that matches the rest of the product. If you use one of the default settings, calibration and profiling really are a one-button process—but if you think defaults are for the timid, you'll find that you have complete control over defining new aim points for color temperature, black and white luminance, and gamma. A unique Artisan feature is the ability to save calibration data for different monitor resolutions: once you've calibrated the monitor at two different resolutions, you can switch freely between them without having to recalibrate.

A full calibration takes about ten minutes and is good for 30 days; after that, the software forces you to recalibrate. While some competing systems allow you to set a warning for a user-selectable calibration period, Sony takes the same approach as Barco. But the software also offers a quick Update Calibration Data feature that revalidates the calibration in about three minutes—if you run this once a week or so, you can avoid the lengthier routine. In dual-monitor setups, you can calibrate the Artisan only when it's the main monitor, but once it's calibrated, you can move the menu bar to the second monitor if you wish.

Macworld's Buying Advice

If you need accurate, predictable color from your display, day in and day out, and you're willing to pay a premium price for it, the Sony Artisan Color Reference System will give you your money's worth. It's more expensive than comparable solutions from competitors such as NEC-Mitsubishi and LaCie, but it provides shadow performance matched only by the considerably more expensive Barco Reference Calibrator V. □

RATING: ●●●●½

PROS: Reliable; one-button, accurate calibration and profiling; great industrial design.

CONS: Takes up two USB ports and provides none; must be your main monitor during calibration.

PRICE: $1,729

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Sony, 877/865-7669, www.sony.com

THIS MONTH IN DIGITAL CAMERAS

Model	Fuji FinePix F401	Canon PowerShot G3	Kodak EasyShare LS443	Nikon Coolpix 4300	Minolta Dimage 7Hi
Rating	♦♦♦	♦♦♦♦½	♦♦♦	♦♦♦♦	♦♦♦♦
Resolution (in megapixels)[A]	2.1[B]	4.0	4.0	4.0	5.0
Price	$499	$899	$499	$499	$1,299
Lens					
Zoom (35mm equiv.)	3× (38mm–114mm)	4× (35mm–140mm)	3× (35mm–105mm)	3× (38mm–114mm)	7× (28mm–200mm)
Maximum Aperture	f2.8–f4.8	f2.0–f3.0	f2.8–f9.6	f2.8–f4.9	f2.8–f3.5
Media Supported	SmartMedia	CompactFlash Type II	Secure Digital/ MultiMedia Card	CompactFlash	CompactFlash Type II
Size (in inches)[C]	compact, 3.3 × 2.7 × 1.1	midsize, 4.8 × 3.0 × 2.5	compact, 4.3 × 2.4 × 1.5	compact, 3.7 × 2.7 × 2.0	large, 4.6 × 3.6 × 4.4
Weight (in ounces)	6.5	14.5	7.9	7.9	18.7
Bundled Software	Fuji FinePix Viewer	Canon Digital Camera Solutions, Photoshop LE	Kodak EasyShare	NikonView 5.1, ArcSoft PhotoStudio, VideoImpression, PanoramaMaker	Minolta Dimage Viewer
Bundled Hardware	16MB SmartMedia card, AC adapter, USB cables	32MB CompactFlash card, wireless remote control, AC adapter, USB and video cables	camera dock, AC adapter, USB and video cables	16MB CompactFlash card, USB and video cables	16MB CompactFlash card, lens hood, USB and video cables
Battery[D]	lithium ion	lithium ion	lithium ion	lithium ion; also supports 2CR5 batteries	AA
Additional Features	supports optional camera dock	hot-shoe, supports add-on lenses, built-in neutral-density filter, flip-out LCD	camera dock, 16MB of internal memory	supports add-on lenses	external flash-sync terminal and hot-shoe, electronic viewfinder
Movie Mode	yes, with sound (2-minute maximum)	yes, with sound (3-minute maximum)	yes, with sound (maximum length dependent on card)	yes, no sound (40-second maximum)	yes, with sound (1-minute maximum)
Image Quality	Good.	Excellent.	Good; images noticeably less sharp than competitors'.	Very good.	Very good; images noisier than other 5-megapixel cameras'.
User Interface	Very good; menus simple and easy to understand.	Very good; controls easy to get to.	Very good.	Good; menus can be confusing at first.	Good; can be intimidating.
Pros	Small, stylish body; good photo quality at native 2.1-megapixel resolution; fast performance.	Excellent photo quality; great performance; excellent preset scene modes; support for external flashes and lenses.	AF illuminator; dock eases photo transfer and battery charging; can mark pictures for printing and e-mail.	Very good photo quality; lots of features for a point-and-shoot camera; good value.	Excellent lens; large number of manual controls; support for external flash; great performance; backlit LCD info display.
Cons	Very limited controls; no AF illuminator; noisy images; expensive compared with other 2-megapixel cameras.	Lens barrel visible through viewfinder at wide angle; no live histogram in record mode.	Photo quality, while satisfactory, is not as good as that of other 4-megapixel cameras.	No AF illuminator; average shooting speeds; doesn't support CF Type II cards.	Produces noisier images than other cameras in its class; lackluster bundle and software.
Users It's Best For	Consumers looking for a small camera to take anywhere.	Enthusiasts who want an easy-to-use camera with full controls and external flash support.	Point-and-shoot users who want high-resolution pictures and a smaller camera.	Amateurs who want high-resolution pictures, manual controls, and a small camera.	Enthusiasts who want manual controls, a long lens, and external flash support.
Contact	800/800-3854, www.fujifilm.com	800/652-2666, www.powershot.com	800/235-6325, www.kodak.com	800/645-6687, www.nikonusa.com	201/825-4000, www.minoltausa.com

Cameras are listed first in order of resolution and then alphabetically by vendor. [A]The effective resolution of the camera, not the resolution of the CCD. [B]Uses SuperCCD sensor, which lets camera take an interpolated 4-megapixel image. [C]Width × height × depth. [D]Battery charger included unless otherwise specified.

BY JEFF KELLER

At the top of this month's list is Canon's 4-megapixel PowerShot G3, an updated version of the successful PowerShot G2—with a longer 4× zoom lens, better image-processing performance, a built-in neutral-density filter (for reducing the shutter speed, or aperture, in extremely bright light), support for wireless flashes, and more. Nikon's Coolpix 4300 comes close in image quality and is significantly cheaper than the G3, but it's really more of a point-and-shoot camera (though it does have some manual controls) for the casual enthusiast who wants high resolution in a small camera.

If you want even more resolution and are willing to pay for it, look at Sony's 5-megapixel Cyber-shot DSC-F717. For $999, you get an excellent Carl Zeiss 5× zoom lens, good manual controls, easy-to-use program settings, and one of the best autofocus systems I've ever seen. Two other 5-megapixel models, Minolta's Dimage 7Hi and Nikon's Coolpix 5700, produce high-quality images and are very good cameras—both have excellent, longer zoom lenses and more manual controls than the DSC-F717—but Sony's combination of value and quality is hard to beat.

Fuji's FinePix F401, although technically a 2.1-megapixel camera, uses Fuji's SuperCCD sensor, which lets you capture interpolated images as large as 4 megapixels. Although it doesn't actually produce pictures as good as those of true 4-megapixel

Nikon Coolpix 5700	Sony Cyber-shot DSC-F717
♦♦♦♦	♦♦♦♦½
5.0	5.0
$1,199	$999
8× (35mm–280mm)	5× (38mm–190mm)
f2.8–f4.2	f2.0–f2.4
CompactFlash Type II	Memory Stick
large, 4.3 × 3.0 × 4.0	large, 4.8 × 2.8 × 6.0
17.0	20.7
NikonView 5.1, ArcSoft PhotoStudio, VideoImpression, PanoramaMaker	Pixela ImageMixer
16MB CompactFlash card, USB and video cables	32MB Memory Stick, AC adapter, USB and video cables
lithium ion; also supports 2CR5 batteries and AA battery grip	lithium ion
hot-shoe, electronic viewfinder, supports external lenses, flip-out LCD	external flash-sync terminal and hot-shoe, electronic viewfinder, unique zoom ring around lens barrel
yes, with sound (1-minute maximum)	yes, with sound (maximum length dependent on card)
Very good.	Excellent.
Good; menus can be confusing at first.	Good; simple but efficient.
Great photo quality; top-notch lens; superb macro capability; support for external flash.	Excellent photo quality; fast, sharp lens; external flash support; laser focusing system; long battery life.
Some controls poorly placed; bundled 16MB card anemic; average battery life; small LCD.	Not as many manual controls as competition; no real continuous-shooting mode.
Enthusiasts who want manual controls, a long lens, and external flash support.	Enthusiasts who want manual controls, a long lens, and external flash support.
800/645-6687, www.nikonusa.com	800/222-7669, www.sonystyle.com

cameras, it's a light camera that's easy to carry around; if you're not too worried about resolution, it's worth a look. The Kodak EasyShare LS443 is a decent point-and-shoot camera with a few nice features, but its photo quality isn't as good as that of the other 4-megapixel cameras on the market. □

JEFF KELLER is the editor of the Digital Camera Resource Page. Check www.dcresource.com for in-depth reviews of the cameras discussed here, with sample images.

STUFFIT DELUXE 7

Compression Program Adds New File Format, Better Encryption

BY JEFFERY BATTERSBY

StuffIt Deluxe has been shrinking and expanding files on the Mac for more than a decade, which makes it ancient by most digital standards. And as with many old structures, sometimes it's better to start from scratch than to build on an existing foundation. Aladdin Systems has rebuilt StuffIt Deluxe 7 from the ground up, adding a new compression engine. Version 7 also sports a new plug-in architecture that lets Aladdin add new archive formats to the program without changing its code. But your decision to upgrade will depend largely on the type of work you do.

It's All Inside

StuffIt Deluxe's changes are mostly under the hood—its interface and functionality remain substantially the same. You can still compress, extract, and manipulate files in a variety of compression formats, but in version 7 you can also create and open self-extracting .zip archives. StuffIt's new compression format, StuffIt X (.sitx), offers improved encryption and an enhanced compression algorithm.

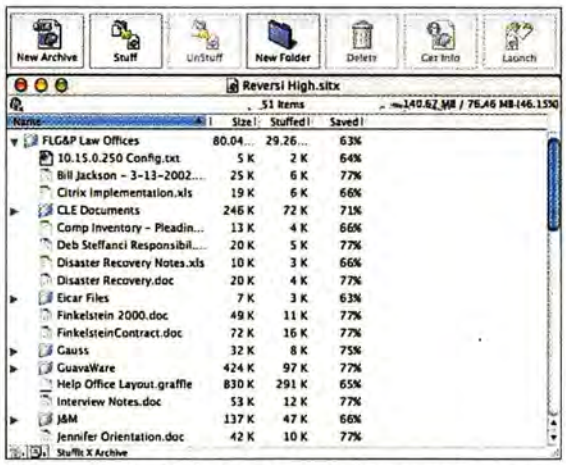
StuffIt still gives you many options for compressing files (Aladdin calls compressed files archives): you can use StuffIt drag and drop, the Magic Menu, contextual menus, or the New Archive window. A new Microsoft Word plug-in also lets you compress documents directly from within Word. But Mac OS X users can't use the True Finder Integration feature, which lets you change an archive's format simply by changing its file extension. (Aladdin says this is due to a limitation in OS X.)

Multimedia and video producers will appreciate version 7's ability to create multiterabyte-size archives, a step up over StuffIt's previous 2GB limit. And Aladdin has significantly beefed up StuffIt's 40-bit encryption capabilities to 512-bit, RC4 encryption, which makes it more secure than the encryption level most banks require for online banking. Version 7 also supports long file names and includes built-in error recovery; the latter can completely rebuild your archive if it becomes corrupted. And Unix geeks who want to control StuffIt through the Terminal's command-line interface will find more functionality and better encryption options, such as Blowfish, DES, and AES, right at their fingertips.

But Sometimes Older Is Better

In our tests, StuffIt X files didn't compress the additional 20 to 30 percent it promises. In most cases, the .sitx file was only 2 to 8 percent smaller than a file compressed in the .sit format, and in some cases, such as with Word documents and MYOB data files, compression was worse. StuffIt X made the most difference with uncompressed multimedia and image files.

We also found a bug in Archive Search, a StuffIt application that lets you search compressed files for specific documents. Archive Search crashed whenever it found a file within a .sitx file. Though these problems were not fixed in the recent 7.01 update, Aladdin says they should be resolved in an update that will be released by the end of 2002.



Trimming the Fat StuffIt Deluxe's new StuffIt X compression format gives your files the big squeeze.

Macworld's Buying Advice

Highly secure data encryption, better compression, terabyte archive sizes, and command-line access all make StuffIt Deluxe 7 a good update. But unless you're compressing huge files or you need to make sure the data you're sending over the Internet is highly secure, simply downloading the latest version of StuffIt Expander may suffice. □

RATING: ♦♦♦♦

PROS: Top-notch encryption; seamless integration with Microsoft Word; allows for terabyte-size archives; backward compatible.

CONS: New format requires new version of StuffIt Expander; compression not as good as promised.

PRICE: $80; upgrade, $30

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Aladdin Systems, 800/732-8881, www.aladdinsystems.com

ABSPLUS

"No Excuses" Hard Drive Backup Package Helps You Start to Prevent Data Loss

BY ADAM C. ENGST

If you're like most Mac users, you know backups are important, but you've never been able to determine the best backup program and media for your needs. Backing up to CD-R feels wasteful, tape drives are too expensive, and backup programs seem way too complicated to set up. Worse still, you can't imagine remembering to back up regularly.

If you're nodding your head in agreement, you should check out CMS Peripherals' ABSplus (Automatic Backup System), a FireWire hard drive with custom software. The ABSplus isn't perfect—but it *is* an integrated hardware-and-software solution, so it's faster and easier to get started with than most other combination backup programs and storage devices.

What You Get

The ABSplus comes in portable and desktop models. The sleek, portable, 2.5-inch hard drive is available with a 20GB, 30GB, 40GB, or 60GB capacity (we used the 60GB for our tests) and gets its power via a FireWire connection. The larger, less expensive, 3.5-inch model, on the other hand, requires an additional power source and is available with a capacity of 40GB, 80GB, 120GB, or 160GB.

CMS claims that the ABSplus can withstand a g-force as high as 1,400; although we couldn't simulate these conditions, we did drop the drive from various elevations. It shrugged off drops from three feet high onto carpeted and tile floor and from six feet onto carpeted floor. The drive managed to survive its first 11-foot tumble to a tile floor, but a bad bounce the second time around rendered it useless.

The other part of the package is CMS's suite of four small applications. (We tested the OS X 10.1 versions of the software in OS X 10.1.5 and 10.2; the company's recently released software specifically for OS X 10.2 wasn't available for evaluation at the time of this writing.)

ABSSettings lets you configure backup options, ABSLauncher watches for the drive to mount and then launches ABSBackup to back up changed files, and ABSReminder reminds you when you haven't backed up within your set number of days. However, if you leave the ABSplus drive plugged into your Mac, you'll have to launch ABSBackup manually to initiate backups. CMS plans to include scheduled-backup functionality in a future release, which should be available by the time you read this.

Backing Up

Installing and using the ABS software is simple—a boon for people overwhelmed by the prospect of backing up. After installation, and whenever you connect the ABSplus to your Mac from then on, ABSBackup launches, scans your drive, and copies new or changed files to the ABSplus—you don't have to configure anything to back up your entire hard disk. A primitively laid-out feedback window displays backup progress, and a dialog at the end summarizes the session.

ABSBackup stores files in their native format, in a folder structure that matches the structure of the source disk. Assuming you've done a full backup, you can boot your (or any) Mac from the ABSplus in either OS 9 or OS X and use it just as you would any other external hard drive.

ABSBackup properly adds new files to the ABSplus and replaces modified files, but it doesn't delete files from the ABSplus if you've deleted, renamed or moved them on the source disk—as FWB Software's comparable, $50 Backup Toolkit (●●●; *Reviews*, May 2002) can. Aside from possibly filling up the ABSplus drive well before the Mac's internal hard drive is full, this flaw means that restoring the entire hard disk would require weeding out duplicate files you had long ago deleted or filed elsewhere. CMS is aware of this problem and is working toward fixing it in a future release.

Restoring Your Data

Backup isn't even half the game; all your efforts will be in vain if you can't properly *restore* from your backup when one of the following four basic disaster scenarios occurs:

1. You accidentally delete a file or folder. No problem—just find the backed-up file or folder on the ABSplus and copy it to your hard drive, as you normally would in the Finder. This worked perfectly for us.

2. You discover a corrupted file. If you've backed up since the corruption happened, you're out of luck, since the ABSplus will have replaced the last good version with the corrupted file. Unlike both Backup Toolkit and Dantz's more powerful $49 Retrospect Express Backup (●●●●; "60 Mac Software Bargains," July 2002), the ABSplus currently offers no way to save multiple versions of the same file, apart from backing up to multiple ABSplus drives on a regular rotation. But then you'd have to factor additional drives into your backup strategy and your budget.

3. You need to restore everything to an empty drive. The ABSplus works acceptably in this situation, but the process for OS X users is awkward. You have to boot from the ABSplus and run a backup in reverse—from the ABSplus to the internal hard drive. (CMS promises a one-button restore process in an ABSBackup update that should be available by the time you read this.)

4. You lose your Mac in a fire or robbery. The only thing that protects your data from such a situation is an off-site backup—you can easily transport the ABSplus portable models to another location.

Haphazard Documentation

The ABSplus's accompanying documentation is problematic—it omits information that could be helpful. For instance, to restore a Mac that was running OS X, you *must* boot into OS X when restoring, something the documentation never mentions.

You can use the ABSplus to back up multiple Macs, such as a desktop and a laptop, but CMS's suggested method (backing up each Mac to a different folder on the ABSplus) isn't the best way, because you won't be able to boot from the separate folders. A better solution is to use Apple's Drive Setup or Disk Utility to create two partitions on the ABSplus, one per Mac. That way, you can boot from either partition.

Macworld's Buying Advice

The ABSplus generally worked well for us, and overall it compares favorably with other backup programs used in concert with a FireWire hard drive. If you don't already have a solid backup solution, it's an excellent way to start protecting yourself against data loss. □

RATING: ●●●½

PROS: Makes initiating backups extremely easy; boots in both OS 9 and OS X; stores files in Finder format.

CONS: Awkward approach for full restores in OS X; doesn't track deleted or moved files; amateurish interface; incomplete documentation.

PRICE: ABSplus FireWire portable model, $299 to $499 for 20GB to 60GB; ABSplus FireWire desktop model, $299 to $549 for 40GB to 160GB.

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: CMS Peripherals, 714/424-5520, www.cmsproducts.com

iLISTEN 1.5

New Speech-Recognition Software for OS X Lacks Polish but Offers Transcription Support

BY SCHOLLE SAWYER McFARLAND

It's a happy day when Mac users have two full-featured speech-recognition programs to choose from—programs that let you dictate using natural speech *and* control your Mac by voice. This technology is critical to people who have limited use of their arms; for everyone else, it offers an exciting new way to interact with a computer.

Before late 2001, advanced speech recognition was available only in Windows. That's when IBM released the capable but incomplete ViaVoice for Mac OS X (♦♦½; *Reviews*, April 2002). Now MacSpeech's iListen 1.5.2 joins the Mac OS X speech-recognition ranks. Unfortunately, this program's performance is inconsistent, but its new ability to transcribe audio files may make it worthwhile to some.

Basic Training

Most speech-recognition programs require a training period during which you acclimate the program to the unique qualities of your voice. With iListen, this process is easy. To begin, you set up the microphone, which in our case was the VXI Parrott with Griffin iMic USB adapter (both included).

Next, for about ten minutes, iListen leads you through sound-level tests and a sample passage of text. With initial training, iListen was about 78 percent accurate in our dictation tests in OS X and OS X's Classic mode. To improve recognition, you can read 11 other passages. Doing so brought the accuracy up slightly, to about 82 percent. The program can also analyze a set of your documents to learn the vocabulary you use.

Dictation and Correction

iListen requires either OS 9 or OS X, and once you're finished setting up the program, you can begin dictating into any application, such as Microsoft Word X or 2001. Using an 800MHz iMac G4 with 512MB of RAM, we saw good performance from the program—there was only a slight delay between speaking the words and seeing them appear on screen.

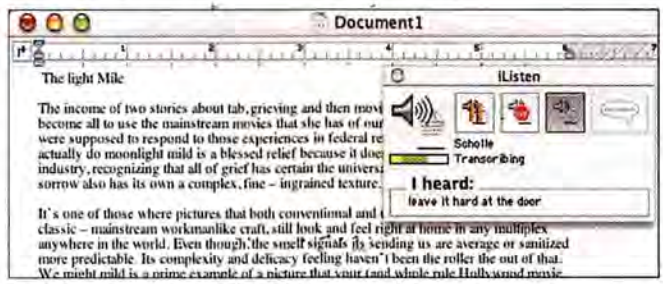
Recognition mistakes are inevitable—and often amusing. After all, English has numerous homonyms (such as *flee* and *flea*), and some things just sound alike (for example, *workmanlike craft* and *work them like crap*). iListen can correct mistakes—and, most important, *learn* from them—no matter what application you're in. Say "Correct that" right after a phrase has been incorrectly recognized, and a correction window opens with a list of fixes. Notably, you can't make a selection from the list by voice.

And you'll often spend time correcting the changes implemented during the correction process. For instance, if you stop to delete an extra space or revise an earlier passage while dictating, iListen may lose track of where you are. If so, the program will begin typing in the wrong place. (The PDF manual offers some workarounds for this problem but doesn't provide a solution.)

Command and Control

Part of speech recognition's promise is that it can give you the ability to stay off of your keyboard as much as you may need to. Unfortunately, however, iListen reveals some of its roughest edges when you try to control your Mac by voice.

Certain built-in commands work just as you'd expect. You can open a program by saying, for example, "Open Microsoft Word." However, other commands didn't work or worked inconsistently in our testing. For instance, "Click mouse" produced no results. Likewise, commands for opening Web pages—"Jump to Macworld," for example, didn't work and sometimes caused unexpected results, such as opening the Print dialog box.



Write Anywhere iListen is the only Mac-compatible speech-recognition program with the ability to transcribe AIFF and WAV files imported from a tape recorder.

iListen relies on AppleScript to do its stuff, which means that if you're handy with AppleScript, you can write your own scripts. If you're not, you won't find many ways to work around iListen's command-and-control deficiencies. Unlike most Windows-compatible speech-recognition programs, iListen doesn't give you built-in access to every menu and every key on the keyboard.

The program includes only a few scripted commands. For example, you can say "File Quit" to quit any program and "Return key," to hit the return key, but you can't say "Command D" to access Word's keyboard shortcut for font options. IBM's ViaVoice doesn't build in complete keyboard access, either, but it does include an easy-to-use utility that helps you add it yourself. You'll find a similar (but unsupported) utility called TypeKey Helper in iListen's Extras folder, but it requires more steps and may be daunting to AppleScript newbies. You must also know that it's there or stumble across it in the Extras folder—it's not mentioned in the manual.

The Freedom of Transcription

Despite its many drawbacks, iListen 1.5.2 has one outstanding new feature: it's the only Mac speech-recognition software able to transcribe AIFF and WAV audio files. This feature alone may appeal to doctors, novelists, and others who prefer to do their writing far from the keyboard. Simply dictate into your digital tape recorder, download the file, push a button, and watch while iListen types what you said.

In our tests, iListen was about 77 percent accurate when transcribing audio files from the iListen-supported Olympus DS-330 digital voice recorder (♦♦♦½; *Reviews*, October 2002) into Microsoft Word X. However, the program doesn't offer much help to Mac users keen to improve that number. Unlike Dragon NaturallySpeaking for Windows, which offers the same audio-file–transcription capability, iListen provides no special training mode that will help the program adapt to your tape recorder's sound quality. You'll have to make numerous corrections, but many people may prefer that to typing documents from scratch.

Macworld's Buying Advice

MacSpeech's iListen 1.5.2 is a work in progress. At this point, IBM's ViaVoice—although it also has its flaws—is a better choice for most. The primary benefit of iListen today is the ability to transcribe documents dictated into a tape recorder. □

RATING: ♦♦

PROS: Support for audio-file transcription; can learn from dictation corrections in any program.

CONS: No speech-controlled correction; frustrating correction process; limited and inconsistent built-in command-and-control abilities; incomplete documentation; some bugs.

PRICE: $99; with headset, $149; upgrade, $40 (doesn't include headset)

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: MacSpeech, 603/644-7253, www.macspeech.com

ENDNOTE 6

Citation-Making Software Adds Mac OS X Support and New Productivity Features

BY FRANKLIN N. TESSLER

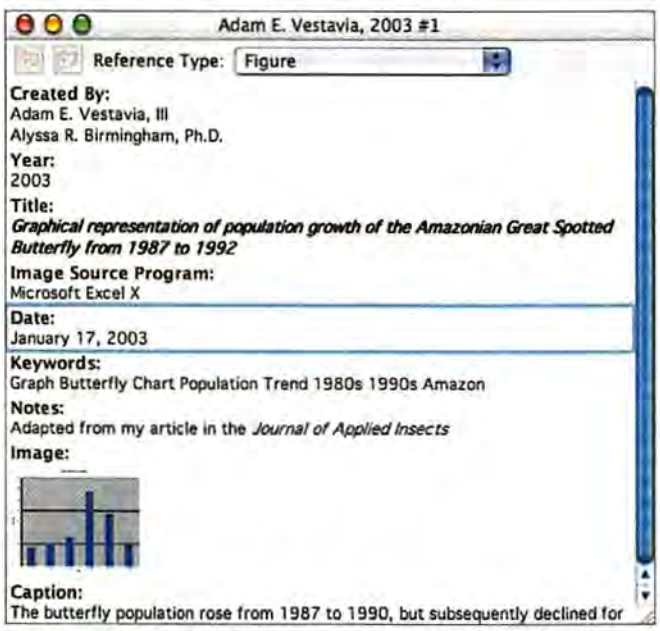
For more than a decade, ISI ResearchSoft's EndNote has made life easier for authors who need to include citations and bibliographies in their work. Last year, we chided ISI for releasing EndNote 5 without support for OS X or Microsoft Word X (*Reviews*, January 2002). EndNote 6 corrects this misstep by providing OS X and Word X compatibility—in fact, now it's for OS X only. EndNote 6 also has several new features that can make academic writers even more productive than before.

More Than Text

We ran EndNote 6 in OS X 10.1.5 without a hitch (an OS X 10.2–compatible version should be shipping by the time you read this). Like its predecessors, EndNote 6 stores text references in a specialized database called an EndNote 6 library. As you write, you copy selected references from the library into your document; EndNote formats the in-text citations and bibliography to suit the publication for which you've indicated you're writing, as we discuss later in this review.

With version 6, you can export all the references embedded in a formatted Word document into a new or existing EndNote library. Although the exported references don't contain notes, abstracts, images, or captions, this is an easy way to share bibliographies with your colleagues without sending them your entire EndNote library.

The program goes a step further by also letting you create references that contain pictures, artwork, and other nontextual data and then insert them into your manuscript as figures. With the Insert Image command, you can add any JPEG, TIFF, GIF, BMP, or PNG file to a reference (see "The Best Image"). A similar command, Insert Object, links an EndNote reference to any type of file—it's handy for cataloging PDF documents and other files that Insert Image doesn't support.



The Best Image The EndNote 6 library displays a thumbnail view of graphics linked to text references in EndNote's new Image field.

To insert a figure into a Word document, you use a new tool called Find Figures to search the library for references that contain images and other graphics. EndNote 6 copies the contents of the linked file into your manuscript, along with the file's caption, and generates a figure citation at your chosen insertion point. If you later move or delete a figure, EndNote 6 can renumber the figures and rearrange them and their captions accordingly. The only limitation is EndNote's inability to handle multiple-part figures: for example, one consisting of figure 2a and figure 2b.

It's unfortunate that EndNote doesn't provide a tool for managing tables. If you're writing for a journal that requires independent numbering schemes for tables and figures, as many do, you'll have to number the tables manually. Still, EndNote's ability to insert and keep track of figures is sure to be a big time-saver.

Easy Formatting

Academic writers face enough of a challenge in making sure their information is valid—they don't want to worry about proper formatting as well. EndNote 6 helps here by providing Word-compatible templates for 145 publications, from the *Journal of the American Chemical Society* to the *Journal of Virology*. You can fill in the template manually, or you can use EndNote's Manuscript wizard, which asks you to supply the basic information most publishers require, such as a title, authors, and keywords.

EndNote creates a formatted document from your data, complete with margins, headings, and markers for all the required sections. Special placeholders tell EndNote where to place the bibliography and figure list in the final manuscript. The program even chooses a bibliographic style that matches the publication you've selected. In our tests, EndNote did an excellent job of selecting styles and putting all the elements in their proper place.

If the journal you need isn't on EndNote's list, you can try to modify an existing template by opening it in Word. However, neither EndNote's printed manual nor its online help offers any guidance on how to accomplish this. Although we managed to devise a rough template after some experimentation, we weren't able to edit its placeholders or customize its Manuscript wizard to request specific information.

New on the Menu

In addition to a pleasing Aqua interface, EndNote 6 sports revamped, more logically arranged menus. For example, the commands in version 5's Text, Terms, and Paper menus have been incorporated into the Edit menu and the new Tools menu.

Alas, EndNote veterans will also note that the Scan Paper menu, which allowed you to format WordPerfect, Nisus, AppleWorks, and plain-text documents, is missing—EndNote 6 supports only Word X. (Until ISI delivers on its promise to restore the Scan Paper function in a future update, you can use EndNote 5 with these other word processors in OS 9 or in OS X's Classic mode. EndNote 6 ships with a version 5 CD.)

Macworld's Buying Advice

Despite its minor limitations, EndNote 6's ability to import and organize text references and figures will save hours of frustrating work. Whether you use version 5 or still enter and format references by hand, EndNote 6 will be a worthwhile investment. □

RATING: ♦♦♦♦

PROS: Automatically inserts figures in manuscripts; templates simplify document formatting.

CONS: Doesn't handle tables or multipart figures; limited ability to customize manuscript templates; supports only Word X.

PRICE: $300; download, $240; upgrade, $100; upgrade download, $90

OS COMPATIBILITY: Mac OS X

COMPANY: ISI ResearchSoft, 800/722-1227, www.endnote.com

M-AUDIO SONICA

Expand Your Mac's Sound Horizons

BY GIL KAUPP

Looking to get high-quality stereo sound from your Mac? If you don't have access to a surround-sound system but still want to increase your Mac's sound fidelity by hooking it up to your receiver, M-Audio's cool blue Sonica will let you do just that. Featuring a minijack stereo analog output and a 24-bit, 96kHz digital optical (SPDIF) output, the portable Sonica plugs into your Mac's USB port and uses licensed TruSurround XT software, from SRS Labs, to simulate multichannel surround sound via just two speakers.

The Hookup

Getting started with the Sonica is easy, and the process is well described in the manual: you just install the driver, attach a USB cable, and select the Sonica as your sound output device—then you're ready to experience surround-sound audio via your Mac. This ease of installation has a flip side, however: M-Audio doesn't include the TOSLink (optical) cable you'll need to connect the Sonica to your receiver—and at approximately $20, this cable is expensive.

If your receiver doesn't have digital inputs, you can hook up the Sonica's analog output to your receiver, using a standard ⅛-inch minijack cable. The supplied drivers worked without a glitch, and M-Audio's tech support responded promptly to our test call.

Sound Quality

The sound quality is significantly better via the optical cable than it is through either the Sonica's analog output or the Mac's. The digital output is louder and cleaner, and the upper frequencies are crystal clear, while the volume level of Sonica's analog output is low, making it difficult to enjoy simulated surround sound via your headphones.

The Sonica's digital output can carry multichannel sound such as Dolby Digital 5.1 (AC-3), Dolby Pro Logic, and DTS to your receiver for decoding, but if you want to use Apple's DVD Player to play a DVD, you won't get the multichannel sound you expect, since DVD Player doesn't yet support this feature. According to M-Audio, a future update of DVD Player should fix this, since multichannel sound is the DVD standard.

For now, in OS X 10.1.5, the freeware VLC (VideoLan Client, available at M-Audio's Web site) can pass AC-3 sound to your receiver. The TruSurround XT settings in Sonica's own Sound preference panel can simulate surround sound even with just two speakers, as well as enhance dialogue and bass reproduction, but these settings won't necessarily improve sound quality.

Macworld's Buying Advice

The Sonica's digital output greatly improves the sound quality you can get from your Mac, even in higher-end setups. If you want to expand your digital hub to include your stereo setup, the Sonica is your best bet. □

RATING: ▮▮▮▮

PROS: Solid drivers; good manual; good tech support; clear sound improvement; great design.

CONS: Analog output not loud enough for headphone use; Dolby Digital (AC-3) playback available in OS X 10.1.5 only with freeware DVD player.

PRICE: $89

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: M-Audio, 800/969-6434, www.m-audio.com

NIKON D100

Digital SLR Adds Strong Choice to Semipro Camera Market

BY RICK LEPAGE

In the low end of the digital single-lens reflex (SLR) camera market, one company's absence has been conspicuous: Nikon. But now—two years after the release of Canon's highly successful 3.1-megapixel EOS D30 and months after Canon's 6.3-megapixel follow-up, the EOS D60 (▮▮▮▮; *Reviews*, August 2002)—Nikon has entered the fray, with its $1,999 D100, an impressive 6.1-megapixel camera that aggressively goes after the market Canon is targeting.

Feels Like Film

The primary appeal of SLR digital cameras is that they look, feel, and act like 35mm film cameras. They have many of the advanced controls found in their film-based counterparts and, best of all, accept off-the-shelf lenses that offer much better optical performance than the lenses in point-and-shoot digital cameras. (As is the case with most digital SLR cameras, the D100 doesn't come with a lens.)

Anyone familiar with Nikon's 35mm cameras will feel right at home with the D100; its controls are, for the most part, very similar. And it incorporates many of Nikon's excellent features, including the 3-D Matrix metering system, a high-powered built-in flash, and support for Nikon's high-quality Nikkor AF lenses.

Accessing the D100's comprehensive set of features can be difficult. The camera's body has a lot of buttons and wheels that take some getting used to, and some actions—such as deleting images, using the LCD to zoom in on an image, and changing the ISO setting—require more effort to perform than they should. Once we were up-to-speed, however, we found that using many of the features became second nature.

The D100 produces very high-quality images. They have a bit more contrast than the images the EOS D60 generates, and in general they are fairly soft, but neither characteristic is a mark against either camera. Both issues can be adjusted easily in Adobe Photoshop, and the softness of the D100's images helps to keep noise levels down.

Another attribute that will appeal to photographers in the field is the D100's long battery life. We shot and viewed hundreds of pictures before needing to recharge its lithium-ion battery. (It's worth noting that the D60 is also an excellent camera in this regard.)

Macworld's Buying Advice

Overall, the D100 is a solid, light, easy-to-use camera that offers excellent controls and long battery life, supports a range of lenses, and takes great pictures. Although we prefer the Canon EOS D60 for its more refined user interface, you really can't go wrong with the Nikon D100—especially when you consider that it costs $200 less than the D60 and has a comparable bundle. □

RATING: ▮▮▮▮

PROS: Excellent image quality; rich feature set; long battery life.

CONS: Accessing some features can be awkward.

PRICE: $1,999

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Nikon, 800/645-6689, www.nikonusa.com

LANSURVEYOR 7.0

Application Bridges Gap between Troubleshooting and Network Management

BY JONATHAN A. OSKI

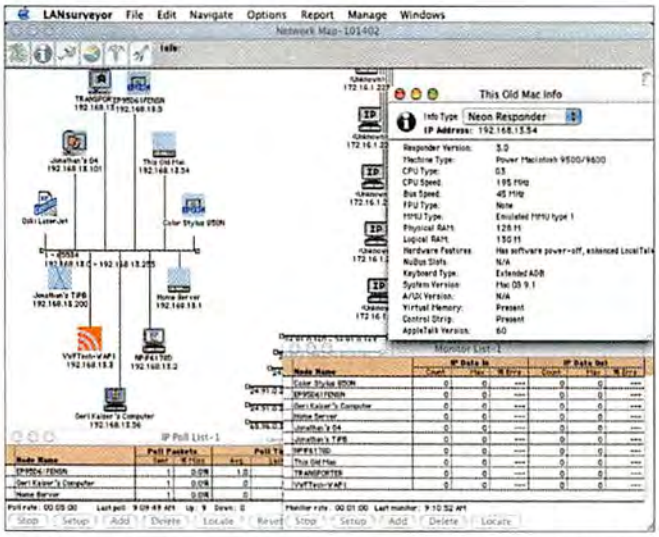
Network managers looking to lighten their load will get a helping hand from Neon Software's LANsurveyor 7.0.1. The $495 package, which aims to bridge the gap between troubleshooting tools (such as Neon's NetMinder Ethernet network analyzer) and management applications (such as Netopia's netOctopus), helps you maintain accurate network documentation, alerts you to network problems, and manages virtually any device connected to your network.

LANsurveyor 7.0 works with System 7 or later, Mac OS X, and Windows 95 or later clients and with printers, routers, and other network devices that support SNMP. Version 7.0—the first OS X–native version—adds a Backup Profiler report and new map types and lets you store notes about any network client.

The base LANsurveyor package includes a license for 20 Neon Responders—local agents that let the application collect data from or issue commands to the clients on which they're installed.

Mapping Your World

LANsurveyor's network map is the heart of the program: all reporting, alerting, and management features are based on or stored within the map. To use the program, you select the TCP/IP addresses and AppleTalk zones you want to map, along with specific AppleTalk services including Neon Responders, ICMP (Ping) SNMP devices, and Timbuktu and Retrospect clients. LANsurveyor scans the devices and creates a hierarchical network map, complete with detailed profiles of each discovered device.



Map Your Way LANsurveyor's hierarchical map uses icons and labels to identify network devices. The Responder shows all applications installed on a selected node.

Version 7.0 allows you to add up to ten notes, such as serial number, location, and user name, to any Responder node. These notes can be displayed on the map and included in reports generated by the program. Note that if you're using OS X, you must be logged in to an OS X workstation for the Responder to load.

Since scanning large, multisegment networks can be time-consuming, LANsurveyor lets you scan a portion of your network at a time. The new map types make it easier to depict large networks; for example, orthogonal and circular maps are nice for displaying

DiskWarrior® has than

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multiple network segments that are linked by one or more routers. You can rearrange the discovered objects to suit your needs, grouping them by function, for instance, or arranging them to more closely depict your network's physical layout.

On the Lookout

Once you've created a map, managing your network is easy. The Poll and Monitor lists let you select devices to watch for performance, reliability, and accessibility. The Poll list tracks the appearance and disappearance of nodes (or services) from the list; similarly, the Monitor list tracks network traffic (in packets) into and out of the nodes on the list.

You can set LANsurveyor to alert you when conditions change. Alerts can be sent by page (using Mark/Space Softworks' PageNow utility), by e-mail, or through the LANsurveyor host station. LANsurveyor can also handle SNMP traps to trigger similar alert notifications.

Taking Action

Through the Manage menu, you can issue requests to Responders to shut down; restart; sync the system clock; send files, folders, or messages; and launch or quit installed applications. Though it can't distribute and install applications like netOctopus can, LANsurveyor can easily copy files and folders to predetermined locations on any networked client.

Management features also let you integrate third-party applications such as Netopia's Timbuktu; AT&T's open-source remote-control tool Virtual Network Computing (VNC), included with LANsurveyor; Neon's CyberGauge; and NCSA Telnet.

LANsurveyor also lets you associate an AppleTalk network service with any application used to manage it. Option-clicking on the device name launches the associated application. For example, you could launch Telnet or a custom application to manage a router anywhere on your network. In this way, you can use LANsurveyor as a "dashboard" to control your network—either directly or by launching a specific application to manage network devices.

LANsurveyor's powerful reporting features not only negate the need for printed network documentation, but also help you manage your network. For example, you can generate an up-to-date spreadsheet of your workstations' applications and their version numbers, automatically locate the workstations with outdated applications on the network map, and then launch a helper application to update the specific folders or files.

Special-purpose reports such as the Backup Profiler, which tracks the amount and type of data on selected nodes, help you plan your network-support needs. But running Backup Profiler is time-consuming, as you can't select only a subset of files to profile.

Macworld's Buying Advice

Despite a few minor shortcomings, LANsurveyor 7.0 is invaluable for network managers. OS X support and new reports and map topologies only increase its usefulness. Whether you use it only for documentation, planning, and troubleshooting or integrate it with your network-monitoring system, you'll see the program's benefits almost immediately. □

RATING: ★★★★

PROS: Manages nodes; quickly and easily creates planning and documentation reports; flexible options for mapping and depicting network.

CONS: OS X Responder requires logged-in user; can't limit scope of Backup Profiler.

PRICE: $495

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Neon Software, 800/334-6366, www.neon.com

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ZIP 750MB FIREWIRE EXTERNAL DRIVE

Fast, Versatile Drive Requires Expensive Media

BY KRISTINA DE NIKE

When the Zip drive first arrived on the scene, the storage market was itching for affordable, easy-to-use, and higher-capacity removable media. Iomega's latest offering, the Zip 750MB FireWire External Drive, still scores on these counts, but today's scene is dramatically different—most users already have CD-RW drives that meet the same criteria. What's more, CD-R/RW discs are not nearly as expensive: they cost less than a dollar each, and one 750MB Zip disk is $15.

Still, the Zip 750MB drive has a speed advantage over CD-R/RW technology. In our tests, it was about 25 percent faster than a CD-RW drive writing a CD-R at 40× and twice as fast as a drive writing a CD-RW at 12×. It's also two and a half times faster than Iomega's previous Zip drive, the USB Zip 250.

Reading and Writing

The Zip 750MB reads and writes 750MB disks that look similar to the older Zip disks. In practice, these new disks hold closer to 710MB and cost $15 apiece. (Unfortunately, no Zip disks are included with the drive.) It also reads and writes 250MB Zip media but only reads 100MB media.

The drive comes with Iomega Tools and Automatic Backup software. The former lets you format disks as HFS, HFS+, or DOS and lets you write-protect disks. The latter lets you schedule backups and determine how many versions of a file you want to save. While it isn't as full-featured as Dantz's Retrospect (♦♦♦♦; *Reviews*, July 2002), Automatic Backup will remind you to back up important files.

At 7.0 by 4.5 by 1.0 inches, the Zip 750MB is slightly smaller than the original Zip drive, and it's quite portable. We installed the Automatic Backup program, but after we disabled it and disconnected the drive, it auto-launched whenever we restarted our Mac. Iomega recommends uninstalling the application if you decide not to use it. Though the Zip 750MB is powered by the FireWire bus, the drive ships without a power supply. If you already run a bus-powered FireWire device, you can request a free AC adapter from Iomega.

Macworld's Buying Advice

If you have a substantial investment in Zip disks, and if you prefer the way you can immediately copy files to them, to the slower process of burning CD-RWs, the Zip 750MB is a natural upgrade. You get the advantages of backward compatibility with your old media, as well as improved speed and capacity with the new media.

Otherwise, it's hard to compete with a CD-RW drive. Along with their other benefits, CD-ROM drives are as ubiquitous as Zip drives once were: if you burn your files onto a CD-R, you'll be sure to find a drive that will read it no matter where you are. □

RATING: ♦♦♦½
PROS: Fast; affordable; compatible with older Zip media.
CONS: Disks are relatively pricey; not as common as CD-ROM drives; no Zip disks included.
PRICE: $180
OS COMPATIBILITY: Mac OS 9, Mac OS X
COMPANY: Iomega, 800/697-8833, www.iomega.com

BRITANNICA 2003 ULTIMATE REFERENCE SUITE

Comprehensive DVD Puts All the Information You Need on Your Desktop

BY FRANKLIN N. TESSLER

Whether you're struggling with a last-minute term paper or casually researching the life cycle of the fruit bat, the Internet offers a wealth of free information. Alas, you can't always trust what you read online. For one-stop fact-finding, you just can't beat the authority and convenience of the Encyclopedia Britannica. The Britannica 2003 Ultimate Reference Suite DVD includes three versions of the popular reference work (it also comes in a three-disc CD set), along with a dictionary, a thesaurus, and an atlas, all in one OS X–only application.

Take Your Pick

Tabs at the top of Britannica's main window let you select which reference suite to access. For adults, there's the complete 32-volume Encyclopedia Britannica, while kids can choose between an elementary (kindergarten through fifth grade) and a student (middle- and high-school) edition. Type a word in the search box, and Britannica displays a scrolling list of matching encyclopedia entries. Single-word searches can produce hundreds of hits, so Britannica lets you narrow your search by entering a phrase or even a question. The search engine also supports Boolean operators, so you can craft complex queries (for example, *space AND Glenn OR Shepard*).

Clicking on a search result opens the corresponding article in a pane to the right of the main window; articles often include links to related articles, images, or movies. Because each new window appears below and to the right of the previous one, they eventually run off the edge of the screen—which can be a problem if you have a small monitor.

If you're just browsing, you can view article listings alphabetically by clicking on a virtual keyboard or typing the first few characters of a subject. The handy Knowledge Navigator also lets you explore the encyclopedia by clicking on existing topic headings such as technology, science and nature, and the arts, but this feature is accessible only from the adult edition.

The elementary edition is more appropriate for fourth and fifth graders than for kindergarteners; and in general, the

Information, Please Britannica lets you expand your knowledge on a given topic. Here, an article on tornadoes includes graphics and links to animations and movies.

adult encyclopedia is more comprehensive than the student editions. However, some student articles contain valuable information the adult version lacks. For example, the student entry on Steve Jobs provides additional details about his early career experience. But you can change encyclopedias on-the-fly without losing your search results.

If you're collecting data, the Research Organizer lets you quickly gather article clippings by highlighting text and clicking on a button. (There's a similar tool for images.) You can save clippings in hierarchical folders, and create personal sets of folders to keep your projects separate from those of other users.

In addition to the encyclopedia, Britannica 2003 includes the Collegiate and Student editions of Merriam-Webster's dictionary and thesaurus, along with a world atlas. (Like the encyclopedia, the atlas comes in three age-appropriate versions, with links to encyclopedia articles.) Also included are interactive timelines that let you review events in world history through 2002.

Under the Hood

Surprisingly, Britannica feels more like a Windows port than a Mac application. The windows have PC-style menus below their title bars; keyboard shortcuts use the control key instead of the ⌘ key; and the window controls would make the Dell dude smile.

Don't expect to run Britannica on that ten-year-old Mac gathering dust in the attic: even on our dual-1GHz Power Mac, some display functions, such as enlarging the article pane, were relatively slow. A minimum installation requires 400MB of hard-disk space and requires you to keep the DVD mounted. (You can run Britannica without the DVD by doing a full installation, but you'll need 2.4GB to do so.)

Macworld's Buying Advice

Britannica 2003 delivers on its promise of providing a complete home-reference library on your desktop. That it does so for every age and reading level makes it even more valuable. It may not be an exemplary Mac application, but it's an exemplary reference application—and compared with a whopping $1,395 for the print edition, it's a steal.

RATING: ♦♦♦½
PROS: Includes three versions for different age levels; multiple search options; much less expensive than print version.
CONS: Windows-like interface; some display functions are slow.
PRICE: $70
OS COMPATIBILITY: Mac OS X
COMPANY: Britannica, 800/323-1229, www.britannica.com

PANASONIC PV-VM202

Small DV Camcorder Offers Unique Modular Design

BY BEN LONG

Jumping into the compact-DV-camcorder fray, Panasonic's PV-VM202 offers features similar to that of its competitors (see *Reviews*, November 2002)—it's tiny, it provides good video quality, and it has removable storage for still images—but the PV-VM202 also has a design that allows you to convert it into a very small digital-still camera.

The single-chip, MiniDV PV-VM202 packs all the features you'd expect; its 10× optical zoom lens provides a good focal range, its controls are well laid out, and it offers a full assortment of digital and analog connections. The camera also includes built-in microphone and headphone jacks—necessities for high-quality audio recording.

The PV-VM202 offers decent video quality, but like most single-CCD camcorders, it suffers from oversharpening and yields annoying moving artifacts in high-contrast areas. The camera's uniqueness lies in its modular design; you can remove the videotape-transport mechanism—the part that holds the videotape—and replace it with a battery module, reducing the camera's size by half and turning the unit into a dedicated digital-still camera.

The camera also includes a multimedia-card slot for storing still images and Web-resolution video clips. Unfortunately, like its competition, the PV-VM202 makes a lousy still camera. Its low-resolution still images lack detail and are plagued with artifacts.

Macworld's Buying Advice

If you want the best video quality and you can spend more, you'd be better served by a three-CCD camcorder. If you need both a video and a still camera and don't have high still-image standards, the PV-VM202's design offers great flexibility and good value.

RATING: ♦♦♦½
PROS: Good video quality; unique modular design.
CONS: Suffers from artifacts common to most single-CCD camcorders; poor still-photo quality.
PRICE: $2,000
OS COMPATIBILITY: Mac OS 9, Mac OS X
COMPANY: Panasonic, 800/742-8086, www.panasonic.com

A NEW KIND OF SCIENCE EXPLORER 9

♦♦♦♦; Wolfram Research, 800/965-3726, www.wolfram.com; $65

Wolfram Research's A New Kind of Science Explorer software kit provides an easy, animated introduction to the book *A New Kind of Science*, by company founder Stephen Wolfram. He claims that cellular automata patterns model all sorts of simple and complex behaviors found in nature, and that Explorer is the easiest way to evaluate this. Explorer, which runs in OS 9 and in OS X's Classic mode, follows the book, chapter by chapter, representing its descriptions of cellular automata as simple point-and-click images.

Explorer provides a delightful form-based interface, which does all the work of generating models from your input values, and includes its own copy of the Mathematica kernel as the computational engine.

It's doubtful that the general user has enough of a background in statistical mechanics, cosmology, or the foundations of math to evaluate Wolfram's grander claims about the implications of cellular automata and their generated patterns, but Explorer targets just such an audience. Expect to see fairly exotic science-fair projects based on this program at hundreds of high schools in the next few years.—CHARLES SETTER

CONSISTENCY 1.0 X

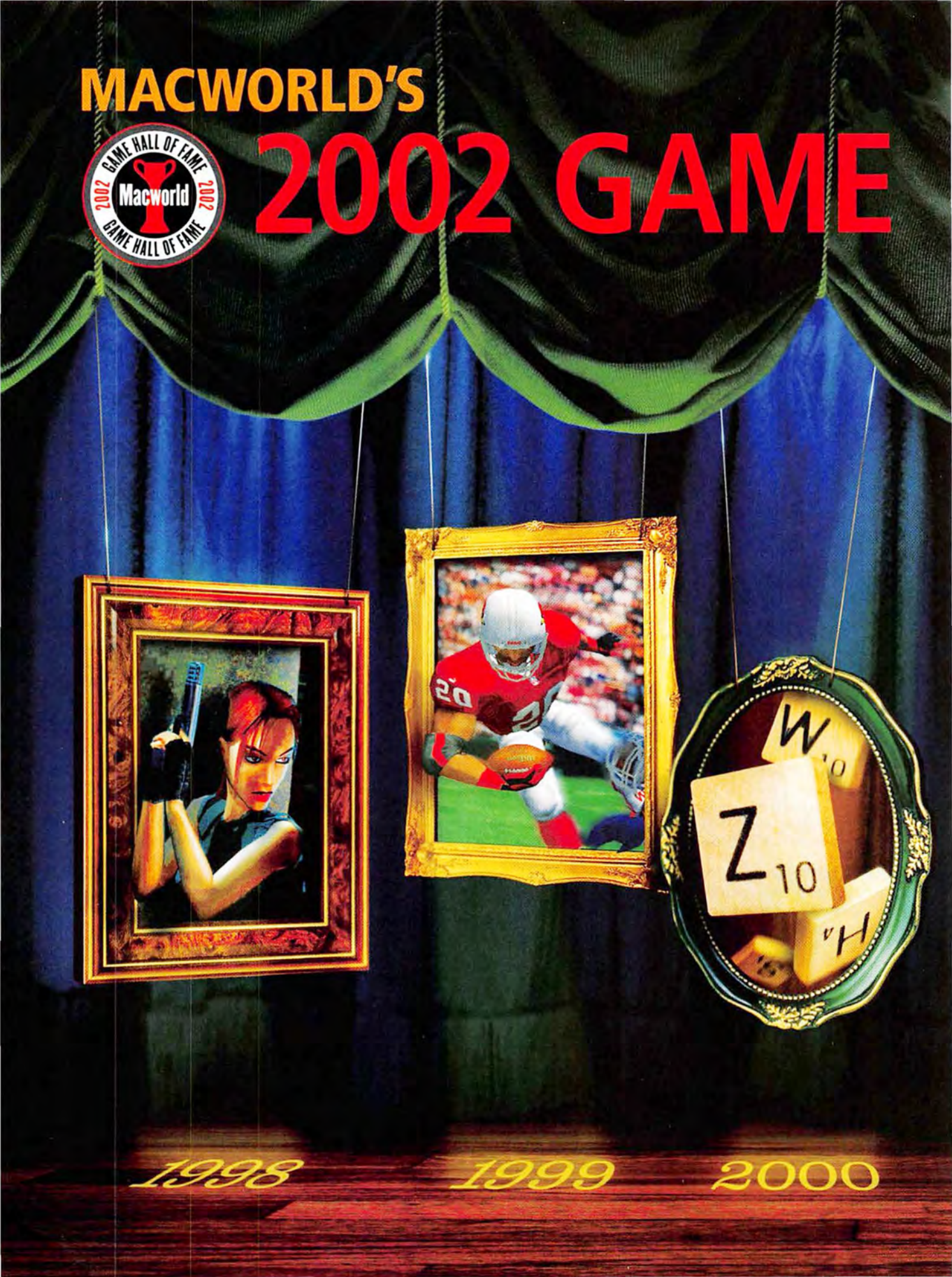
♦♦♦♦; Sciral, www.sciral.com; $20

If you're a chronic maker of to-do lists who isn't satisfied with the time-management help that either pen and paper or calendaring features provide, you should make time to check out Sciral's Consistency 1.0—an innovative approach to making sure the recurring tasks in your life that don't *quite* have set-in-stone deadlines get done.

Consistency's interface couldn't be cleaner or easier to interpret. It contains one window, with rows for tasks and columns for dates. Colored boxes mark the intersection of rows and columns, and these boxes indicate how soon you'll need to complete a task. Light blue means you don't need to do it yet, green means it's time, yellow means you're almost late, and red means that, for example, your goldfish may die soon if you don't feed it. You set the deadline parameters and double-click on the box when the task is done.

You'll need to keep Consistency up and running if you want to stay on track, but we look forward to seeing the program grow to include pop-up reminders even when it's not active. In the meantime, any well-designed tool that keeps us on top of things is worth $20 any day.—JENNIFER BERGER

MACWORLD'S 2002 GAME



HALL of FAME

BY | PETER COHEN

WARM UP YOUR
GAME PADS!
WE'VE GOT 11 OF THE YEAR'S HOTTEST, MOST ADDICTIVE GAMES.

2001 2002

PHOTO ILLUSTRATION © DAVIDJILIAN.COM

IT'S HARD TO BELIEVE THAT ANOTHER YEAR HAS COME and gone since I took over stewardship of the great Macworld Game Hall of Fame in Pittsfield, Massachusetts. It takes a lot of elbow grease to keep the brass and marble of this noble institution sparkling, but it's a labor of love—especially when I see the rhapsodic pleasure evident on the faces of the Hall's countless visitors. And who can blame them? Whether you prefer whiling away your day with a game of solitaire or killing time with some Uzi-toting action, we have something for you here.

While we're always busy, the onset of winter signals a particularly exciting time for us: it's when we once again roll out the red carpet to honor the best games of the year. And what a year it was—2002 marked the true arrival of gaming in Mac OS X. Rather than merely converting OS 9 versions of their games, game developers spent the past year demonstrating their commitment to Apple's new operating system and taking advantage of what OS X has to offer—they've improved performance; added unique features; and in some cases, created OS X–only titles. This year's winners are also notable for the depth and breadth of game play they represent across the entire gaming spectrum.

Here's a look at this year's inductees.

Pinball Wizard Re-create the golden age of pinball—with your Mac and Jinni Zeala.

Best Casual Game

Jinni Zeala Pinball

★★★★½

Although 2002 brought us an abundance of fantastic card and puzzle games, the top honor for casual games has to go to LittleWing's Jinni Zeala Pinball, published by MacPlay.

LittleWing has a long history of creating top-notch simulations of solid-state pinball games for the Mac—and Jinni Zeala is one of its finest to date. Unlike developers of computer pinball games that incorporate incongruous video-game elements and physically improbable board configurations, LittleWing prefers a more true-to-life approach. Jinni Zeala's board can stand up to a discriminating pinball fan's architectural scrutiny, and it features baroque and delicate artwork worthy of a game museum such as ours.

The inspiration for Jinni Zeala comes from the Arabian Nights tales. The playfield is an exuberant mixture of pop psychedelia and flashing Las Vegas neon. The ball moves realistically over a complex board that's chock-full of targets, ramps, and holes you can use to activate multiball modes. Collect items in the correct order, and you'll activate one of five different bonus stages; complete them all, and you'll get a chance to score massive points in the Flying Harem bonus stage.

What's Cool: Racking up killer combos for huge points, massaging flippers and banging the table without causing the dreaded tilt. **Who It's For:** Folks looking for an authentic pinball experience they can bring with them on their PowerBooks. **From:** MacPlay, 214/855-5955, www.macplay.com; $20.

Best Strategy Game

Stronghold

★★★★½

As a strategy game that successfully combines real-time play with an emphasis on military might and economic fortitude, Stronghold is definitely worthy of praise. And in a category populated by formidable challengers, this MacSoft title fittingly stood like a fortress on a hill.

The developers behind Stronghold are the same creative team that helped give rise to Caesar III, an epic city-building game that I had to delete from my hard drive to avoid losing sleep. Ditto for Stronghold, which shares some traits with that elder game.

Stronghold puts you in charge of alternately building and fortifying medieval castles or seeing to their destruction. It sounds simple, but there's plenty here to keep you engrossed. Success in Stronghold depends directly on your ability to create and maintain effective supply chains by harvesting raw resources (such as grain), refining them (into flour, say), then turning them into finished goods (for example, bread). As your needs and the needs of your vassals become more complex, so do these supply chains.

Besieged! Build or attack medieval castles in Stronghold, and keep your peasants happy, too.

Stronghold also features a collection of challenges, including economic scenarios that test your administrative capabilities, re-creations of historic battles, and a military campaign that tests your ability to fortify your castles against incoming assaults. You can even engage other Mac players online—if you're lucky enough to find them. And if you grow tired of Stronghold's built-in world, you can create and play your own maps or maps that other players create.

What's Cool: The level of detail in the artwork, which shows bubbling brooks, wild animals, and peasants going about

their business. **Who It's For:** Strategy-game buffs who have always dreamed of building—or laying siege to—medieval fortresses. **From:** MacSoft, 800/229-2714, www.wizworks.com/macsoft; $40.

Boneyard The Undead are just one of four armies you'll command (and fight) in Warcraft III.

Best Sequel

Warcraft III: Reign of Chaos

★★★★½

Too often, game developers try to cash in on the success of earlier games by simply tacking a few new features and a modified story line onto an existing game engine and calling it a sequel. It's rare that a developer is able to revisit an old favorite and turn it into something entirely new without diminishing it's original appeal. But with Warcraft III: Reign of Chaos, Blizzard Entertainment has managed to accomplish this and more—providing an excellent model for other game makers hoping to evolve their popular franchises to keep up with changing times.

In this latest installment, the game series that helped define the term *real-time strategy game* shifts its focus to more personal interaction. No longer are you fielding armies of Orc grunts against human warriors; in Warcraft III, you lead the charge as a hero who commands smaller, specialized units that must carry out more-complex tasks, such as establishing beachheads for invasions and rescuing towns from onslaughts of foes.

The game features terrific multiplayer action over LANs or via Battle.net, Blizzard's free Internet gaming service. But if you don't have a decent connection or don't feel like playing against other humans, you'll find tremendous challenge in facing off against the game's built-in opponents.

But the thing that truly sends me into the stratosphere about Warcraft III is its world editor. More than just a level editor, the world editor lets you create your own environments, using the Warcraft III engine as a starting-off point. It's flexible enough that you can use your own art and sound effects, and it allows you to script complex interactions with objects and computer-controlled characters. You have to be in OS X to use the editor—as it doesn't run at all in OS 9.

Blizzard Entertainment also deserves credit for getting Warcraft III out to Mac gamers at the same time as their PC counterparts. This is the first time it has been able to do that with a major release (although last year's Diablo II expansion pack, Lord of Destruction, was also a hybrid release).

What's Cool: New foes—such as Night Elves and the Undead—as well as compelling 3-D graphics that help pull you completely into the world. **Who It's For:** People who don't just want to play in a challenging fantasy world but also want to build one themselves. **From:** Blizzard Entertainment, 800/953-7669, www.blizzard.com; $50.

Best Kids' Game

Moop & Dreadly in The Treasure on Bing Bong Island

★★★★

As the father of three kids, I'm constantly disappointed by the dearth of truly original kids' games out there. That's why I was thrilled when Hulabee Entertainment introduced its imaginative and entertaining adventure game, Moop & Dreadly in The Treasure on Bing Bong Island.

Moop is a lovable purple creature (who resembles some sort of ape-and-cat hybrid) and constant companion to Dreadly, a rambunctious and imaginative youngster who has a special knack for getting himself—and Moop—into trouble. In this game, players help Moop and Dreadly go on a high-seas adventure. The duo must help the denizens of Bing Bong Island find their missing treasure while

BEST GAMING HARDWARE: THE X FACTOR

For true arcade junkies, few game controllers provide a more authentic arcade experience on the Mac than the $180 X-Arcade, from Xgaming (866/942-6464, www.xgaming.com).

The X-Arcade is manufactured from the same type of wood used by arcade-game cabinet makers, and it features two separate joysticks (for multiple players) and 20 buttons (including side pinball buttons) that look and feel like the real deal. And like arcade hardware, the X-Arcade is designed to take abuse.

Of course, all of this authenticity comes at a price: Be prepared to make some room on your desk for this mammoth toy. Measuring about two feet wide, almost a foot deep, and weighing in at a crushing 11 pounds, the X-Arcade is much bigger and heftier than any game controller I've ever seen.

The X-Arcade is modular, too. In addition to the USB adapter kit bundled with the Mac package, you can also buy adapters for popular home video-game console systems including the Sega Dreamcast, Sony Playstation 2, Microsoft Xbox, and Nintendo GameCube to maximize your use.

Where the X-Arcade particularly shines is in playing games using emulators such as MacMAME (www.macmame.org). It's about as close to the arcade experience as you can get without actually visiting one.

I readily admit that $180 is an almost absurd amount of money to pay for a game controller. Heck, it costs more than some people are willing to spend on video cards. But if you're a real arcade fan, your love for the hobby transcends mere currency.

¡Qué Divertido! In Moop & Dreadly, kids can choose to follow the story in English or Spanish.

thwarting attacks by nefarious pirates and saving damsels in distress. Along the way, they solve puzzles, unlock traps, and accomplish other feats of derring-do.

Moop & Dreadly has endearing animation and high-quality voice talent that will immediately appeal to fans of competitor Humongous Software's Junior Adventure series—which produced popular titles such as Putt Putt and Pajama Sam. Like those games, Moop & Dreadly proceeds in a linear fashion, so it won't be too frustrating for young players. Each screen also sports loads of *clickables*—hot spots that yield comical animations or sound effects when clicked on.

This is also one of the relatively few kids' games that run only on OS X to come out this year.

What's Cool: Each chapter of the adventure is introduced like the adventure serials of the Golden Age of Cinema. **Who It's For:** Kids aged five to eight (and kids at heart). **From:** Plaid Banana Entertainment, 800/289-7949, www.plaidbanana games.com; $20.

A LOOK AT THE YEAR AHEAD

As our thumb-weary selection committee can attest, 2002 was a terrific year for Mac gaming. And if the early buzz is any indication, 2003 promises to be just as stellar. Here's a glimpse at what you may see:

Sometime in the first half of the year, Mac gamers will finally find out what all the EverQuest fuss is about: the enormously popular role-playing game from Sony Online Entertainment (858/537-0898, www.station.sony.com) will be making its way to the Mac. EverQuest lets you explore an online world populated by beasts—both mundane and magical—while collecting treasures and other goods. You can play alone or team up with other players on quests.

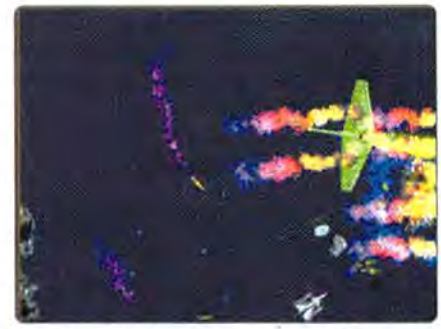
A game many Mac users had despaired of ever seeing on their platform will be released midyear, thanks to Bold—Halo: Combat Evolved (952/697-6055, www.boldgames.com). This legendary Bungie title was originally intended for both Windows and Mac OS, but then Bungie became part of Microsoft and Halo was instead released exclusively for Microsoft's Xbox. Halo is a 3-D–action game set on a fantastic alien world in which the Master Chief, a human soldier, must overcome the better-equipped forces of The Covenant, an alien collective bent on, among other things, the destruction of the human species.

If you find yourself twiddling your thumbs waiting for your favorite games' levels to load, you'll want to check out Dungeon Siege, Bold's fantasy role-playing game scheduled for release in early 2003 (952/697-6055, www.boldgames.com). Its game engine continuously loads scenery, keeping the action smooth.

Aspyr Media will keep bringing great games for sports enthusiasts. In 2003, Mac users will see the release of Tony Hawk Pro Skater 3, Nascar Racing Season 2002, and Tiger Woods PGA Tour 2003 (888/212-7797, www.aspyr.com).

On the shareware front, the folks at Strange Flavour and Freeverse Software plan to deliver Airburst Extreme (212/929-3549, www.freeverse.com), the sequel to a 2001 Game Hall of Fame honoree. This new title features more-varied game play, online gaming, and a wider range of characters.

We also hope to see Contraband Entertainment's Abducted sometime in 2003. It's a cinematic survival-horror game like Resident Evil, set in the futuristic recesses of an alien stronghold. Contraband promises to deliver cutting-edge 3-D effects, along with cross-platform editing tools that should keep hobbyist gamers busy.



Wild Blue Yonder Shoot down aircraft from many eras in WingNuts, an old-school arcade romp.

Best Old-School Arcade Game

Wingnuts: Temporal Navigator

♦♦♦♦♦

As a child of the eighties, I spent more than my share of lunch money and allowance at the local arcade. One of my favorite time-wasters was a Taito game called Time Pilot, which is unquestionably one of the biggest inspirations for Freeverse's excellent game, Wingnuts: Temporal Navigator—the only five-mouser in this list.

In Wingnuts, you're the pilot of a time-traveling aircraft, and you must down squadrons of robot-controlled aircraft programmed by the insane Baron von Schtopwatch, a wise-cracking bad guy with a penchant for horrid puns. You'll start by chasing slow-moving and delicate balsa-and-canvas biplanes. You'll then move forward through 30 levels of play—from World War I to the Jet Age to the modern age and beyond—as you fight against the forces of evil.

It's a simple premise, but it's fun and extraordinarily well executed. Wingnuts is encouraging proof that old classics can be updated for modern tastes and actually gain something in the process. OpenGL graphics technology is used beautifully in this game with intricately detailed animations. At higher levels, you'll be astounded by the sheer mass of aircraft flying around the screen at once. The sound effects are great, too—including the roar of individual engines, weapons, and falling shrapnel.

What's Cool: Attention to detail, such as shot-off airplane parts spinning and splashing into the ocean far below. **Who It's For:** Anyone with a Michael Jackson glove or a toreador jacket hidden in a closet. **From:** Freeverse Software, 212/929-3549, www.freeverse.com; $25.

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Best First-Person Shooter

Medal of Honor: Allied Assault

★★★★

The opening sequence of the movie *Saving Private Ryan*, set in Normandy, France, on D day, illustrated the true horror of war and offered a glimpse of just how brave the men who stormed those beaches were in the face of seemingly impossible odds. Medal of Honor: Allied Assault lets you experience a taste of that very battle—from your computer. It also lets you participate in many other missions drawn straight from what really happened in World War II.

Medal of Honor puts you in the role of Lt. Mike Powell, from the famed 1st Ranger Battalion. You're recruited to go on more than a dozen missions that will take you into Nazi-controlled territory throughout the European theater.

In a year populated by a lot of great first-person shooting games, Medal of Honor stands apart. Thanks to its Quake III Arena graphics engine, Medal of Honor looks fantastic, with careful attention paid to character animation. The game's artificial intelligence, which determines how computer-controlled characters act and react to what you're doing, is on the whole better than that of many 3-D–action games. The addition of realistic era weaponry (and the absence of giant zombie cyborgs or shambling corpses, à la Return to Castle Wolfenstein) makes it a challenging treat for hardened game fanatics.

GI Joe In Medal of Honor: Allied Assault, you'll take part in historic battles.

Nazis make for easy (and guilt-free) targets in this game's single-player missions. However, you can also hunt less-sinister targets by taking advantage of the game's great multiplayer capabilities. Medal of Honor's popularity on the Windows platform (and cross-platform compatibility) makes it easy to find other players online.

Medal of Honor: Allied Assault is a sterling example of a game that's greater than the sum of its parts—a rare treat in this day of plentiful first-person shooter choices.

What's Cool: Nazi characters who actually speak German, not "movie German." **Who It's For:** Anyone who's ever wanted to be Sgt. Rock. **From:** Aspyr Media, 888/212-7797, www.aspyr.com; $50.

Pop Star pop-pop combines brickbashing and combat in a hypnotic and frantic combination.

Best Retro Game with a Twist

pop-pop

★★★★½

Instead of merely updating old arcade games for modern audiences, some game developers throw in a case of Jolt cola and an electric shock, and mutate aging games into something completely new. Such is the case with Ambrosia Software's pop-pop. This crazy, psychedelic action game takes one of the original arcade game concepts—the brick-bashing Breakout—and mixes it with the fearsome combat of a martial-arts fighting game. The result is unmistakably challenging, addictive, hypnotic, and loads of fun.

Created by Andrew Campbell of BattleGirl fame, pop-pop has an enormously appealing visual style that's a bit Hello Kitty and a bit *Powerpuff Girls*, with a few triple-shot espressos added for good measure. To play, you control a *pop*—an animated character with a special power—and compete against a computer- or human-controlled opponent, smashing walls of bricks and collecting power-ups (energy boosters). You use power-ups to befuddle opponents, either by sending bricks their way or by tormenting them with whatever superpower your pop has managed to charge. My favorite, Ducky, sends out flotillas of rubber ducks to create catastrophic rebounding of balls and bricks. To win, you must clear your area of bricks before the other player does. The electronic soundtrack will delight your ears, and a background reminiscent of swimming in a reflective pond will mesmerize your eyes.

With its bright colors, lots of action, and great sound effects, pop-pop is the whole ball of wax. It'll make you wiggle your tushie like you're meshuga. The best part is, you can download it to try before you buy it.

What's Cool: Holding down the mouse button to keep the ball anchored to your paddle, for more precise control and release. **Who It's For:** Gamers looking for a novel approach to a tried-and-true gaming idea. **From:** Ambrosia Software, 800/231-1816, www.ambrosiasw.com; $25.

Best Games Rescued from Oblivion

Fallout and Fallout 2

★★★½, ★★★½

Thanks to its new owners, United Developers, MacPlay is once again at the forefront of Mac game publishing. While the company has mainly focused on bringing new titles to the Mac, it recently took the opportunity to revisit one of its most beloved titles. This past summer, MacPlay offered both Fallout—a postapocalyptic role-playing game originally released in 1997—and its sequel, Fallout 2, for OS X. This should delight old-school Mac gamers who long ago gave up hope of ever returning Fallout to their collections.

In both Fallout and its sequel, you don your leather and hockey pads, in best *Mad Max* style, and roam the land seeking parts and supplies to help equip a

Half Life When you visit the irradiated wastes of Fallout, don't expect much in the way of hospitality.

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Modern Primitive Dungeons and Dragons meets *Mad Max* in the adventure game Fallout 2.

ragtag bunch of fellow Armageddon survivors. Both games are rendered from an isometric perspective, just like more recent fare such as Baldur's Gate II or Icewind Dale (two other MacPlay offerings).

Despite their age, both programs make for compelling play. In some respects, Fallout and Fallout 2 are just as fresh and unusual as they were when they were first introduced (in fact, this is Fallout 2's premiere on the Mac). Of course, the genre has evolved since the games debuted, and some gamers may be put off by the rather plodding turn-based action, as well as by the limited graphics and interface.

Here's to hoping MacPlay can dig a few more hidden gems out of its catalog and update them for OS X.

What's Cool: An odd 1950s bit of "duck and cover" set in an alternate universe. **Who It's For:** People who watch *The Road Warrior* and wish they were there. **From:** MacPlay, 214/855-5955, www.macplay.com; Fallout, $20; Fallout 2, $30.

Best Third-Person Shooter

Max Payne

★★★★

The mean streets of New York. A rogue cop on the run for a crime he didn't commit. An underworld crime cartel he must stop at any cost. The worst blizzard anyone has ever seen. Nope, we're not talking about a very special episode of *NYPD Blue*. It's Max Payne.

Third-person shooters have long been a popular alternative to the first-person shooter. In these games, you track what's going on from a camera view set behind and above the main character, rather than through his eyes directly. But as a result, third-person shooters have suffered from a complete lack of precision when it comes to aiming and controlling weapons, especially ranging weapons such as rifles and guns. Targets are usually smaller and more distant, and the over-the-shoulder perspective can sometimes distort your perception of where things are.

The developers of Max Payne came up with an interesting solution: Bullet Time, a slow-motion trick that's straight from the movie *The Matrix*. Bullet Time lets you line up and squeeze off your shots in real-time while all the action (and, indeed, your own reflexes) continue at a slower rate. The bottom line is that it works, and it's one major reason why Max Payne is worthy of recognition in this year's Game Hall of Fame.

Bullet Time factors into your game play the same way health points and ammunition do—it's a limited resource you can replenish from time to time, but it must be used sparingly. That's good, because otherwise Max Payne would get old fast. There's no multiplayer mode in this game, so once you've played through the missions, you're more or less done.

Max Payne's developer took a lot of chances with this game, from the graphic-novel–influenced panels of interstitial artwork to the melodramatic voice-overs that fill up the film noir–style sequences with cheesy abandon. But all together, the game is really fun to play, and I'm certain we'll see Bullet Time put to good use in other games soon.

Copping an Attitude Max Payne is a rogue cop with cool moves and Bullet Time reflexes.

What's Cool: Pausing in the middle of a jump makes the camera rotate around you in a *Matrix* freeze-frame style. **Who It's For:** Anyone looking for an entertaining (albeit blood-soaked) noir yarn. **From:** MacSoft, 800/229-2714, www.wizworks.com/macsoft; $50.

Tin Soldier Otto Matic has his own reasons to hate vegetables—at least these alien mutated ones.

Best Adult Game in Kids' Clothing

Otto Matic

★★★½

The big-eyed robot and colorful, cartoony backgrounds may make you think that Pangea Software's Otto Matic is just for kids, but after a few minutes of getting beaten over the head by a giant robot-eating onion or chased by a shambling slime-blob, you'll realize you were sorely mistaken.

Otto Matic is a noble robot on an important mission to save humanity from the clutches of the Giant Brain from Planet X and his fleshy-headed minions. All that stands between them and total galactic domination is Otto Matic, who travels to Earth and various alien worlds rescuing human hostages, collecting power-ups, avoiding pitfalls, and beating back vicious flora and fauna that would just as soon reduce him to spare parts.

With flying saucers, killer tomatoes, a theremin-influenced soundtrack, and *Flash Gordon*–style ray pistols, Otto Matic revels in the trappings of vintage B-movie science-fiction classics. In fact, the self-effacing sense of humor and whimsy is unquestionably a hallmark of all of Pangea's finest games.

If Otto Matic has passed you by because you didn't purchase a new consumer Mac last year (it shipped on iMacs, eMacs, and iBooks), fear not—it's still boxed and on store shelves, thanks to Aspyr Media.

What's Cool: Using Otto's jump jets to hop over water and bash through barriers. **Who It's For:** People who watch *Mystery Science Theater 3000* and think, "Hey, that movie wasn't so bad." **From:** Aspyr Media, 888/212-7797, www.aspyr.com; $35. □

When he's not cleaning fingerprints and nose marks off the glass cases at the Macworld Game Hall of Fame, MacCentral.com Senior Editor PETER COHEN can usually be found reporting news and playing games in his subterranean Cape Cod office.

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PC to Mac

A Switcher's Guide to Putting Windows in the Rearview Mirror

BY | DAVID POGUE

MAYBE YOU'VE COME TO THE MAC because you love its look. Maybe friends, family, or Apple's "Switch" ads have persuaded you to give the Mac a try. But if you're a former Windows user finding your way onto the Mac for the first time—or a Mac veteran trying to help a Windows user make the leap—you're in for a lot of surprises.

In some ways, Mac OS X is more like Windows than any earlier Mac OS version, but it's still uncharted territory to former Windows users. This guide will help you get your stuff transferred from the PC to the Mac, find your way around OS X (especially version 10.2, also known as Jaguar), and learn what makes Mac fans so fanatical.

Moving Your Stuff

For most people switching to the Mac, the first question is "What about all my old files?"

Friendly File Formats Fortunately, most popular programs are sold in both Mac and Windows flavors, and the documents they create are freely interchangeable. For example, the corresponding Mac versions of these programs open and save Windows documents with nary a hiccup: Microsoft Word, Excel, and PowerPoint; FileMaker Pro; Macromedia FreeHand and Dreamweaver; Adobe Illustrator and Photoshop; and many more. Alas, you'll probably have to *buy* the Mac versions of those programs, although Macromedia, Adobe, and others often include both Windows and Mac versions in the same box.

Files in standard exchange formats don't need conversion, either. These include graphics formats such as JPEG, GIF, TIF, and PNG; Rich Text Format (RTF) and plain text (no formatting at all); HTML; QIF (Quicken Interchange Format); MIDI and MP3 (for music); and TrueType and OpenType fonts.

The Great Exchange You can move your files to the Mac in several ways. If you have a CD burner or an external hard drive, there's not much to it. After copying your PC documents to a disc or your device, insert the CD into your Mac or connect the external drive; then copy the files over. If your PC doesn't have a CD or DVD burner, you can use a network cable to connect it to your Mac (see "Building a Network for Two").

Once you've transferred your Windows files to your new Mac, two resources can make it easier to put them in the right places (your Palm Desktop files into the Mac's Palm folder, your digital-camera shots into the Mac's Pictures folder, and so on). The first, Detto's Move2Mac kit ($60; www.detto.com), which should be available by the time you read this, does the job for you. The second is Apple's How to Switch site (www.apple.com/switch/howto/), where you can read detailed instructions for doing it yourself.

Most files are a snap to transfer, but not everything will go quietly. For example, since there's no Mac version of Microsoft Access, bringing over your databases will take some work. You'll have to export the data and then import it into a cross-platform database program such as FileMaker. Unfortunately, this process will cause you to lose your layouts; if you can't live without them, it may be easier to buy Connectix's Virtual PC ($219 to $249; 650/571-5100, www.connectix.com)—a Windows simulator—so you can run Access on your Mac.

Using Strange New Hardware

Even after you've moved all your files and messages over to the Mac, you have one more thing to transfer: your brain. In the parallel Macintosh universe, you have to make a few adjustments to the way you use a mouse, a keyboard, and discs.

The Mac Mouse First off, you'll have a hard time using the Apple mouse to right-click on things, because it doesn't even have a right button. (Its single button is the equivalent of your PC mouse's left one.)

Instead, you produce shortcut menus (called *contextual* menus on the Mac) by holding down the control key as you click on things on the screen. Of course, you're welcome to provide your own two-button USB mouse—you don't even need to install driver software

Dock Tricks If you control-click on a folder or disk icon on the Dock (top), you get a pop-up menu of everything inside that disk or folder—a terrific form of X-ray vision with no Windows equivalent. If you control-click on an application icon (bottom), you can jump to any open window in that program or quit it altogether.

ILLUSTRATION BY WWW.MICHAELMEISTER.COM

Where'd It Go?

When you switch to Mac OS X from Windows, you may feel as though you've crossed into a foreign land. This alphabetical listing will help you track down some common Windows functions in OS X. The actual functions are pretty much the same—you'll just find them in different places.

IF YOU'RE SEEKING THIS WINDOWS FUNCTION . . .	. . . YOU'LL FIND IT HERE IN MAC OS X
About *name of program*	To find out the version number of the program you're using, don't look in the Help menu. Instead, check the application menu—the one that bears the name of the program you're in—next to the Apple menu.
Add Hardware control panel	The Mac doesn't require a program to install the driver for a new external gadget. The drivers for most printers, mice, and other accessories come preinstalled. If you plug in a device and it doesn't work, install the correct driver from the included CD (or the manufacturer's Web site).
Add Or Remove Programs control panel	Here's another one you just don't need on the Mac. To remove a program, you usually just drag its icon to the Trash.
BIOS	You'll never have to update or even think about your Mac's ROM (the approximate equivalent of a PC's BIOS). It's permanent and unchanging. Your Mac's similar *firmware* does occasionally require updating to work with a new OS version.
Control Panel	There is a Control Panel in OS X—but it's called System Preferences and is represented on the Dock by a light-switch icon.
Directories	Most people call these folders on the Mac.
Disks	Every disk inside or attached to a Mac is represented on the screen by an icon. You'll never see an icon for an empty drive, as you do in Windows, and there's no such thing as drive letters because the Mac refers to disks, not drives—and each disk has a name, not a letter.
Maximize button	On the Mac, the closest thing to the Maximize button is the Zoom button (the green button in the upper left corner of a window). Instead of expanding a window to fit the entire screen, however, it makes the window grow—or shrink—just enough to enclose its contents.
Minimize button	You can minimize an OS X window to the Dock just the way you would minimize a Windows window to the taskbar. Use any of these methods: double-click on its title bar, press ⌘-M, choose Window: Minimize Window, or click on the yellow Minimize button at the top left of a window. Restore the window by clicking on its Dock icon.
Properties dialog box	You can call up a very similar dialog box for any item (file, folder, program, disk, or printer) by highlighting its icon and choosing File: Get Info.
Registry	There is no Registry on the Mac. Let the celebration begin!

for it. The instant you plug it into your USB port, you'll be able to right-click on your Mac just as you did on your Windows PC. (Check the manufacturer's Web site for OS X drivers, though; these may give your two-button mouse even more features.)

Keyboard Confusion The two keys beside the spacebar will require a little adjustment, too. The option key is roughly the equivalent of a PC's Alt key; the Mac's ⌘ key, also called the command key, is your new Ctrl key. In fact, most of the Windows Ctrl-key combinations correspond exactly to ⌘-key sequences on the Mac. The Save command is now ⌘-S instead of Ctrl-S, Open is ⌘-O instead of Ctrl-O, and so on. (Mac keyboard shortcuts are listed at the right side of each menu, just as in Windows.)

Disc Differences If your Mac keyboard has an eject key in the upper right corner (its icon looks like an underlined triangle), hold it down for a moment to open the CD drawer or, if you have a slot-loading CD drive, to spit out any CD that's in it. If it's an older Mac keyboard without an eject key, substitute the F12 key. (This shortcut works more reliably in Jaguar than in earlier OS X versions.) You can also eject a CD or any other disc by control-clicking on its desktop icon and choosing Eject from the contextual menu.

You'll also discover that working with discs is very different on the Mac. For example, discs inside or attached to a Mac are represented on the desktop by icons. OS X does have something like the My Computer window (choose Go: Computer), and it may make you more comfortable. But both the desktop icons and those in the Computer window reflect only the discs currently inserted in your Mac. You'll never see an icon for an empty drive, as you do in Windows.

Key Equivalents

PC	MAC
Alt	option
Ctrl	⌘
right-click	control-click

Navigating in a Strange New World

Mac OS and Windows grow ever more alike. The latest version of each offers a built-in firewall and the ability to share a single cable modem or DSL among all the computers on a network. Both recognize file-name extensions (such as *.doc* for Microsoft Word files). But despite their similarities, the two operating systems are still extremely different in both operation and philosophy (for quick help, see "Where'd It Go?").

Getting Around For example, there's no Start menu in OS X. Instead, you stash the icons of frequently used programs, documents, and folders in the Dock at the bottom edge of the screen. (That is, the Dock is *usually* at the bottom edge; you can move it to either side of the screen, using the Apple menu's Dock submenu.)

As with the Start menu, you can rearrange these icons (drag them), remove the ones you don't use often (drag them away from the Dock and then release), or add new icons of your own (applications go to the left of the divider line, and documents and folders go to the right). You don't move the actual program files when you do this—you're just creating and rearranging pointers to them.

OS X doesn't have a taskbar, either. Instead, a small black triangle appears beneath the Dock icons of open programs. If you click and hold on one of these icons (or control-click on it), you'll see a pop-up list of the open windows in that program, just as you would in Windows XP (see "Dock Tricks").

On the other hand, some conventions never die. In Windows, you press Ctrl-Tab to cycle through open programs. Similarly, on the Mac, you cycle through the various open programs in your Dock by holding down the ⌘ key and pressing tab repeatedly. In OS X 10.2, you can also just *tap* ⌘-tab to switch from the program you're using to the one you used most recently. In fact, OS X 10.2 even offers a bonus feature

that's not available in Windows: you can press ⌘-tilde (~) to cycle through every open window in a *single* program.

Bailing Out Windows isn't the only operating system with a "three-fingered salute." When you need to bail out of a frozen program on the Mac, instead of pressing the standard Windows key combination, Ctrl-Alt-Delete, you press ⌘-option-escape (esc). When the Force Quit dialog box appears, click on the program you want to toss, click on Force Quit, confirm your choice, and then relaunch the program.

Stashing Your Trash You'll find the OS X Trash icon at the end of the Dock. In general, it works exactly like the Windows Recycle Bin—and why not, since the Mac's Trash Can was Microsoft's inspiration? However, there are a couple of differences.

The Trash doesn't empty automatically, no matter how full your hard drive gets. That job is yours. The simplest way is to control-click on the Trash icon and choose Empty Trash from the contextual menu.

The Mac never bothers you with an "Are you sure?" message when you throw something into the Trash—whether you've dragged a file's icon there or highlighted the file's icon and pressed ⌘-delete. In fact, it won't even ask for confirmation when you empty the Trash if you do it by control-clicking. The Mac interrupts you for permission only when you choose Finder: Empty Trash—and you can even turn off that confirmation if you like (in Finder: Preferences).

Changing Settings The Control Panel is alive and well in OS X, but it's called System Preferences, and it shows up on the Dock as a light-switch icon. Just like Windows' Control Panel, this window contains tools for adjusting your computer's clock, network connections, and power settings. You can view these icons either by category or in a simple alphabetical list: just choose either View: Show All In Categories or View: Show All Alphabetically.

Chatty Mac In the Speech panel in System Preferences, you can set up your Mac to read text, in any program, at the touch of a key. Better yet, download the two AppleScripts at www.apple.com/applescript/macosx/text2audio.html, and you can turn any text file into a *spoken digital recording*. Transfer these files to your iPod, and listen to your documents—from e-mail to electronic books—as you commute.

As for the Registry, IRQs, DLLs, and Blue Screens of Death—forget it. They don't exist on the Macintosh.

Working with Programs

In general, programs work on the Mac just as they do in Windows—double-click on one to open it, choose Quit from the application's menu to exit it—but there are a few important differences.

Today's Menu Once you're in a program and hard at work, you'll discover that the Mac has only one, ever-present menu bar. The menus change depending on the program and the window you're using. That means you won't find the menu bar inside *each window* you open; it will always appear at the top of the screen. One side effect of this is that closing all of a program's windows doesn't close the program. You must choose File: Quit (⌘-Q).

Building a Network for Two

If you're moving to the Mac and keeping your PC, or if you just want to transfer files directly between systems, you can connect your Mac and PC via a network. Every Mac has an Ethernet port, and most PCs do, too.

If you don't already have a full-blown network (that is, two or more computers connected by cables to an Ethernet hub), you can always buy an Ethernet crossover cable for about $10 and connect it directly to the two computers' Ethernet jacks.

To use the network trick, put all of the PC files you want to share into, say, the My Documents folder—and then share that folder on the network. On the Mac, choose Go: Connect To Server, and the corresponding dialog box will appear. Thanks to OS X 10.2's new networking software, the PC will show up automatically in the list. Double-click on its name (or on the name of the workgroup cluster if you have one). Type your name and password (if necessary), click on OK, choose the shared folder you want, and click on OK again.

Now the shared folder on the Windows machine will appear on your desktop with a network-drive icon, just as though you'd tapped into another Mac. From there, it's a simple matter to drag files from one machine's icon to another. In fact, you can go the other way, too: You can sit at your PC and view the contents of your Home folder on the Mac.

To prepare the Mac for visitation from a PC, open the Sharing pane of System Preferences. Turn on Windows File Sharing. Choose View: Accounts, and create an account if necessary. Click on your account name, click on Edit User, and select the Allow User To Log In From Windows option. When the Password Reset Required message appears, enter a password in both boxes (it's fine if it's the same as your old password), and click on OK. Click on OK again to get past the Keychain notice, and then click on Save. Your Mac is now ready for invasion.

On the Windows machine, open My Network Places or Network Neighborhood. Your Mac's icon should appear here, bearing a label like *Samba 2.2.3a (Robins-computer)*. (Samba is the Unix version of the SMB file-sharing protocol that Windows uses.) Double-click on the icon, sign in, and marvel at the instant appearance of your actual Home folder—on the PC. You're ready to open your files on either system, copy them back and forth, or whatever.

If your Mac doesn't show up in the My Network Places or Network Neighborhood window, try restarting the PC. The My Network Places window updates only once per session. If that doesn't work, go to the PC and click on the View Workgroup Computers link in the left task pane; in the next window, click on the Microsoft Windows Network link. Finally, double-click on the Workgroup icons until you find your Mac.

10 Mac Tricks Your PC Couldn't Do

You may have moved to the Mac because of its beauty, its polish, and its reputation for stability. But you also gained a big Welcome Wagon basket full of cool features that don't exist in Windows. And that's on top of the magic of free programs such as iTunes, iPhoto, iMovie, and iDVD. (See "Become an iExpert," April 2002, and "Go Pro with iDVD 2," March 2002, for help using some of these programs.)

1. Resize a Window Just Right The green globule icon at the upper left corner of every window is the Zoom button. Clicking on it resizes a window full of file or program icons so it's *exactly* large enough to contain those icons. (The corresponding Windows button resizes the window to fill the whole screen.)

2. Fill a Window with a Picture On the Mac, you can dress up the background of any icon-view window with a color or photo of your choice. Just choose View: Show View Options, turn on This Window Only (if you like), and then click on Color or Picture at the bottom of the window.

3. Wake Up Instantly from Sleep Mode If you have a laptop, you'll love this one: it turns on instantly when you open the lid and, just as elegantly, goes back to sleep when you close the lid.

4. Read Stuff Aloud The Mac can recite almost anything you like: text that the cursor hovers over, alert messages, menus, and any document in any program. It can speak in your choice of 22 synthesizer voices, aged 8 to 50. Visit the Universal Access panel in System Preferences (greatly enhanced in OS X 10.2). Make sure Enable Access For Assistive Devices is selected. Now visit the Speech panel in System Preferences. Select the Spoken User Interface tab (see "Chatty Mac"). When you select the Selected Text When The Key Is Pressed option, the Mac prompts you to specify a keystroke. Choose an obscure one—shift-option-Z, for example. In another program, highlight some text and press the keystroke you specified. The Mac will read that text aloud. There's no better proofreading technique than listening to your own work.

5. Respond to Voice Commands The Mac doesn't just talk; it also listens. It responds to a long list of commands, from "Empty the Trash" to "Quit all applications" to "Tell me a joke." To turn on speech recognition, go to the Speech panel of System Preferences. Choose the On option after Apple Speakable Items Is. A round blue window appears. Click on the triangle at its base and select Open Speech Commands Window from the menu. Here you'll see all the commands the Mac understands. When you're ready to talk to your computer, position the microphone 1 to 3 feet from your mouth. While pressing the escape (esc) key, speak. Talk normally; don't exaggerate or shout.

6. Switch While Saving When you save a file—for example, a Microsoft Word document—on the Mac, a little Save dialog box (a sheet) slides out of the title bar so you can give the file a name. On Windows, this box would commandeer your machine. But in the multitasking OS X, you can switch to any other Word window, do some other work, and return to the Save sheet at your leisure.

7. Remember Your Passwords Every time you connect to another Mac or PC over the network to share files, the Mac offers you a check box labeled Save To Keychain. If you select this option, the Mac memorizes these passwords so you don't have to retype them constantly. After all, you established your identity when you logged in to your Mac account—why type a million passwords unnecessarily?

8. Jump to Important Spots Speed demons know that using the mouse is for slowpokes. Both Windows and OS X offer full keyboard control of *menus*, but OS X even offers keystrokes for the most important *places* on the machine. You can directly open important folders—Applications, Computer, Home, your iDisk, Favorites—by pressing ⌘-shift and the folder's first initial. (Before OS X 10.2, you used ⌘-option instead.)

9. Tell You How Big a Folder Is In Windows, when you look at a window in a list view, you see only dashes for folder and disk sizes. That makes it awfully hard to figure out whether a certain group of folders will fit on, say, a CD you're about to burn. On the Mac, though, you can choose View: Show View Options, select Calculate All Sizes, and close the window. You'll see the folder sizes pop onto the screen as the Mac tallies the numbers for the files within (see "Sizes Matter").

10. Leave You Alone OS X requires no "activation" and no 25-digit CD serial number, nor do any bubbles ever pop up and nag you to join .Net, Passport, or some other Microsoft database. It's the OS that leaves you be.

Where the Apps Are When it comes to managing your programs, the Applications folder (choose Applications from the Go menu) is something like the Program Files folder in Windows. The difference is that you're *encouraged* to open this folder and double-click on things. And you'll never have to guess which icon therein represents the application you seek. On the Mac, all applications bear plain-English names. Microsoft Word's name, for instance, appears as Microsoft Word, not as the baffling WINWORD.EXE. Also, remember that there's no Start menu—in a way, the Applications folder takes its place. This folder contains your complete list of programs, as opposed to the greatest hits, which appear in your Dock.

Sizes Matter Only the Mac lets you see how much disk space each folder takes up. This illustration also demonstrates a nice Mac touch: every program bears a plain-English name.

Uninstalling Made Simple You don't usually need any special Remove Programs application to uninstall a program. Just open your Applications folder and drag the relevant program icon to the Trash. That's it—no need to worry that you're leaving destabilizing fragments behind.

The Last Word

Switching to the Mac isn't effortless, and Mac OS X isn't perfect. Still, over time, you'll discover hundreds of grace notes—little examples of fit and finish, from the rounded screen corners to the Simple Finder mode (for the very young and very clueless). And soon, you'll marvel at the perfectionism of the people who work at Apple. Yes, the smoothness, elegance, and beauty of the Mac may come as something of a shock to your Windows-acclimated sensibilities—but you'll get used to it. □

Contributing Editor DAVID POGUE (www.davidpogue.com) is the author of *Switching to the Mac: The Missing Manual* and *Mac OS X: The Missing Manual*, second edition (Pogue Press/O'Reilly, 2002). He also writes the weekly technology column *State of the Art*, for the *New York Times*.

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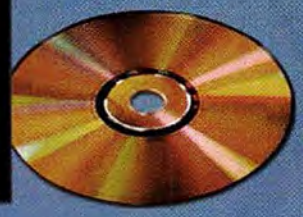

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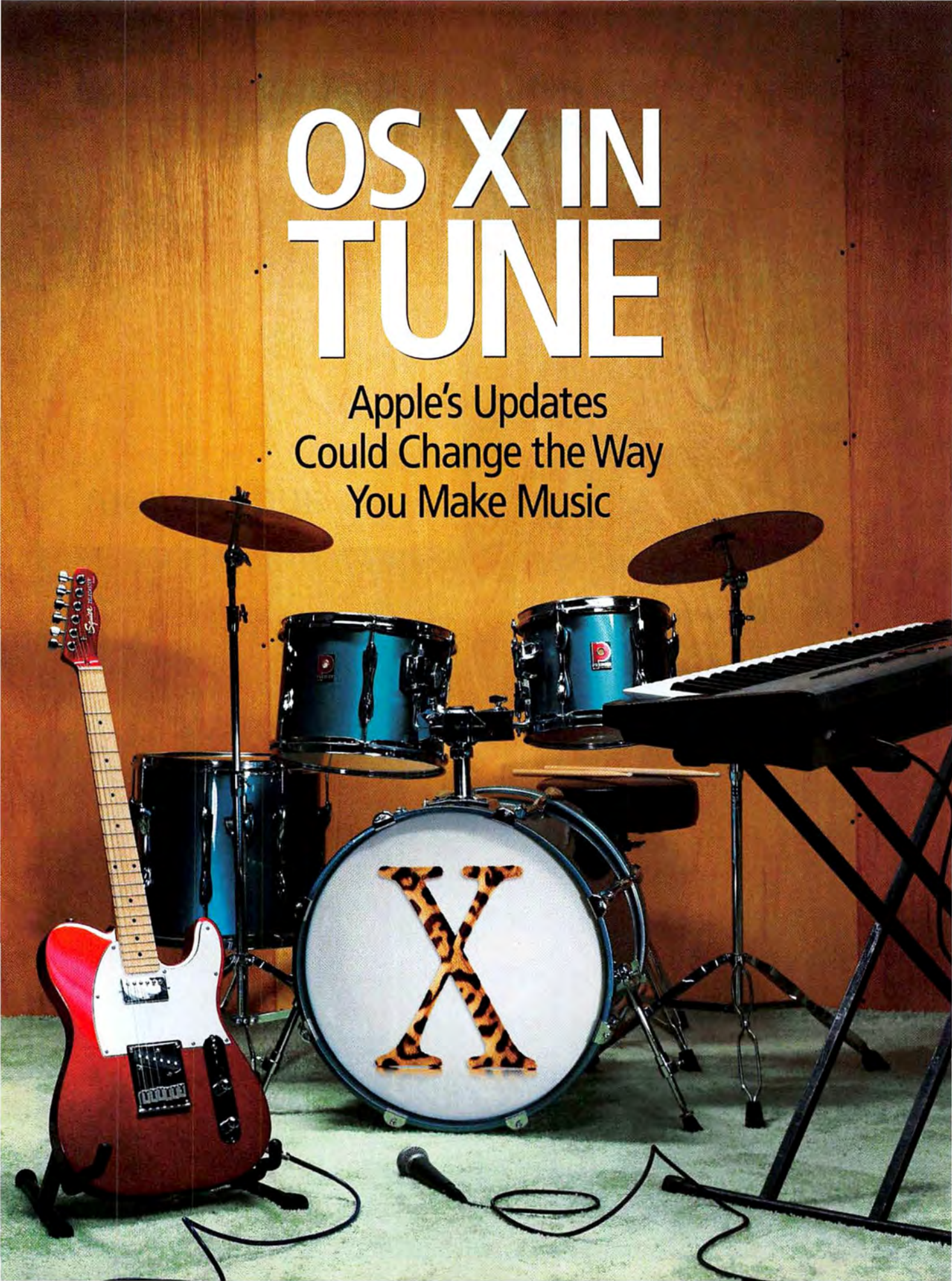
OS X IN TUNE

Apple's Updates Could Change the Way You Make Music



BY | CHRISTOPHER BREEN

Apple's traditional musical role has always been that of interested sideman rather than baton-ready conductor. With the release of Mac OS X 10.2, however, that has begun to change. By incorporating new audio, MIDI (Musical Instrument Digital Interface), and plug-in architectures into Mac OS, Apple is attempting to supplant the competing standards that have kept audio applications from harmonizing in OS 9. The company hopes that its universal standards will eliminate discord, allowing you to more easily configure your studios and to mix and match a greater variety of hardware and software. (For more on audio and MIDI apps that are either available now or coming soon, see "Good Times, Bad Times.")

We're here to examine Apple's work, how that work will benefit you (as well as the people who create the applications you use to make music on the Mac), and what you might see in the future. Get ready—the band's about to begin.

Break with the Past

To fully appreciate the musical changes wrought by OS X, you have to know what came before. Under the old Mac OS, Apple acted largely as a bystander in regard to audio and music on the Mac. Apple provided developers with the basics: Sound Manager, which was a collection of routines that allowed applications to play and record sound on a variety of Mac systems and audio hardware, and MIDI Manager, a set of tools that let Mac OS communicate with electronic musical instruments via the MIDI protocol. But both Sound Manager and MIDI Manager were too limited to satisfy music professionals: Sound Manager offered support for only two channels of audio, and it provided no support for the kind of high-resolution audio used in modern studios. And MIDI Manager was incapable of handling complex MIDI configurations that featured multiport MIDI interfaces (the hardware devices that allowed electronic musical instruments to communicate with the Mac).

As a result, third-party developers created competing standards. For example, Digidesign, Emagic, and Mark of the Unicorn (MOTU) created drivers for their audio hardware instead of using Sound Manager. Steinberg created the more adaptable ASIO (Audio Streaming Input Output) standard, which allowed audio hardware from different manufacturers to work with a variety of audio applications. To handle communication between MIDI instruments and Mac OS, the now defunct Opcode created OMS (Open Music System), and MOTU offered FreeMIDI. And then there were competing audio-effect plug-in standards—including Digidesign's RTAS (Real Time AudioSuite), MOTU's MAS (MOTU Audio System), and Steinberg's VST (Virtual Studio Technology).

This hodgepodge of standards was an inconvenience for both users and developers. Musicians using an audio-capture device from vendor X were unable to take advantage of plug-ins meant to be used with a similar device from vendor Y. And plug-in–creator Z, trying to address the desires of as many customers as possible, was forced to create multiple versions of its products.

Apple Steps In

With the advent of OS X, Apple saw an opportunity not only to incorporate professional-quality audio and MIDI functions—support for higher audio resolutions, for example—into Mac OS, but also to establish new standards for audio, MIDI, and plug-ins. It has done so with its Core Audio and CoreMIDI technologies. So what do these two technologies bring to the table?

More-Efficient Data Processing Core Audio handles data much more efficiently, allowing you to process files (to apply an effect, for example) more quickly. More-efficient processing also means that you can run more effects and virtual instruments simultaneously than you could in the past. Core Audio speaks the language of higher-resolution (such as 24-bit, 96kHz) audio, meaning that the Mac's processor needn't convert high-resolution audio files to a lower resolution for editing. Apple has made this scheme scalable, providing room for future high-resolution formats and allowing developers to use low-resolution audio. Game developers, for example, prefer low-resolution sound effects, which are less of a burden on the Mac's processor and allow them to devote the processor to pumping out more frames per second.

PHOTOGRAPHY BY TREVOR PEARSON

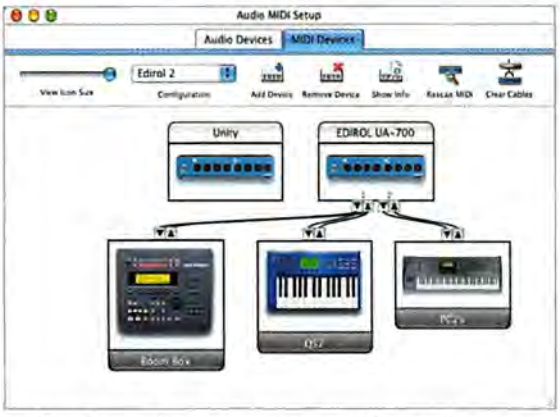
Faster Processing Core Audio helps move audio into and out of the Mac more quickly (this in-and-out process is termed *throughput*). In OS X you can, for example, play a software-based synthesizer, sing a vocal track, add effects such as reverb and delay to that vocal track, and expect your accompaniment and processed vocals to emerge from your Mac's speakers as you play and sing—without a noticeable lag between input and playback (this lag is called *latency* and is measured in milliseconds). In the past, long (and noticeable) throughput latencies in OS 9—about 22ms with virtual memory off and 90ms with virtual memory on—made such a feat impossible without the help of third-party hardware. By contrast, OS X offers throughput latencies of less than 3ms.

Scalable Multichannel Audio Support Unlike Sound Manager in OS 9, which limited the number of audio channels you could work with, Core Audio lets you use as many audio channels as your processor can handle. No longer must an audio application arbitrarily limit you to 12 audio tracks, for example—if your Mac's processor can handle 24 tracks, then 24 tracks you shall have.

Class Drivers To promote true plug and play, OS X includes generic drivers for USB and FireWire audio and MIDI devices. When compatible audio-input and MIDI devices are connected to the Mac, they immediately become available to applications that use Core Audio, and they tell the Mac exactly what their capabilities are. For example, Mac OS will automatically recognize that a MIDI interface has four input ports and four output ports or that an audio interface can support 8-, 16-, and 24-bit audio. In OS 9, such peripherals generally required a driver and had to be manually configured.

Single Standards for Audio and MIDI With Core Audio and CoreMIDI, Apple is assuming responsibility for how the Mac and applications communicate with audio hardware and MIDI devices. Apple's establishment of these standards profits both users and developers. When hardware and software aren't tied to a particular vendor's proprietary standard, you can use a greater number of devices and applications. And developers don't have to spend additional weeks tweaking their applications to work with a mass of different device and MIDI drivers (nor must a developer shy away from a particular standard because it wasn't hatched in-house). Less development time means that products and updates will get into your hands in shorter order.

One final benefit of an Apple-controlled standard is that a change in Mac OS is unlikely to bring your music-creation system to its knees. Updates to OS X have been known to "break" applications written with earlier versions of OS X in mind. With Apple responsible for the core functionality of audio and MIDI on the Mac, there's every reason to believe that these components will work properly with each Mac OS update.



Making Connections Configuring your MIDI setup is as easy as adding devices and dragging virtual cables between them.

A New Plug-in Standard In an attempt to establish a single effect and virtual-instrument plug-in standard, Apple has created Audio Units. An Audio Units plug-in can act as a virtual instrument (a software-based synthesizer, for instance) or as an effects processor (such as a reverb effect). Alternatives to current plug-in standards such as VST, RTAS, and MAS, Audio Units plug-ins work with the Mac's hardware. Unlike the plug-ins of these other standards, Audio Units plug-ins are built into the Core Audio infrastructure—you won't find an Audio Units plug-in folder in Jaguar, and the plug-ins appear as options only in the applications that support them. They also don't replace plug-ins designed for third-party hardware, such as Digidesign's TDM (Time Division Multiplexing) plug-ins. OS X includes Audio Units plug-ins such as a sample-rate converter, a reverb effect, and a DLS (Downloadable Sounds) synthesizer that can be directly accessed by any application that supports Audio Units—a future version of iTunes, perhaps.

Like universal audio and MIDI protocols, a single plug-in standard simplifies the lives of both users and developers. If you use a variety of audio applications, you needn't purchase redundant (and expensive) plug-ins. And developers—previously accustomed to writing several versions of a plug-in—can now create one Audio Units plug-in. This allows them to devote their time to creating newer and better plug-ins.

Although Apple would like to see the Macintosh audio industry settle on the Audio Units standard—and, in the process, end the battle of conflicting standards that makes working with audio and MIDI more difficult than it needs to be—there's nothing in OS X that prevents other varieties of plug-ins from working. If an application is built to support additional plug-in standards—as Steinberg's Cubase SX

sequencer supports VST plug-ins, for example—OS X won't thwart that application's efforts to use the plug-in. OS X requires only that plug-ins be updated to run in OS X (plug-ins designed for OS 9 and earlier are compiled in a different language and won't run in OS X).

Adoption of these standards is anything but certain. As we go to press, a number of developers have expressed interest in Audio Units, but only Emagic—a wholly owned subsidiary of Apple—has adopted the standard. Developers such as Steinberg and Digidesign continue to support their respective proprietary plug-in standards, VST and RTAS. MOTU hasn't indicated whether it will develop MAS for OS X.

Tomorrow's Technology Today

Given the powerful capabilities of Core Audio, it's surprising how little evidence of the standard is visible in OS X. Although you can select audio-input and -output devices in the Sound system preference, the means of configuring the nitty-gritty elements of audio and MIDI in Apple's new operating system can be found in a single application—Audio MIDI Setup (AMS). Located in the Utilities folder inside OS X's Applications folder, AMS consists of two tabbed windows, Audio Devices and MIDI Devices.

Audio The Audio Devices window is divided into areas for audio input and output (see "Audio Aid"). Within the input area, you choose the default input device from the Default Input pop-up menu (this can be the Mac's built-in audio—if present—or an attached audio-capture device). To adjust any of the audio-input devices attached to your Mac, select a device from the Selected Audio Device pop-up menu. Once you select a device, you can adjust its input volume if the device supports such an option (the Mac's built-in audio-input port doesn't, but a third-party audio peripheral might). You can also select the input source on devices that offer multiple sources (analog- and digital-audio inputs, for example). And finally, you can choose an input format from the Current Format pop-up menu—two-channel, 44.1kHz, and 16-bit, for instance, or one-channel, 22.05kHz, and 8-bit. Choices in the Current Format menu are limited to those channels,

Good Times, Bad Times

COMPANY	PRODUCT	PRICE	CONTACT	AVAILABILITY	COMMENTS
DIGITAL-AUDIO–PRODUCTION APPLICATIONS: These audio and MIDI music-production tools are at the heart of nearly every Mac musician's studio.					
Digidesign	Pro Tools 6.0	not announced	800/333-2137, www.digidesign.com	early 2003	Compatible with Pro Tools hardware; CoreMIDI support; TDM plug-in support.
	Pro Tools LE	not announced	800/333-2137, www.digidesign.com	early 2003	Compatible with Digi 001, Mbox, and Digi 002 audio hardware; RTAS plug-in support; Audio Units support unknown.
Emagic	Logic Platinum 5	$949	530/477-1051, www.emagicusa.com	now	Support for Core Audio, CoreMIDI, and Audio Units.
Mark of the Unicorn	Digital Performer	not announced	617/576-2760, www.motu.com	December 2002	Support for Core Audio, CoreMIDI, and plug-ins unknown.
Steinberg	Cubase SX	$799	818/678-5100, www.us.steinberg.net	now	VST plug-in support; no support for Audio Units.
VIRTUAL INSTRUMENTS: Software-based instruments have replaced hardware synthesizers, samplers, and drum machines in many studios.					
BitHeadz	Unity Session	$649	888/870-0070, www.bitheadz.com	now	Can be used within a sequencer that supports CoreMIDI.
Native Instruments	various plug-ins	varies by plug-in	866/556-6487, www.nativeinstruments.de	2003	Native Instruments plans to release OS X–native versions of its popular B4 Organ, Pro-53 analog synthesizer, and FM7 FM synthesizer plug-ins in 2003.
Propellerhead Software	Reason 2.0	$399	626/445-2842, www.propellerheads.se	now	Works as a stand-alone instrument and sequencer; requires ReWire support (currently missing in OS X) to work with sequencers.
LOOP-BASED COMPOSITION TOOLS: These song-building applications are popular tools for creating groove-based electronic dance music.					
Ableton	Live 1.5	$399	626/445-2842, www.ableton.com	now	Supports Core Audio, CoreMIDI, and VST plug-ins; OS X version operates as stand-alone application; can't currently be linked to other OS X music applications.
Arturia	Storm 2.0	$149	[33] (0) 4 38 02 05 55, www.arturia.com/en	now	Supports Core Audio, CoreMIDI, and VST plug-ins; OS X version operates as stand-alone application; can't currently be linked to other OS X music applications.
BitHeadz	Phrazer 2.0	$299	888/870-0070, www.bitheadz.com	now	Doesn't support plug-ins—uses program's built-in effects; OS X version operates as stand-alone application; can't currently be linked to other OS X music applications.
PROFESSIONAL AUDIO EDITORS: The primary audio editors have made their way to OS X.					
Bias	Deck 3.5	$399	800/775-2427, www.bias-inc.com	now	Core Audio and VST support.
	Peak 3.1	$499	800/775-2427, www.bias-inc.com	now	Core Audio and VST support.
TC Works	Spark 2.5	$499	805/373-1828, www.tcworks.de	now	Core Audio and VST support.

resolutions, and bit rates that are supported by the audio-input device.

The output area of the Audio Devices window is similarly configured. You'll find options for choosing the default output device—the Mac's built-in audio controller or an attached audio device—and the device for system output (system alerts). If a device allows you to adjust output volume, a slider for doing just that becomes active. And another Current Format pop-up menu lets you select supported channels, resolutions, and bit rates for the output device—handy if you have a sudden hankering to hear your iTunes played in mono, for example.

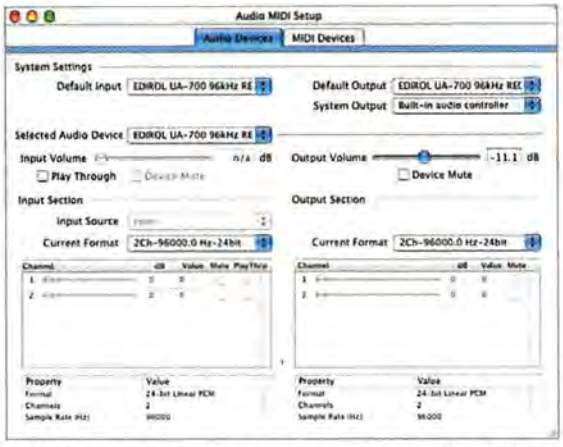
MIDI People familiar with the Opcode OMS Setup application will feel right at home with AMS's MIDI Devices window. Compatible USB MIDI devices (keyboards and MIDI interfaces, for instance) that are plugged in to the Mac appear as icons within this window (see "Making Connections"). Arrows attached to the device icon represent MIDI input and output ports. Within this window, you drag virtual cables—which mimic hardware connections—between the input and output ports on the keyboard and MIDI interface. To reveal a MIDI device's special options (the MIDI channels it transmits and receives, its ability to operate as a General MIDI device, and its System Exclusive ID, for example), you click on the device, click on the Show Info button, and click on the More Properties button.

The MIDI Devices window is also similar to the OMS Setup application in that you can create multiple configurations—useful if you have one MIDI setup at your studio and another at home. Unlike OMS Setup, MIDI Devices can't currently discover devices plugged in to the Mac, aside from compatible USB devices. You must manually add and configure each MIDI device. (Under OMS Setup, you add a device and scan the MIDI chain for devices, and the found device is automatically added to OMS Setup.)

Note that it's possible that your visits to AMS will be few and far between. Applications can be written so that you perform all audio configurations from within an application's preferences window.

A Trying Transition?

Rosy as the Mac's musical future looks, some people who work with audio will be slow to make the move to OS X. What are some reasons for their reluctance to change?



Audio Aid The Audio MIDI Setup utility offers a wealth of options for configuring audio input and output in Mac OS X.

The Cost For one thing, this transition will come at a price. Certain hardware devices—serial-port MIDI interfaces and some audio-capture devices, for example—will never be compatible with OS X and will need to be replaced by those that are. And plug-in effects and virtual instruments that work in OS 9 won't function in OS X's Classic environment and must be upgraded or replaced. The prospect of paying to upgrade scads of programs and plug-ins may deter some users. And because OS X works best with today's fast Macs, some may feel compelled to purchase a new Mac to gain the most benefit from Apple's audio architecture.

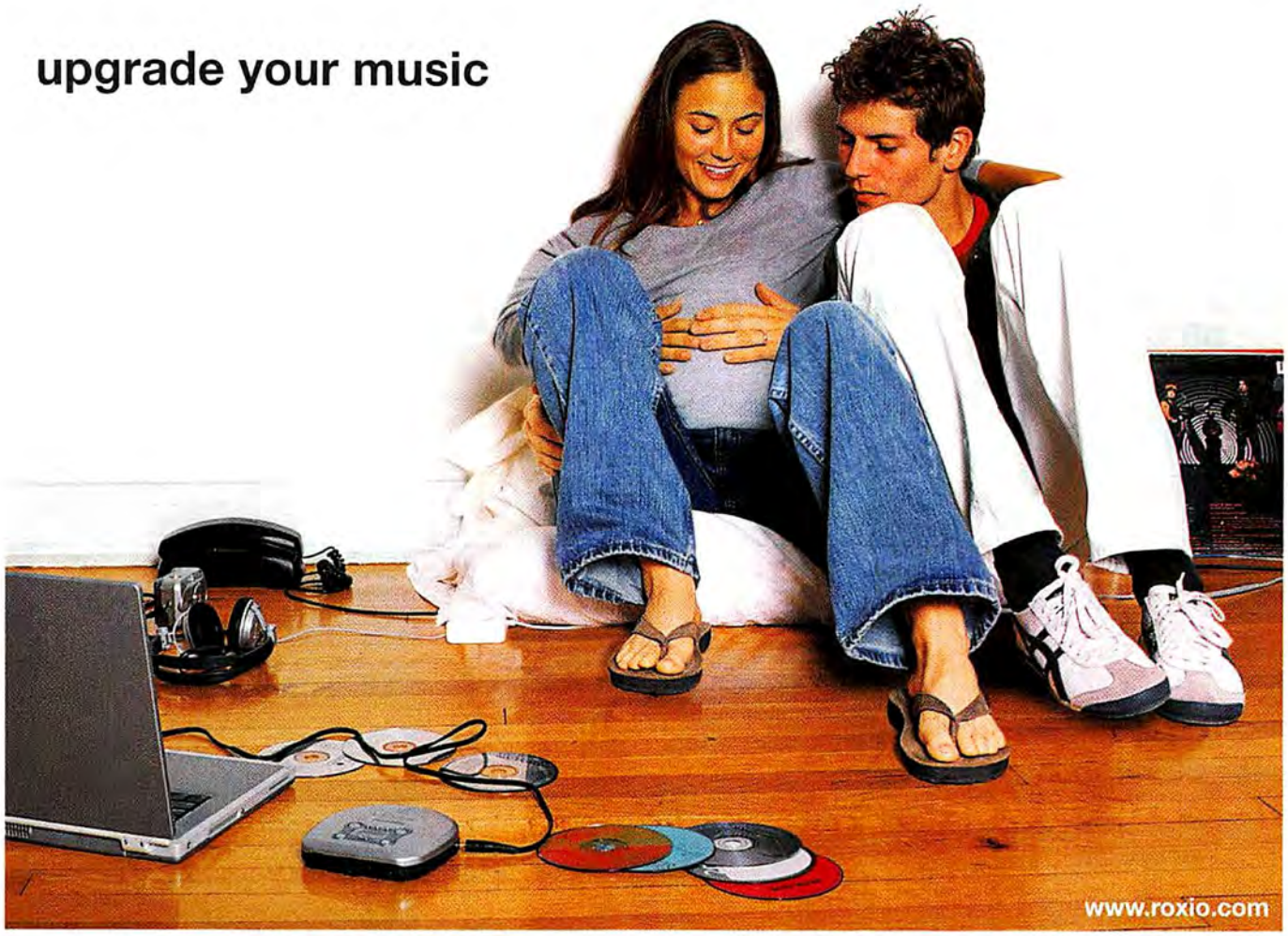
The Flux The unfinished nature of audio and MIDI in OS X is also bound to keep some people from upgrading. For example, if the portfolio of polkas you created in OS 9 depends on plug-ins unavailable in OS X, you'll definitely want to stick with OS 9 until compatible (or comparable) plug-ins are available. Also, Propellerhead Software's ReWire—a scheme that allows some virtual instruments to work with sequencing applications—is not currently supported in the new generation of OS X–compatible sequencing applications. This may be enough to keep some people from embracing OS X.

The Last Word

But rough spots such as these are to be expected, considering that Apple has completely overhauled the way music is made on the Mac. Fortunately, they're *only* rough spots. Apple's Core Audio technology brings much-needed order to audio. This solid foundation, if it's accompanied by the enthusiastic support of developers, hints at a harmonious future for music and the Mac. □

When he's not tapping rhythmically on his Macintosh keyboard, Contributing Editor CHRISTOPHER BREEN is a professional musician in the San Francisco Bay Area.

upgrade your music



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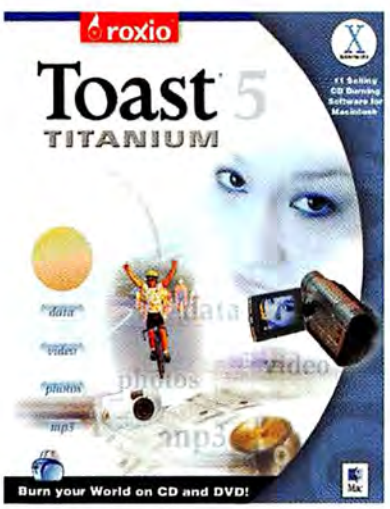

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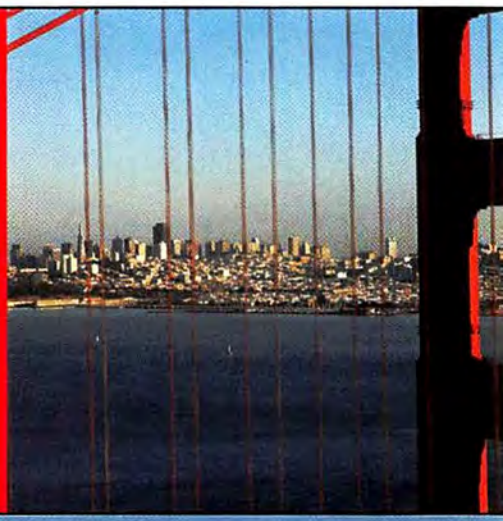

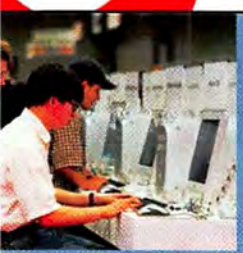

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Soup Up Your PowerBook

An inescapable truth in a technological world is that in order to keep up, one must trade up. Who, for example, would have imagined that the massively expansive 2GB hard drive in 1998's PowerBook G3 would be considered inadequate for today's modest library of MP3 files? Or that the original Titanium PowerBook G4's 64MB of RAM would be incapable of booting the version of Mac OS current in the waning weeks of 2002?

There's no need, however, to give up on your old PowerBook. The original PowerBook G3 Series (Wall Street) can still be a player—if it's given enough RAM and a big enough hard drive. Likewise, you can coax a reasonably powerful growl from Jaguar on an original PowerBook G4.

In the following pages, we'll show you how to replace the hard drive and upgrade the RAM in a Wall Street PowerBook G3 and a Titanium PowerBook G4. To complete the picture, look for our instructions for upgrading the two PowerBook models issued between them—the Lombard and Pismo PowerBook G3s—at www.macworld.com/2003/01/features/upgrade/index.html.

So slip on your grounding strap, unlatch the tool chest, and let's begin. □

Contributing Editor CHRISTOPHER BREEN dissects other Macs in his tips-and-troubleshooting tome *Mac 911* (Peachpit Press, 2002) and reveals the iPod's inner workings in *Secrets of the iPod* (Peachpit Press, 2002).

TOOLS

Grounding strap

Small Phillips-head screwdriver

Needle-nose pliers

Torx T-8 screwdriver

Plastic shim (two old credit cards may do)

POWERBOOK G3 SERIES (WALL STREET)

1 Prepare to Upgrade the RAM

If you looked at specifications alone, you'd think this PowerBook's maximum RAM capacity was 192MB. Small high-capacity RAM modules weren't available when the Wall Street was released, but they are now. You can actually install as much as 512MB of RAM if you put 256MB 144-pin SDRAM modules in both the user-accessible upper RAM slot *and* the supposedly for-Apple-techs-only slot beneath the processor card.

First, shut down the PowerBook and remove all attached cables. Pull the front expansion-bay release handles toward you to eject any inserted peripheral modules (the battery and the CD-ROM drive, for example). Place your index fingers inside the expansion bays and locate the ridged, plastic tab on the roof of each expansion bay. Pull the tabs toward you to release the bottom of the keyboard.

Lift the bottom of the keyboard, and pull it toward you to release the metal tabs that hold the top of the keyboard in place. Fold the keyboard back toward you, making sure not to tug on the keyboard's fragile—and breakable—connector ribbons.

2 Access the First RAM Slot

Now that you're inside the Mac, you can access the first RAM slot—but wait to put in the card if you're going to upgrade the hidden RAM slot, too. Be sure to use a grounding strap if one came with the RAM you purchased. If you don't have one, touch the metal hard-drive bracket to the side of the heat shield to discharge any static electricity.

Using a small Phillips-head screwdriver, unscrew the two screws that hold the heat shield in place A. Use needle-nose pliers to remove the screw

closest to you if your fingers can't grasp it. Pull the shield's wire handle toward you to remove the shield.

The white slot on top of the processor card is the PowerBook's user-serviceable RAM slot. If you want to upgrade the PowerBook via this slot only, insert a 144-pin SDRAM module (up to 256MB) at a 45-degree angle and press it into place so that the indentations on the side line up with the snaps on the retaining brackets B. (If your RAM upgrade is complete, skip to step 4.)

3 Access the Hidden RAM Slot

If you want to upgrade the Mac's other RAM slot, refrain from installing RAM in the top socket for the time being. The hidden slot is on the underside of the processor card (the user-upgradable RAM slot sits atop the processor card).

To reach the hidden slot, first unscrew the single Phillips-head (shown here) or Torx T-8 screw at the bottom left corner of the hard-drive bracket A. Pull up on the left side of the hard-drive bracket and lift it and the hard drive out.

Use a plastic (not metal) shim (a couple of old credit cards you're not attached to will do) to carefully pry up the right side of the processor card B. (Don't use a screwdriver! It can damage the processor card's delicate traces and destroy your PowerBook.) On the underside of the processor card, you'll see another white RAM slot filled with the PowerBook's original RAM. Remove this RAM by gently prying apart the retaining brackets until the module pops up. Replace it with a module no larger than 1.5 inches (the top slot can accommodate 1-, 1.5-, and 2-inch modules).

4 Put Back the Processor Card

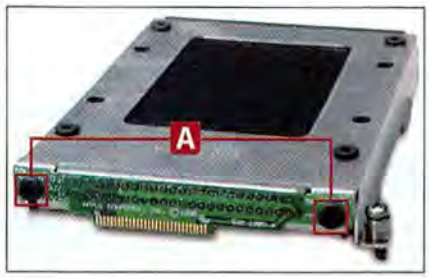
Replacing the processor card isn't difficult, but you must put it firmly in place. Your PowerBook won't boot up if it's not completely mated with the motherboard.

Slip the two plastic tabs on the left side of the processor card into the slots on the left side of the processor bracket, and press the processor card firmly into place.

5 Prepare to Upgrade the Hard Drive

All PowerBook G3 Series models use 2.5-inch IDE/ATA hard drives—either the Slim 12.5mm or SuperSlim 9.5mm varieties. In step 3 you learned how to remove the hard-drive bracket (and hard drive). To replace the drive, first remove the data connector.

Using a Torx T-8 screwdriver, unscrew the two screws that hold the green data connector to the hard-drive bracket A. Turn the bracket over so you can see the drive, and use a plastic shim (or a well-honed fingernail) to carefully separate the connector from the hard drive at the base of the connector. To avoid damaging the connection between the motherboard and the hard drive, don't pull on the green circuit board! Turn the bracket over, and remove the four black Torx T-8 screws that hold the drive to the bracket.



6 Reassemble with the New Hard Drive

Unlike hard drives intended for desktop computers, drives intended for laptops are always sold configured with master jumper settings—so you needn't worry about them.

Replace the drive, screw it into the bracket, attach the data connector, and press the new hard drive into place. Tighten the screw that holds the drive in position, and replace the heat shield. Put back the keyboard and expansion-bay modules. Plug in the power cord and any peripheral cables.

Finally, insert a system software CD. You'll need to format the new hard drive, so push the power button and hold down the C key to boot from the CD. If you've booted from a Mac OS 9 CD, launch Drive Setup, which you can find in the Utilities folder inside the Applications (Mac OS 9) folder. Select the drive in the Drive Setup window, and click on the Initialize button.

If you've booted from a Mac OS X Installer disc, select Disk Utility from the Installer menu, select the drive in the left side of the Disk Utility window, and click on the Erase tab. Choose Mac OS X Extended from the Volume Format pop-up menu, and click on the Erase button. Install Mac OS and enjoy.

continues

POWERBOOK G4 (TITANIUM)

1 Prepare to Upgrade the RAM

It's a piece of cake to upgrade your Titanium PowerBook's memory—there's no need to remove a processor card to access the second RAM slot. Over its lifetime, the PowerBook G4 has shipped with two different types of RAM: PC100 and PC133. To simplify your life, we recommend you buy PC133 144-pin SDRAM. This variety of RAM is easy to find and works in all PowerBook G4 varieties. (Only the older PowerBook G4 can accept PC100 RAM.)

After shutting down the PowerBook and removing its cables, press the two release tabs at the top of the keyboard and fold the keyboard toward you. If you're not using a grounding strap, touch the inner metal case near the PowerBook's power button.

The RAM in this PowerBook is contained in two slots that piggyback one another just to the left of the bottom of the keyboard A. Carefully pry apart the RAM brackets that hold the installed RAM in place, and replace the RAM with two higher-capacity cards. (The maximum is 1GB total.) Replace the keyboard when you're done.

2 Prepare to Upgrade the Hard Drive

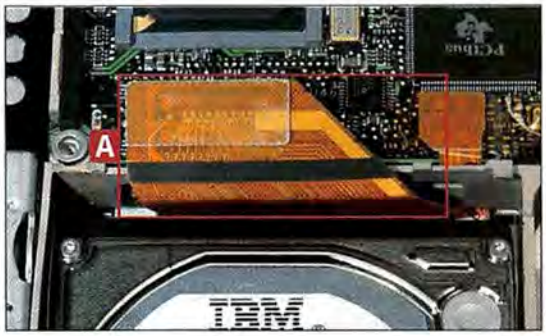
The PowerBook G4's hard drive is beneath the bottom cover. Get ready to remove a lot of screws.

Make sure that your PowerBook is off and that you've removed any cables. To avoid scratching the top of your PowerBook, place it, top down, on a nonabrasive surface. Remove the battery and the eight small screws that hold the cover in place A. With the screws removed, pull the cover toward you slightly and lift up.

3 Detach the Data Cable and Remove the Hard Drive

To avoid bending (and possibly breaking) the hard drive's data cable when you remove the drive, detach it now.

With your fingers, gently pull up on the dark orange hard-drive data cable attached to the motherboard A.



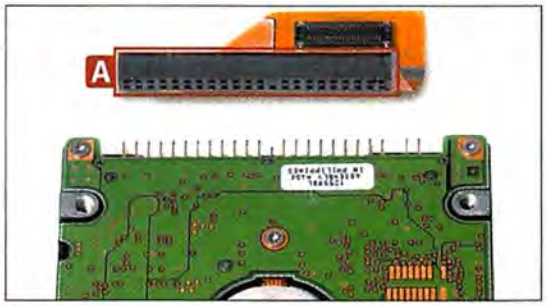
Use a Torx T-8 screwdriver to remove the two screws on the side of the battery compartment that hold the drive in place B. Using an old credit card or other stiff piece of plastic, pry up the back of the hard drive.

Thanks to four rubber grommets, the hard drive will offer resistance as you pull it out. The two grommets closest to the battery compartment are likely to remain in the hard-drive compartment.

4 Remove the Grommets, Insulator Sheet, and Data Cable

Before you can extract the hard drive from the internal bracket, you must remove the drive's accoutrements.

Remove the grommets, pull off the plastic insulator sheet, and carefully pull the data connector away from the drive. (Grasp the black connector rather than the orange data cable A.) Remove the remaining two Torx T-8 screws from the side of the drive. (The bracket doesn't come out with the drive.)



5 Attach the Accoutrements to the New Drive

The hard drive, grommets, data connector, and plastic insulator sheet all go back into the PowerBook as one unit. Here's how to assemble them.

With the name of the hard drive facing up and the data pins pointing away from you, screw two Torx T-8 screws into the left side of the drive. Place the two rubber grommets over these screws with the thickest portion of the grommet closest to the drive.

Attach the data connector to the drive so that the four pins to the left of the drive remain uncovered (these are for jumpers that you don't need). Attach the plastic insulator sheet. Now you're ready to put the new drive into your PowerBook.

6 Insert the Drive

It may be easy to access the Titanium PowerBook's RAM slots, but you'll have to work in very cramped quarters to put in a new hard drive. It's a tight fit, but you can do it.

Make sure the rubber grommets on the right side of the drive bracket are firmly in place. Position the drive sideways at a 45-degree angle so that the grommets on the left side of the drive line up with the holes on the left side of the drive bracket A. Push the drive into place and screw the two Torx T-8 screws into the right side of the hard drive from the battery compartment. Reattach the data connector to the motherboard.

7 Replace the Cover and Format the Drive

Perform this step carefully, as the bottom cover may not fit correctly the first time. The screws should go straight into the holes and not resist being tightened.

Place the cover just below where it should go, and push it forward into place. Be sure the screw holes are aligned before replacing screws. Replace the screws and the battery. Plug in the power cord and any peripheral cables.

Finally, insert a system-software CD into the media drive. You'll to need to format the new drive, so push the power button and do so (see step 6 in the Wall Street section). Install Mac OS, and enjoy your updated PowerBook.

THREE POWERBOOK UPGRADE TIPS

> **Which PowerBook do you have?** First released in 1998, the Wall Street PowerBooks can be identified by the multicolored Apple logo at the bottom of the display. (These were the last PowerBooks to bear that logo.) The original PowerBook G4, released in 2001, was the first to sport the Titanium case. (For a complete list of PowerBook release dates and code names, go to www.apple-history.com.)

> **Don't know your DIMMs from your DRAMs?** You're not alone. *SO-DIMM* refers to the form factor of the RAM module in most PowerBooks; it means "Small Outline DIMM." SO-DIMM is a smaller module (with 144 pins) than the 168-pin DIMMs found in desktop Macs. SDRAM is the type of RAM found in that module.

> **All RAM isn't created equal.** The Mac OS X 10.2 installer can fail to work properly if your PowerBook contains RAM that doesn't comply with Apple's specifications. Before you purchase additional RAM, it's a good idea to call the maker or check its Web site to make sure the RAM meets those specifications.

Dreamweaver Templates

A well-designed navigation system greatly improves a Web site's usability. But customizing navigation bars for each section of a site can be time-consuming—and when your boss later decides to remove a section from the site or add a new one to it, updating all your pages can book your schedule for weeks. You can avoid this chore by using the new optional regions in Macromedia Dreamweaver MX's templates. With a single template, you can build a flexible, easily updated navigation system—including section-specific elements—to serve your entire site.

Using Optional Regions

By consolidating elements that appear on every page of your site—such as navigation tools—in one location, Dreamweaver templates minimize the work of creating and maintaining pages that have a similar look-and-feel. A template is simply a Web page with some areas marked as editable and some as noneditable. After creating a page based on the template, you can change or add new content to the editable regions—the noneditable areas, however, remain untouchable. In this way, templates enforce consistency by preventing changes to shared page elements.

ILLUSTRATION BY ANDERS WENNGREN

But although the template features in previous versions of Dreamweaver were useful, they limited the flexibility of your pages. Since noneditable regions couldn't be modified on template-based pages, you often ended up with pages that looked identical. Subtle changes, such as highlighted navigation buttons on pages in one section of a site, weren't possible without multiple templates, which meant more pages to update.

To address this issue and give templates greater flexibility, Macromedia introduced optional regions in Dreamweaver MX. An optional region is a chunk of HTML that you can either display or hide on any page created from the template. For example, a template for pages containing news stories could include an optional region with a sidebar for links to additional articles. When adding new stories to the site, you could display this sidebar on pages that needed it while hiding it on others. An optional region can include any mixture of editable and noneditable content.

Even better, you can use optional regions to create a sitewide navigation bar that changes appearance to reflect which section you're in and displays appropriate secondary navigation tools, all from a single template. Here's how:

Step 1: Make a Template

To get started, design a basic page and save it as a template (File: Save As Template). So that people can add content to pages built from the template, you need to add at least one editable region—a single paragraph, for example, or a table that will hold the page's main content. Select the area of the page you want to make editable, and choose Insert: Template Objects: Editable Region. In the New Editable Region dialog box, enter a name for the region and click on OK. Don't create an editable region for the area where the navigation bars will appear.

Step 2: Build the Navigation Bar

Now you can add the navigation bar to the template. Each button in the navigation bar will represent a section of the site and have two possible appearances. The highlighted version will indicate that the active page is in the section the button represents; the regular version will indicate that the page is in another section. On the template, you'll add both versions of each button—either side by side, if the navigation bar runs horizontally across the page, or one on top of the other, if it runs vertically down the side. (The navigation bar on your template will end up being very wide or very tall. Don't worry—only one version of each button will appear on a template-based page.)

To start, insert the highlighted version for the first navigation button into your template and add a link to that section's main page. Next, insert the regular version of the first navigation button—a rollover image works well for this. To add it to a horizontal navigation bar, click to the right of the button you just inserted; for a vertical navigation bar, do the same thing and then press shift-return to insert a line break. Again, link the button to that section's main page.

Continue this process until you've added two versions of each button in the navigation bar.

Step 3: Add Optional Regions

To show the appropriate navigation buttons for each page, you'll need to set up optional regions on your template. Select the first button in your navigation bar. Make sure you've also selected its hyperlink by clicking on the <a> tag in the Tag Selector, located in the lower left corner of the document window (see "Tag, You're It").

To turn this button into an optional region, choose Insert: Template Objects: Optional Region. In the New Optional Region dialog box, enter a name for the region (a good choice would be the name of the section to which it links—for example, Products). Don't use spaces or punctuation marks.

Deselect the Show By Default option—by default, you'll want to hide this button and display it only in pages that are part of this section of the site. Click on OK. To identify the new optional region, Dreamweaver adds a light blue tab, labeled "If" followed by the name you provided.

Next, you need to create a way to toggle between the two button options as you build pages. To do this, you'll use Dreamweaver MX's basic template language to add a bit of programming logic to your buttons.

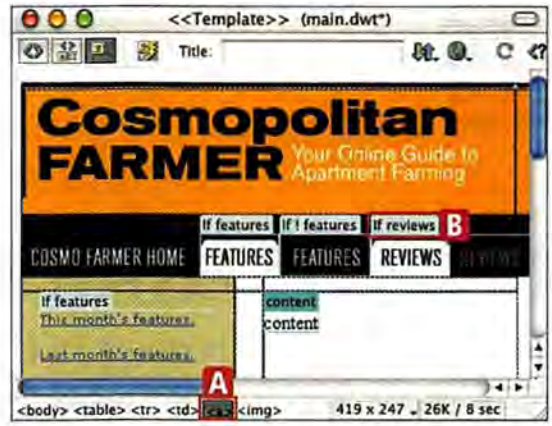
Select the second button and its hyperlink. Again, choose Insert: Template Objects: Optional Region. Click on the Advanced tab. Select the Enter Expression option. In the text field below, type ! followed by the name of the first optional region: !Products, for example. The exclamation mark is a logical operator meaning NOT. In other words, this instructs Dreamweaver to display this optional region if the Products region is *not* visible. (As a result, this is the button that will appear by default on template pages.) Repeat this process for each pair of buttons on the navigation bar.

Step 4: Create a New Page

You're now ready to build pages for the site. Choose New from the File menu. In the resulting dialog box, click on the Templates tab, select the template you just created, and click on Create.

More Info:

www.macworld.com/2000/07/create/easy.html
Visit Macworld.com for more tips on using Dreamweaver's template features.



Tag, You're It
Dreamweaver's Tag Selector offers precise control for selecting an HTML tag and any other tags nested inside it. In this case, clicking on the <a> tag A selects the link and image for the Reviews button. Once you've defined a button as an optional region, Dreamweaver places a blue "If" tag around it B.

None of the buttons in the new page's navigation bar will be highlighted. To highlight a button, indicating which section of the site the page is in, choose Modify: Template Properties. The Template Properties dialog box will appear, listing the template's optional regions—one for each navigation item. (The optional regions you created using the Advanced tab don't appear.) Choose the button you want to highlight from the list; then choose the Show option. Click on OK. The selected button will be highlighted.

Designers concerned about creating compact HTML will be pleased to note that using optional regions won't bloat their code. Dreamweaver automatically removes the code of hidden optional regions on a template-based page.

Step 5: Add Subnavigation

You can take this process even further by having a unique, secondary navigation bar for each section. For example, say you want your pages to contain a main navigation bar along the top and a section-specific navigation bar along the left side.

Open your original template file. Add secondary navigation bars for each section of your site to the left side of the page, one under the other. To help keep things organized, consider placing each section's subnavigation bar in a basic one-cell table.

Next, select the first subnavigation bar and turn it into an optional region. In the New Optional Region dialog box, click on the Advanced tab and select the Use Parameter button. From the pull-down menu to the right, choose the name of the section where the secondary navigation bar should appear.

This ties the new optional region to the display of that section button. If the button is highlighted, the secondary navigation bar for that section appears. Now when you activate an optional region on your template-based page, Dreamweaver modifies the main navigation bar *and* adds the appropriate secondary navigation bar. It couldn't be simpler.

And since all the navigation options are defined in a single template, you can update the entire site's navigation system by editing one file and letting Dreamweaver update every page in the site. □

DAVID SAWYER McFARLAND is a Web developer and the author of *Dreamweaver MX: The Missing Manual* (Pogue Press/O'Reilly, 2002).

Presentation Power Tips

You've spent weeks in Microsoft PowerPoint polishing a critical sales pitch. But when you load the presentation onto the Windows machine in the conference room, video clips vanish, text bleeds off the edge of the screen, and pictures are unrecognizable. Your presentation is ruined. With a little planning, you could have avoided this PowerPoint meltdown. Here are some strategies for making sure your slide show looks great on any Mac or Windows PC.

Know Your Computer

Although Microsoft PowerPoint has become the standard for creating slide-show presentations, using the program won't guarantee a flawless production. Support for PowerPoint features can vary widely from version to version—not to mention across platforms.

The only surefire path to a trouble-free presentation is to create and show it on the same computer. Then your only concern will be hooking up your Mac to the available projector (see "Making the Right Connection"). But using your own machine isn't always an option. If you attend a large conference, you may have to use a different Mac or even—heaven forbid—a Windows computer to display your work.

ILLUSTRATION BY NEIL LESLIE

The best way to avoid unpleasant surprises is to know what you'll be dealing with. The more details you have on the hardware and software you'll have at your disposal, the easier it will be to create a presentation that works within those confines. Windows PCs are more of a challenge, so we'll start there.

Designing for Windows

Unless the display PC is more than five years old, it probably has PowerPoint 97, 2000, or 2002 installed. While these Windows versions usually have no problem *opening* Mac presentation files, they're less dependable when it comes to displaying what's in them. Each version has its own quirks and limitations. The trick, then, is to craft the elements of your presentation—including fonts, images, and movies—to compensate for these idiosyncrasies.

Use Foolproof Animations Animations let you add interest to presentations while emphasizing important details, but support for them varies from version to version. If you don't know which version of PowerPoint the display computer will be running, limit yourself to simple entry animations, such as Fly In, Appear, and Dissolve. And since neither PowerPoint 97 nor PowerPoint 2000 supports exit animations, triggered when you move to the next animation on a slide, avoid them altogether.

Sadly, no matter which version of PowerPoint is on the display PC, QuickTime transitions won't work—even if QuickTime for Windows is installed. Stick to PowerPoint transitions instead.

Be Image Conscious If you're including graphics in your PowerPoint presentation, avoid using Mac-specific image formats such as PICT. All images should be in cross-platform formats such as JPEG, TIFF, or GIF. Also, never cut and paste or drag images into your presentation, as they may appear distorted or may not show up at all. Instead, take the time to import graphics correctly with PowerPoint's Insert Picture command.

Remember that PowerPoint is not an image editor. Once you've inserted an image into your presentation, don't resize or rotate it with PowerPoint, or it may display improperly. Whenever possible, edit your graphic in a separate image-processing application before adding it to your PowerPoint file.

Avoid Obscure Fonts It's tempting to dig deep into your font collection to dazzle your audience. Alas, if the typefaces you use aren't installed on the Windows computer, PowerPoint will substitute fonts—with unpredictable results. Since you probably won't know in advance what fonts the PC has, it's best to stick with Office standards such as Arial, Times New Roman, Helvetica, Courier, and Symbol. This also applies to presentations intended for another

Mac. (Unlike PowerPoint for Windows, the Mac version doesn't let you embed fonts in a presentation file and take them with you.) If you need to change unsupported fonts in a finished presentation, use the Replace Fonts feature, in PowerPoint's Format menu, to swap fonts in a jiffy.

Of course, if you absolutely have to use a Mac font that has no PC equivalent, you can import it into your presentation as a graphic. Create the text in any painting or drawing application, save the document as a graphic file, and insert it into your presentation. Keep in mind, though, that you won't be able to edit the text or its background once you've placed it into PowerPoint.

Prepare Perfect Movies No PowerPoint glitch causes more frustration than video clips that refuse to play. Although QuickTime movies usually run without a hitch on a Mac, PowerPoint for Windows often balks when asked to display movies inserted in Mac PowerPoint presentations—even if QuickTime for Windows is properly installed on the computer. That's because the Windows version of PowerPoint can play back QuickTime movies only if they use *codecs* (compressors/decompressors) that are compatible with Media Control Interface, which handles multimedia playback on Windows PCs.

To prepare your movies for playback in Windows PowerPoint, use Apple's QuickTime Pro media player ($30; www.apple.com/quicktime). From the QuickTime Pro Export menu, choose a compatible codec (such as BMP or Cinepak) or Microsoft's standard AVI format (see "Cross-Platform Video"). If it's at all possible, apply the codec to the original—uncompressed—copy of your movie, since recompressing affects image quality. Then insert the newly converted movie into your PowerPoint presentation.

Even if your movies are in the proper format and the right place, PowerPoint may refuse to play them. If that happens, open the presentation on the Windows PC and manually delete and reinsert every movie in the file. Everything should then play smoothly.

Take It with You When you're ready to pack up your Mac PowerPoint presentation and hit the road, make sure you don't leave anything behind. A good way to prevent missing elements is to use PowerPoint X's Package feature (Save As: Format: PowerPoint Package). This collects the presentation file, including any linked movies, sounds, and images, and places them into one folder for you. If you're not sure which version of Windows you'll be using, restrict yourself to eight-character file names with three-letter extensions—for example, slidesho.ppt.

CD-Rs and CD-RWs are fine for getting all but the largest presentations onto a PC. Be sure to burn them in ISO 9660 format, as Windows can't read HFS-formatted volumes. To ensure the best performance, copy your files directly to the display PC instead of running the presentation from removable media.

Test on Windows Of course, the best way to tell whether your presentation will run properly is to load it on a Windows PC that's set up just like the display computer. Even in Mac-based organizations, it's seldom difficult to find a Windows PC that has PowerPoint installed. If a Windows machine is not available, Connectix's Virtual PC (650/571-5100, www.connectix.com) lets you use your Mac to practice in a Windows environment. (Prices for Virtual PC range from $219 to $249, depending on the Windows version you need to emulate.) Although it's slow, Virtual PC is more than adequate to test presentations for Windows compatibility. This is also a good opportunity to make sure the disc you'll be using to transfer your presentation is readable.

Cross-Platform Video QuickTime Pro lets you convert movies to AVI format using Windows-compatible codecs.

Designing for Macs

If you're fortunate enough to have another Mac for your presentation computer, you won't have to deal with any cross-platform issues. That said, you'll still have to ensure that your fonts and movies are compatible. PowerPoint X, the latest release, should have no trouble displaying PowerPoint 98 or 2001 files, but the opposite may not be true. The earlier versions don't support some features, such as object transparency. (It's doubtful that you'll have to use a release older than PowerPoint 98, but it pays to check.)

Adjust the RAM PowerPoint tends to be a memory hog in OS 9 and in Classic mode. If your presentation contains many images or movies, increase PowerPoint's RAM allocation to at least 50MB—more if enough physical memory is available. (Because of its improved memory management, this isn't an issue with OS X.)

Make QuickTime Compatible Newer versions of QuickTime handle older movies without missing a beat. But if you find yourself stuck with an aging Mac that can't support the latest and greatest version of QuickTime Player, use the Cinepak codec, which is compatible with early versions of the Player, to compress your movies first in QuickTime Pro.

Presentation 911

Unfortunately, you can't always know in advance what computer you'll be using on the road. And no matter how meticulous you are, problems have a way of cropping up at the last minute. This is why

continues

it's always a good idea to do a dry run at the presentation venue. Should the worst happen and the display computer's version of PowerPoint refuse to play your show, you can still save the day if you pack an extra CD loaded with substitute presentation software and copies of your slide show in a variety of alternative file formats. Here's what you should bring:

PowerPoint Viewer Microsoft's free viewer application lets you show PowerPoint presentations on computers that don't have the full application installed. When packing up, make sure you take the *installer*—not the actual viewer application.

The Windows version (which you can download at www.office.microsoft.com/downloads/2002/ppview97.aspx) is compatible with Windows PowerPoint 95, 97, 2000, and 2002 files, and it works with Mac presentations. The Mac version of PowerPoint Viewer (available at www.microsoft.com/mac/download/office98/powerpoint98viewer.asp) doesn't run natively in OS X but does work in the Classic environment.

MAKING THE RIGHT CONNECTION

Unless you want to lug a display around whenever you give an electronic slide presentation, you'll have to use whatever video projector is on hand. Most Mac laptops work fine with current projector models. But if you don't pay attention when you hook up your Mac, you could end up with a blank screen. Unfortunately, AV technicians often aren't Mac-savvy, so it's up to you to know what to do. Here are some tips to follow:

Know Your Cables Before you leave home, always make sure you have the appropriate cables for your Mac. Most Mac portables (from the PowerBook 2400 to current models) have VGA ports that are compatible with the cables that work with Windows PCs—simply connect one end of the cable to the video port and the other end to the projector. There are, however, a few exceptions. For example, the latest Titanium PowerBooks have DVI ports for connecting to digital monitors. This means you'll need a DVI-to-VGA cable, which is usually included with the laptop.

Early, non-FireWire iBooks don't have video ports and hence can't be used for presentations. You can connect a FireWire iBook to a projector; however, its composite video port won't display crisp graphics or text. Still, it's acceptable in a pinch.

Some older PowerBooks (including the 5300 and 1400) sport mini-15 video ports, which aren't compatible with standard VGA cables. You can buy an adapter from most computer-supply retailers for less than $20.

Connect before Booting Always connect your PowerBook to the projector before booting up. Otherwise, you may end up with nothing more than a blank screen. Once you see an image on screen and have set up the display, you can disconnect the video cable to share the projector with another presenter. Then your Mac will be ready to go when it's your turn. You can put the computer to sleep before or after unhooking the cable, but you should reconnect it *before* you reawaken the Mac.

Use Video Mirroring Most PowerBooks support video mirroring, which lets you view the same image on your laptop and on the larger screen. That way, you don't have to turn your back on the audience to see what they're viewing. To activate video mirroring in OS 9, use the Video Mirroring tab in the control strip; in OS X, open the Displays panel in System Preferences, click on the Arrange tab, and select Mirror Displays. Make sure you select the color depth and resolution that match your presentation's.

Browser Show HTML-based presentations sport a directory of slides and navigation buttons.

An HTML Copy The Save As Web Page command in Mac PowerPoint 98, 2001, and X lets you save a presentation as a Web page, which you can play on any computer with a browser. PowerPoint creates a main HTML file and then puts graphics, sounds, and other linked files into a separate folder. Images are usually reduced in quality, and slide animations and transitions don't work, but it's better than ending up with no presentation at all (see "Browser Show").

QuickTime Conversion Another good backup plan is to save your presentation as a QuickTime movie, using Mac PowerPoint 2001 or X. You can then show it on any Mac or Windows PC that has QuickTime installed. The fidelity is generally superior to that of HTML presentations, but it's not perfect. For example, animations may run sluggishly, and QuickTime doesn't support multiple slide masters. (Jaguar users having trouble creating QuickTime movies in PowerPoint X should download the Microsoft Office v. X 10.1.1 update, available at www.microsoft.com/mac/download.)

The Slide Transition function, located in the Slide Show menu, lets you set up timing for an entire presentation at once. Your presentation will then play as a continuous movie that you can pause to give more time to individual slides.

To export your presentation as a QuickTime movie, choose Make Movie from the File menu. PowerPoint lets you specify the movie's resolution to emphasize playback quality or minimize file size. If you're not sure which settings to use, the default options (640 by 480 pixels and automatic optimization) usually work well.

Peace of Mind

Unless you're a natural public speaker, keeping your voice from cracking is tough enough without the added worry that your slide show won't run. Follow our guidelines, and you can at least be confident that your audience will see your electronic presentation the way you designed it. As for your delivery, you'll have to work on that yourself. □

Contributing Editor FRANKLIN N. TESSLER helps coordinate electronic presentations at one of the world's largest medical meetings.

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Recycle Old Macs

Some people are very good at finding uses for an old computer—whether as a file server, a recipe archive, or even an aquarium (for ideas, see our "Old Mac" series, at www.macworld.com/subject/oldmac). But if you have no need for your retired Quadra 800 and just want it out of your house, you'll need to know the best way to get rid of it.

Before you toss your CPU into the trash or leave it curbside, consider its environmental impact. According to the Environmental Protection Agency, 220 tons of computers and other electronic goods are dumped in U.S. landfills and incinerators every year. Some of this waste is toxic, and much of it is recyclable. Consider the following options when you've outgrown a Mac.

Sell, Sell, Sell

The adventurous among us may enjoy participating in a local technology flea market (see "Island of Discarded Macs," *Ihnatko*, October 2001), but if you'd like to recoup some of what you spent on your Mac, you can try selling it from the comfort of your home.

ILLUSTRATION BY GARY BATES

One of the more common ways to do this is via eBay, which has a healthy Mac section (http://pages.ebay.com/catindex/catapple.html). The amount you can make varies, of course, with the type of system you're putting on the block: the PowerBook 140 I'm trying to unload would fetch perhaps $15, while my old Performa 6115 CD would likely top out at around $45—and that's assuming I threw in the monitor. Newer computers will go for more, but remember that eBay takes its cut of your profits.

And before you decide to post on eBay and make that quick sawbuck, ponder how you'll ship the computer. If you've lost your Mac's original packing materials, you'll have to hunt down suitable replacements—including a sturdy container and some sort of padding to keep the CPU from rattling around in the box. You'll also need to make sure the package arrives safely, as the last thing you want is to be on the hook for a Mac that arrives damaged—or not at all. Consider getting insurance, so if something happens to the Mac in transit, you're not responsible for damaged goods. You might want to include the price of insurance (at the United States Postal Service, it starts at $1.30 for a package worth $50 or less and goes up from there) when you're estimating the shipping cost for your buyer.

Another way to sell is to place a classified ad, and there are two ways you can approach this—by staying local and by trying your luck on a Web site.

Convenience is the advantage to selling locally—you won't have to factor shipping and handling into the deal, and you can make arrangements for your computer's new owner to pick up the machine. You can usually place an ad in the local newspaper or on a classifieds Web site such as craigslist (www.craigslist.org), which covers 14 major U.S. cities and their environs.

If nobody's biting locally and you have your heart set on trying to wring some extra cash out of your old Mac, consider casting a wider net. Look on any number of Mac sites—such as Secondhand Mac (www.secondhandmac.com), Low End Mac (www.lowendmac.com), Insanely Great Mac (www.insanely-great.com), or Macworld's own PriceGrabber (http://macworld.pricegrabber.com)—for a classifieds section. As long as you specify that the price includes shipping and handling—and you wait until the buyer's check clears before sending out your computer—posting on a national site can be a fairly easy way to unload old hardware.

Give It Away

If the benevolent side of your nature is in charge of getting your old computer out of the house, you may consider donating it to charity. Before you bundle the

system into the back of your car and head for the nearest deserving nonprofit, though, make sure your equipment is in fairly good condition. Most local organizations are not interested in anything with less than a PowerPC processor, so very old Macs are out.

If you're looking to unload a shelf full of separate hardware items, consider giving your equipment to a refurbisher. These nonprofit groups specialize in restoring computer equipment and passing it on—they're also better equipped to accept incomplete systems or individual pieces of hardware, and to help you recycle electronic equipment that can't be refurbished. (For a list of things to consider when donating or selling your computer, see "All Things Must Pass.")

There are a number of Web resources available to potential donors. Share The Technology (www.sharetechnology.org/reuse) offers a computer-donation database where you can search, by platform or by region, for a local organization that can take your computer off your hands. Another good searchable directory is TechSoup (www.techsoup.com), a Web site that provides technology resources to nonprofit organizations. You can look for a local or national recipient that will take your computer; then you can read a profile of each organization, as well as donor comments that rate how easy it was to work with the group. For those who prefer to research the groups they donate to, this is a helpful feature.

Another extensive donation guide is Anne Bubnic's PEP Directory (www.microweb.com/pepsite/Recycle/recycle_index.html). Would-be donors can click on the name of a country or state to get contact information about government agencies and nonprofit organizations that will accept donated computers.

A final note about donation—yes, you can write it off on your taxes, but only with proper documentation. Make sure the group to which you're donating the computer is indeed a nonprofit organization with a tax-exempt ID. Be sure to make a list of everything you donated, and get a receipt from the group for the current market value of your donation. You paid $2,400 for that Performa in 1995, but it's not worth that much today. If you're not sure what the market value of your computer is, check out EveryMac.com (www.everymac.com/systems/index.html), which provides extensive pricing information, based on processor model, case type, and manufacturer.

Recycle

If all else fails and you can't find someone to take your computer or monitor off your hands, you should recycle it. Simply throwing the items out is a bad idea—the National Safety Council estimates that between three and five million tons of electronic waste will be coming from homes and businesses over the next several years, and much of it contains both recyclable materials (such as copper and aluminum) and toxic substances (such as lead and mercury). Letting either sit in a dump isn't good for the environment in the long run.

There are a few things to remember as you're finding a recycler—many accept old equipment at a drop-off center or make pickups on a schedule, and they'll probably charge a small fee to get rid of the electronics in question. Recycling a computer isn't as easy as recycling a Coke can, yet.

The first thing you must do is find a recycling center. The Electronic Industries Alliance (www.eiae.org), a trade group for manufacturers of computer hardware, provides a clickable map of the United States on its Web site—to find a local recycler, simply click on your state. If your state doesn't have listings, You can use a search tool to find national recycling programs or nearby alternatives. The National Recycling Coalition (www.nrc-recycle.org) also lets you look up electronics recycling centers in your area.

One last thing to do before leaving your computer at a recycling center is to ask the center personnel where old equipment is stored. There are some centers that send American electronics junk overseas, creating another environmental mess by shifting the garbage around. You'll want to make sure you're not contributing, directly or indirectly, to this growing problem.

Happy Trails

With just a little effort, you can get rid of your computer while gaining a few extra dollars toward your next computer purchase, the satisfaction of passing the computer on to someone who needs it, or the knowledge that you're helping reduce electronic waste.

Macworld.com Executive Editor LISA SCHMEISER is taking suggestions on what to do with all the old hardware in her house. Anybody out there want an old Performa?

ALL THINGS MUST PASS

Before you sell or donate your old computer equipment, here are some things to consider.

- >> Have you deleted all personal files from the computer?
- >> Is the operating system intact? Can you include the software when you donate the machine? Some organizations and individuals may require it.
- >> Do you have software licenses for all programs installed on the computer? Can you provide them to the organization or person?
- >> Can you also provide a mouse and keyboard? Although computer refurbishers usually accept individual items, other groups may ask for whole systems.
- >> Have you contacted the organization in question to check their guidelines for donation? Have you made sure you can write off the donation?

Outwit Printing Problems

When you want to print, you can usually just hit ⌘-P and head out for coffee. But things don't always go according to plan. In Adobe Illustrator 10 ($399; 800/833-6687, www.adobe.com), you'll occasionally have to spend some time massaging your illustration to get ideal results in less-than-ideal conditions. The next time you're in an unusual printing situation, you may be very glad to have these tips around.

The Dreaded Limitcheck Error

You can encounter a fair number of errors when printing an illustration, but one of the most common is the *limitcheck error*, the result of a limitation in your printer's PostScript interpreter. If the number of points in the mathematical representation of a path exceeds this limitation, the illustration will not print successfully.

Unfortunately, the "points" used in this mathematical representation are not the anchor points you used to define the object. Instead, they're calculated by the PostScript interpreter during the printing process. When presented with a curve, the interpreter has to plot hundreds of tiny straight lines to create a rendering that's as accurate as possible. So instead of a perfect curve, your printer creates an approximation with hundreds of flat edges.

The exact number of edges is determined by a variable known as *flatness*. The default flatness value for a typical laser printer is 1 pixel, or 1/300 inch. This means the center of any flat edge of the printed curve can be at most 1/300 inch from the closest point along the perfect mathematical curve. If you raise the flatness value, the printer can draw fewer flat edges, cutting print time but causing blockier curves. Each tiny line in the polygon rendering is joined at a point. If the number of points exceeds your printer's built-in path limit, you'll see the telltale words *limitcheck error* in the progress area on your screen, and the illustration will fail to print (see "Flatness Foul-ups").

The path limit for the original LaserWriter was 1,500, seemingly enough flat edges to imitate any curve. But when you factor in path variations such as compound paths and masks, both of which merge shapes with hundreds or thousands of flat edges, things can get extremely complicated.

You can overcome limitcheck errors several ways:

Increase the Flatness This is usually just a matter of lowering the Output Resolution value, in the Printing & Export section of the Document Setup dialog box. (This value will be applied to all objects in the illustration.)

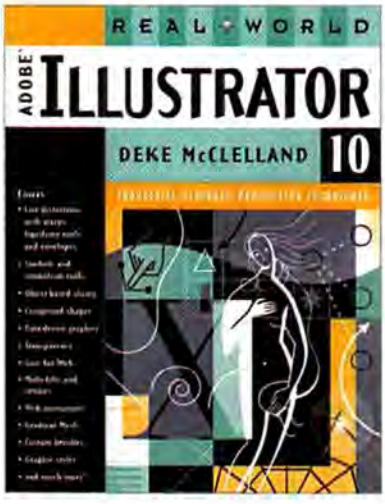
The default output resolution is 800. For an imagesetter with a resolution of 2,400, this translates to a flatness of 3. This is because Illustrator uses the equation *printing device resolution/output resolution = flatness* (in this case, 2,400/800 = 3). A flatness of 3 is usually high enough to avoid limitcheck errors. If the output resolution is the same as the resolution for the final printing device, then you have set the flatness to 1, a low flatness that could cause some problems.

You can print a test version of an illustration by lowering the Output Resolution value to, say, 300 and leaving the Split Long Paths option deselected. This will significantly reduce print time, at the expense of the curves.

Keep in mind that Output Resolution values are saved with an EPS file and included with the illustration, even if you import it into another application. So don't expect an illustration to print better from Adobe PageMaker or QuarkXPress than it does directly from Illustrator.

Select Split Long Paths You'll find the Split Long Paths option in the Printing & Export section of the Document Setup dialog box. Select it, and the next time you save or print the current illustration, Illustrator will automatically break up every path that it decides is at risk into several smaller paths. In most cases, this won't affect the printed appearance of your illustration.

Unfortunately, there's no way to automatically reassemble paths after Illustrator splits them apart.

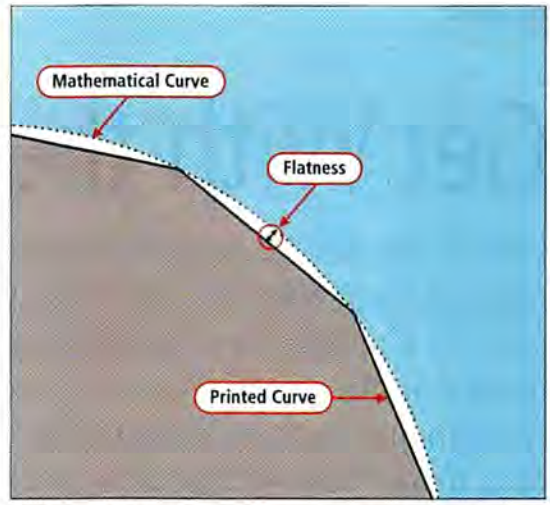


Fully Illustrated
This article is an excerpt from *Real World Adobe Illustrator 10* (Peachpit Press, 2002), by Deke McClelland. You can find the book at www.peachpit.com or your local bookseller.

If you ever need to join them back together, you'll have to do so manually, which complicates the editing process. So be sure to save your illustration before selecting the Split Long Paths option, and then use File: Save As to save a copy of the split illustration under a different name.

Use Masks and Patterns Wisely This is the best solution. If, for example, a complex mask isn't printing, select the mask group and click on the Pathfinder palette's Crop button to permanently crop the content elements. Though this may necessitate some manual edits on your part, it will almost always solve the printing problem, and it allows you to print smooth curves without worrying about strange printing issues such as flatness.

Some of the Pathfinder commands have a habit of producing alert boxes when they complete, warning you that they may have generated paths that are too complicated to print. Ignore these messages! They are almost always inaccurate. Wait until you encounter a limitcheck error before you worry about an overly long path.



Flatness Foul-ups Your illustration won't print? A flatness foul-up may be to blame. Flatness determines the greatest distance between the center of a flat edge and the closest point along the true mathematical curve. If the number of points is greater than your printer's built-in path limit, you'll see the words *limitcheck error*, and your printer's tray will remain bare.

Pattern Problems

Patterns can also cause limitcheck errors, but more commonly they cause out-of-memory errors by overwhelming the RAM available to your printer. (Yes, like computers, PostScript printers have RAM.)

It works like this: Illustrator downloads the tile pattern (so called because it's based on repeating rectangular artwork), as if it were a font, to your printer's memory. In this way, the printer accesses tile definitions repeatedly throughout the creation of an illustration.

If the illustration contains too many tile patterns or if a single tile is too complex, the printer's memory may fill up, in which case the print job is canceled and you see an out-of-memory error on screen. (A printer that just stops working on a job, even though Illustrator seems to have sent the illustration successfully, is likewise an indication of an out-of-memory error.)

Out-of-memory errors are not as common when you're printing to modern, high-resolution imagesetters, because these machines tend to include updated PostScript interpreters and have increased memory capacity. And PostScript Level 3 printers in general have also remedied a lot of the printing problems experienced in the past. Therefore, you will most often encounter an out-of-memory error when printing a proof of an illustration to a midrange laser printer or to another low-memory device. Try one of the following techniques to remedy the problem:

- Convert all characters to paths using Type: Create Outlines. This way, Illustrator won't have to download both tile and font definitions.
- Rasterize the vector art. This will convert the pattern tiles into pixels, thereby simplifying the data the printer has to interpret. Be warned that the rasterization process will cause printed art to lose a little quality.
- Save the Illustrator file as a PDF. Converting to PDF resolves a lot of the complex instructions in things such as patterns, masks, and compound paths. To do this, choose File: Save As, and then choose Adobe PDF from the pop-up menu. Name the file, and click on Save. This opens the Options dialog box. The default set of options is most appropriate for PDF files that a service bureau or imagesetter will output.
- Print objects filled with different tile patterns in separate pages. Then use traditional paste-up techniques to combine the patterns in a composite proof. (It's time to dust off your X-acto knife and steel straightedge!)

When you print the illustration to an imagesetter, it will probably print successfully because of the imagesetter's increased memory capacity. But if you still encounter an out-of-memory error, you'll have to delete some patterns or, again, resort to traditional paste-up techniques.

Print Perfect

Sure, Illustrator images and effects look fantastic on your monitor, but unless you're a Web designer, the real proof is in the printing. The people who manage to avoid problems usually have a good understanding of how to create their files and choose options with the output in mind.

Contributing Editor DEKE McCLELLAND is the award-winning author of more than 60 books on computer graphics and electronic publishing.

Get With the Program

Early in Mac OS X's gestation, it became clear that Apple desired a cozier relationship between its operating system and its applications. And with each OS X update, that bond has grown stronger—but a few rough edges remain. In this month's *Mac 911*, I explore several OS and application workarounds, such as finding alternative spelling checkers, moving contacts to and from Address Book, making Ink work, and running two versions of iTunes. I also offer tips for increasing AirPort range.

Another OS X Spelling Checker

Is there a way to change the spelling checker used in Apple's Mail application?

Walt Vennell, *Monroeville, New Jersey*

If I've divined the intention of your question correctly, you're less than tickled with OS X's spelling checker. While I couldn't be happier that OS X includes a systemwide spelling checker that works with a variety of compatible applications, such as Mail, TextEdit, Project Builder, and OmniWeb, I have to agree that the capabilities of this one are a little thin. More often than not, OS X's spelling checker offers only a limited number of spelling suggestions.

ILLUSTRATION BY LEO ESPINOSA

Thankfully, there's an alternative: Anton Leuski's cocoAspell (www-ciir.cs.umass.edu/~leouski/cocoaspell)—a free OS X implementation of Aspell, which in turn is a free, open-source spelling checker developed by Kevin Atkinson (http://aspell.sourceforge.net).

To install the utility, first drop the cocoAspell .service file into the Services folder of the appropriate Library folder (the one at the root level of your OS X volume if you want all users to have access to the spelling checker, or the one in your user's folder if you'll be the sole beneficiary of cocoAspell's services). If no Services folder exists within this Library folder, create one. Then place the Spelling.prefPane folder in the PreferencePanes folder of the Library folder you've chosen (again, if no PreferencePanes folder exists, create one).

Now launch System Preferences, select the Spelling system preference that appears, enable the dictionaries you want to use, and log out and back in to OS X. When you next select the Spelling system preference, a dialog box will appear and let you choose to not enable cocoAspell, to enable it just this once, or to have it enabled each time you log in. cocoAspell includes dictionaries for American English, British English, Canadian English, and English. Leuski has compiled additional dictionaries for Breton, Catalan, Czech, Danish, Dutch, Esperanto, Faeroese, French, German, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Spanish, and Swedish—all of which you can download from www-ciir.cs.umass.edu/~leouski/cocoaspell/dictionaries.html.

To enable cocoAspell within an application such as Mail, create a new message and select Edit: Spelling: Spelling. In the resulting dialog box, select the dictionary you'd like from the Dictionary pop-up menu. All cocoAspell dictionaries have *(Aspell)* appended to their names—American English (Aspell), for example. Once you've done this, you'll notice that the list of spelling suggestions increases by leaps and bounds.

If you're looking for a spelling checker that works with all applications on your Mac, try Casady & Greene's excellent Spell Catcher (800/359-4920, www.casadyg.com). An OS X–compatible version should ship soon.

Name Game

Is it possible to use the data in my OS X 10.2 Address Book in Microsoft Entourage X?

Dav Evans, *Sydney, Australia*

Yes, it is. Just launch Entourage and click on the Address Book button to reveal Entourage's Address

Book. Then open OS X 10.2's Address Book, click in the Name pane, and press ⌘-A to select all the names (or ⌘-click to select one name at a time). Drag the names to Entourage's Address Book to add them.

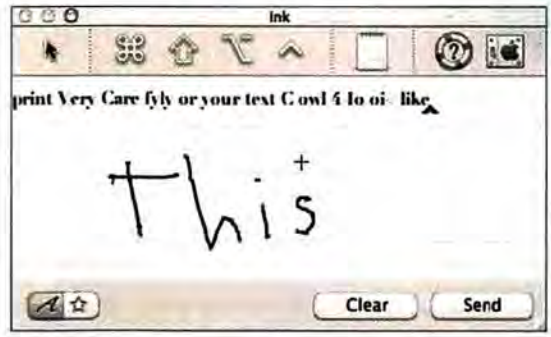
Inky Dinky Parlez-Vous

I've done everything I can to activate the highly touted handwriting-recognition Ink function in OS X 10.2—including buying a new Wacom USB Intuos2 pad. So far, no joy. How the heck does one turn on this function?

Paul D. Guthrie, *Maynard, Massachusetts*

There's no real trick to it. Yes, you need an OS X 10.2–compatible graphics tablet, and you have one, in the Intuos2 (sorry, OS X doesn't support older ADB graphic tablets—nor will it ever, according to Wacom). If the Ink system preference doesn't appear when you plug in the tablet, follow this path: *your hard drive*: System: Library: Components: Ink.component: Contents: SharedSupport: InkServer. Then double-click on the InkServer application. This should bring Ink to the fore. If it does but Ink fails to appear when you next log in, add InkServer to your log-in items.

It's also possible that you're overlooking Ink even though it's enabled—there's no apparent sign that Ink is on the job until you turn the Ink functions on. To do so, launch System Preferences and click on the Ink system preference. In the resulting Ink window, click on the On button in the Settings tab to turn on handwriting recognition. When you do, up pops the InkPad window at the bottom right of the Mac's desktop (this window sits in front of any running application). If you select Anywhere from the Allow Me To Write pop-up menu, you can use Ink's handwriting recognition in any application. Just start writing, and a yellow sheet appears front and center. When you finish scrawling a word, it appears at the insertion point in the foremost application. If you choose Only In InkPad from the Allow Me To Write pop-up menu, handwriting will be recognized only in the InkPad application—where you can write to your heart's content and send the text to the frontmost application by clicking on the Send button in the InkPad window (see "Ink Blot").



Ink Blot Your fourth-grade teacher was right. Good penmanship pays off—particularly when you're trying to generate legible text with Mac OS X 10.2's Ink feature.

For the sake of others considering the purchase of a graphics tablet solely for the purpose of using Ink, I should mention that Ink is not easy to use. (And yes, I do own a Newton, and Ink has a tougher time recognizing my handwriting than my Newton 2100 ever does.) Adjusting the spacing slider in the Ink system preference—the one where you tell Ink how closely spaced your handwriting is—helps, but I can't imagine a time when using Ink will be a tenth as efficient as typing characters on the keyboard.

Dyno-Sore

I have the old contact manager Dynodex 2.0, which runs in OS 9 and in OS X's Classic mode. Is there a way to import those address lists to OS X and its Address Book?

Paul Steinberg, *Incline Village, Nevada*

Not directly, no. Dynodex is so old that it wouldn't know a vCard (the contact format beloved by all modern contact managers) if one strolled up and offered to shine its shoes. But that doesn't mean your contacts can't have a new lease on life with OS X's Address Book. The trick, as I mentioned in "Apple's Information Hub" (December 2002), is to use another application as a go-between.

My go-between contact-management application of choice is Palm's Palm Desktop 4.0 (408/503-7000, www.palm.com). I prefer Palm Desktop because it's free (you don't need to own a Palm OS device to download the software) and has flexible import and export options. The application began life as Claris Organizer and has retained its ability to import data files from contact managers that shuffled off this mortal coil years ago. Currently, Palm Desktop can import files created in Address Book Plus, DateBook Pro, DayMaker, Dynodex, Meeting Maker, Now Contact, Now Up-to-Date, QuickDex, and TouchBase Pro.

continues

TIP OF THE MONTH

Among its many talents, The Omni Group's $30 Web browser, OmniWeb (800/315-6664, www.omnigroup.com), has the power to peer into your iPod. To reveal the unseen, configure your iPod so that it mounts as a FireWire drive (select the Enable FireWire Disk Use option in the iPod Preferences window within iTunes).

Drag the iPod's icon on top of the OmniWeb icon. OmniWeb will launch, and within the browser window, you'll see a list of all the files on your iPod (even the invisible ones). Double-click on the iPod_Control folder, then on the Music folder inside that, and finally on one of the folders that begin with *F* (F01, F02, or F03, for example) inside the Music folder. To copy a music file from the iPod to your Mac, control-click on the file you want to copy, and select Download File To *desktop: name of file* from the resulting contextual menu (where *desktop* is the location to which OmniWeb normally downloads files and *name of file* is the name of the song). To use the QuickTime plug-in to play a song within OmniWeb, double-click on the file inside the browser window.

Matthew Covington, *Watsonville, California*

UNSOLICITED ADVICE

If you've attempted to restore even a single application from the Software Restore discs included with new Macs, you know that it's a difficult job—the installer insists that you install everything or nothing. If the discs included with the new Power Mac G4 (Mirrored Drive Doors) are any indication, the days of inflexible restore discs may be at an end.

These discs allow you to restore most everything (excluding OS X, iPhoto, iTunes, iChat, or iMovie, which are installed from the OS X installer discs), just OS 9.2.2, or a specific application. However, what Apple giveth with one hand, it taketh away with the other. You cannot boot from these discs, which means that should you desire to first erase and then restore your drive, you must boot from the included OS X Installer disc, install OS X, and then restore from the Restore discs. Also, according to Apple, using these Restore discs is the only way to reinstall OS 9—no separate OS 9 disc is included.

Palm Desktop can also import data from a tab-delimited text file (a Microsoft Excel file, for example).

Once the information you want is in Palm Desktop, choose Export from the File menu; in the resulting Export: Palm Desktop dialog box, choose Addresses from the Module pop-up menu and vCard from the Format pop-up menu. Click on Export to save your addresses in a single vCard file. To add the addresses to OS X's Address Book, drag the vCard file into the Name portion of the Address Book window.

iTunes Times Two

I recently upgraded from iTunes 2 to iTunes 3. The problem is that I prefer the Visuals in iTunes 2 to those found in the more recent version. Can I use both versions of iTunes on my Mac—one for the Visuals and the other for everything else?

Bob Rapacki, *Macworld.com forums*

You can, but you'll have to suffer a couple of minor inconveniences to do so.

Minor Inconvenience Number One is that whenever you switch from one version of iTunes to the other, the iTunes Setup Assistant will appear—requiring that you click through a couple of windows.

Minor Inconvenience Number Two is that you must redirect iTunes 2 to iTunes 3's music library. When Apple moved from iTunes 2 to iTunes 3, it changed where iTunes stores its music files by default. In Mac OS X, iTunes 2 stores its music files in *your user's folder*: Documents: iTunes: iTunes Music. iTunes 3 places its music files in *your user's folder*: Music: iTunes: iTunes Music. To redirect iTunes 2, select Preferences from the iTunes menu, click on the Advanced tab in the resulting iTunes Preferences window, click on the Change button, navigate to the iTunes Music folder created by iTunes 3, and click on Choose. Now click on OK to dismiss the iTunes Preferences window.

Rectifying AirPort Reception

My PowerBook G4/400 gets reasonably good AirPort reception at short distances (about 30 to 40 feet). Beyond that, reception is erratic. What can I do to make it better?

John Vella, *Portland, Maine*

It's true that the AirPort range in the early Titanium PowerBooks is terrible. I've conducted a side-by-side test with my 400MHz Titanium PowerBook and an AirPort-equipped iMac, and in cases where the iMac exhibits perfectly reasonable reception (three dots in OS 9's AirPort control strip), the PowerBook can't see the Base Station at all.

Apple recommends that you move your Base Station around to gain better reception, but this isn't much help. The antenna's placement and the PowerBook's titanium case guarantee poor AirPort reception. Apple has made some improvements in later PowerBooks, but they still don't get as great a range as other Macs.

At the risk of seeming flippant, I'll suggest that you don't use AirPort at all. Instead, purchase a PC wireless card such as the Orinoco PC Card (866/674-6626, www.orinocowireless.com) and slip it into your laptop's PC Card slot. These approximately $70 cards offer the kind of range you'd get from any non-PowerBook Mac, because they place the antenna outside the case. In OS 9, they behave just like an AirPort card. When inserted, the card appears on the desktop as an AirPort PC Card. To enable it, just select AirPort PC Card in the Connect Using pop-up menus in both the AppleTalk and TCP/IP control panels.

OS X doesn't support third-party wireless network cards, but that doesn't mean your wireless dreams are over. A group of selfless souls has concocted a free OS X–compatible driver for many of these cards. The driver has some limitations, however. It supports AppleTalk over IP, so if you want to contact a Mac running OS 9 or earlier, that machine must be configured to connect over TCP/IP—an option that could possibly make your own Mac more vulnerable to Internet intrusion. Also, the driver doesn't support printing to AppleTalk printers (because the driver requires an IP address, rather than just an AppleTalk address). You can download the driver at http://wireless driver.sourceforge.net.

If you want to attack the problem from the other end, you can hack your Base Station and add an external antenna to improve its reception. You'll find instructions for doing so at http://macintouch.com/airportantenna.html#macmillan. ❑

Contributing Editor CHRISTOPHER BREEN shares more secrets in the second edition of his *Secrets of the iPod* (Peachpit Press, 2003).

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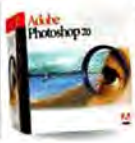

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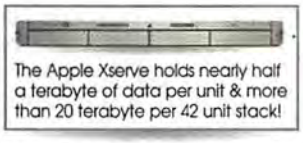

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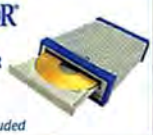

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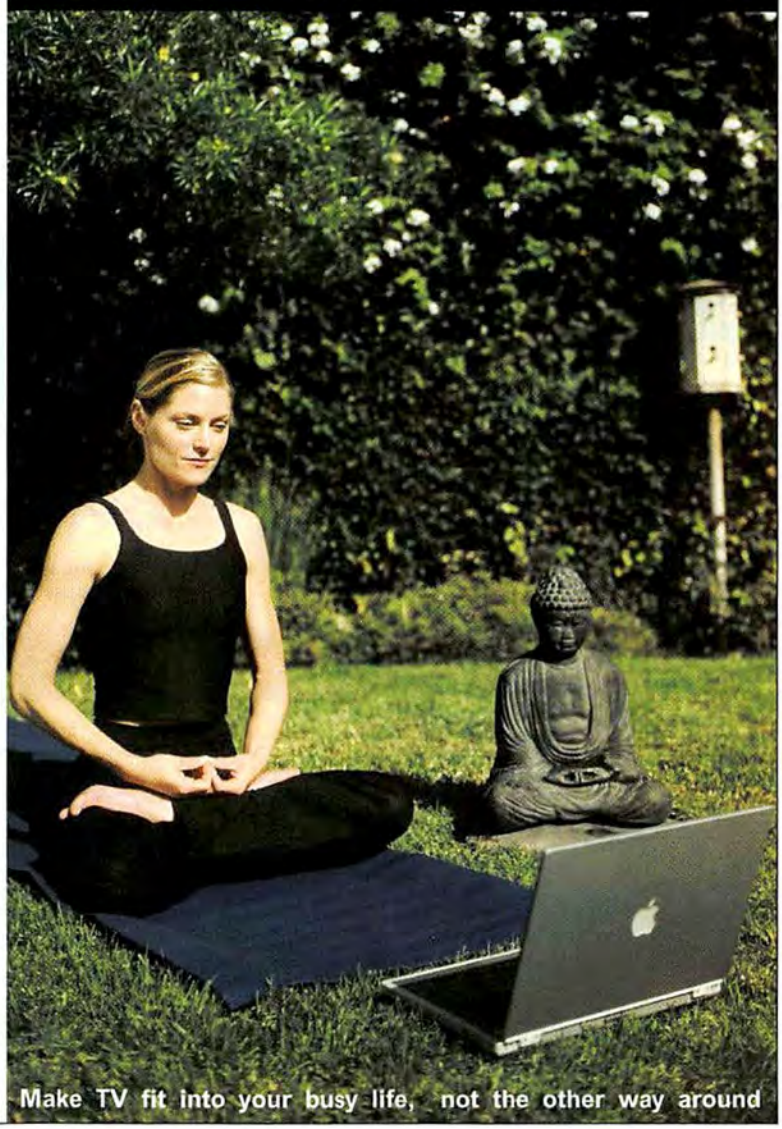

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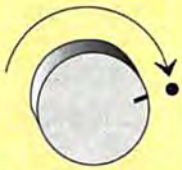

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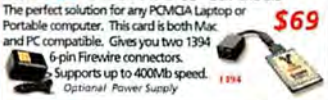

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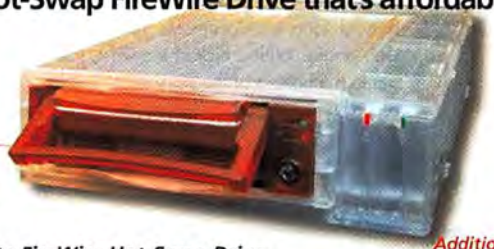

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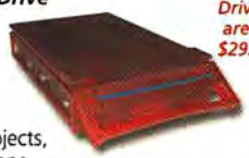

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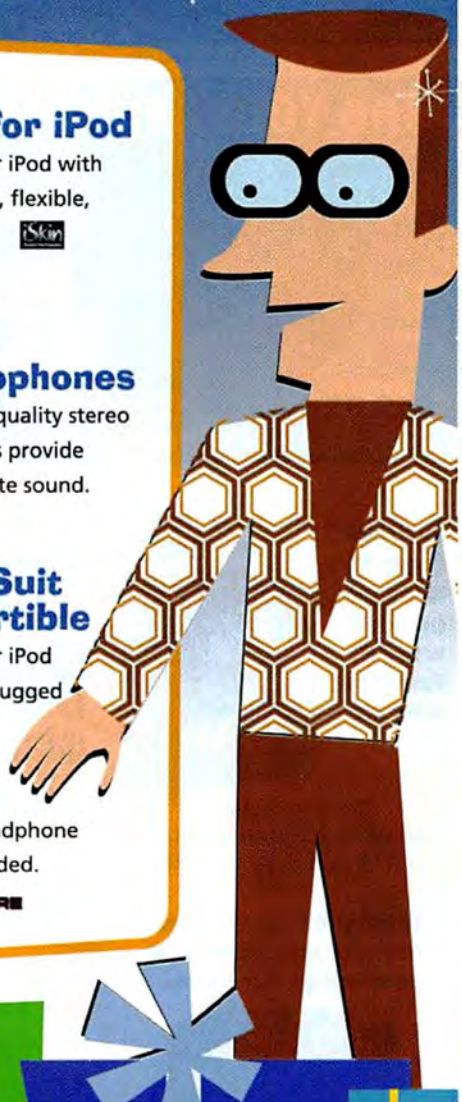

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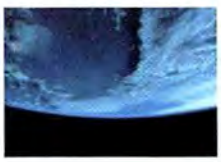

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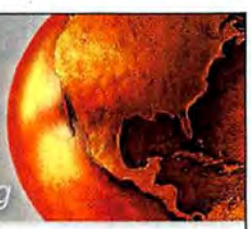

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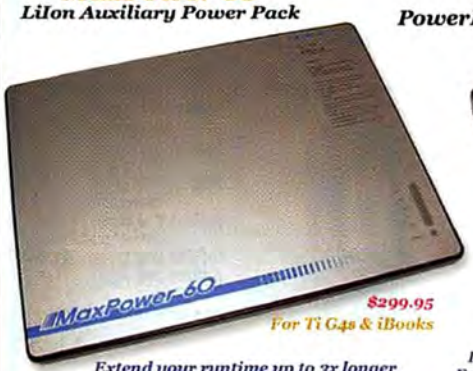

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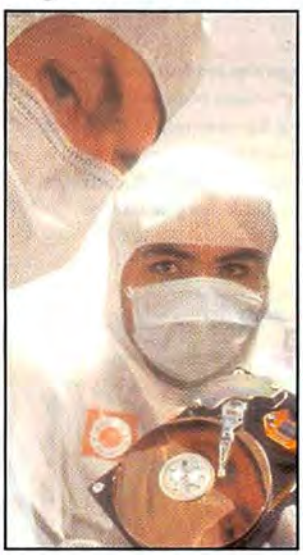

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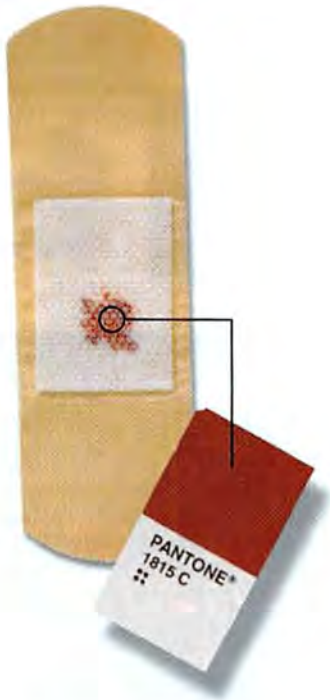

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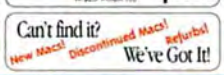

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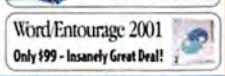

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The only *real* defense against buying gear that's slick and futuristic today but akin to an AMC Pacer in terms of performance and style weeks later is to keep January and July firmly in mind. Those are the months of the two biggest Mac trade shows, when the eyes of the world (and the press) are on Apple, and *that's* when the company usually releases its newest and flashiest. And in May, during the Worldwide Developers' Conference. And in the fall, just before the shareholders' meeting. And occasionally at the Seybold conference. Well, you see where this leads: you're stuck under a bare tree in a bleak landscape, waiting for the release of a nanoMac that can be uploaded in the form of a nasal spray.

Seriously, Unix is the name of Apple's colorful plush mascot. You've seen and enjoyed his lovable antics and his thrilling comic slam-dunk demonstrations at professional basketball games. Otherwise, no, he doesn't affect what you do at all.

> Seriously, Unix is the name of Apple's colorful plush mascot.

AppleScript? Now *there's* a lovable plush creature with a wonderful influence on your life. It's Mac OS's plain-English (more or less) scripting language, and it can automate common, uncommon, and downright heroically stupid tasks. Look inside your AppleScript folder for a program called Script Editor. You can start off by having Mac OS record scripts for you (consult AppleScript's Help system), but sooner or later you'll want to get a nice book such as Ethan Wilde's excellent *AppleScript for Applications* (Peachpit Press, 2001) and start writing code from scratch.

Finally, look, you're my friend and everything and I *wouldn't* have offered my unending assistance if I didn't want you to phone me and ask for it. But, man, yesterday you woke me up at the crack of 9 a.m. with these questions. Remember that Apple has a really quite excellent online support system at www.apple.com. Many companies use a corporate site as a way to convince stockholders to stick it through at least until the CEO can make it safely to the Philippines, but Apple's site actually offers helpful and practical advice.

With the answers to these common questions in hand, you're pretty qualified to call yourself a Virtual Close Personal Friend of Andy Ihnatko—or a Friend of His Friend or the Hairdresser of His Aunt. Welcome to the neighborhood; we're happy to have you here. We'll have you arrogantly insisting, "Of *course* Macs have no manual-eject button on their CD drives! That just goes to prove how sophisticated they are!" like a System 6.02 veteran in no time. □

Contributing Editor ANDY IHNATKO (www.andyi.com) points out that Virtual Close Personal Friends are not entitled to place boozy 4 a.m. phone calls on the subject of Where It All Went Wrong.

ANDY IHNATKO

There's No Such Thing As a Stupid Question

Welcome to Macintosh

HOWDY! I SEE A LOT OF NEW FACES OUT THERE THIS month. Now that Apple's advertising people have finally decided that preemptively conceptualizing the operational modality of the Macintosh with its target demographic was just too much work, and have decided to just start saying that every other computer is a piece of crap, new Mac people seem to be arriving in droves, like failed bass players to a *Fear Factor* contestant audition.

The raw sales numbers point to this. So does the nature of the e-mail messages I'm getting from old friends who have bought new Macs. See, they're always asking me about what computer to buy. The Code of the Ihnatkos includes "Always help out a pal in need"—but I set down one simple rule. "My recommendation will be impartial and tailored to your needs, not my personal preferences," I say. "But if you buy a Macintosh, my Answer Line is open for the life of the product. If you get a Windows machine, I'll troubleshoot three—and only three—problems." It's a win-win. If they go PC, I appear Cassandra-like, and they won't ignore my advice again. If they go Mac, even better: I give the *appearance* of being generous with my time and expertise, even though I made the pledge fairly secure in the knowledge that Mac users rarely run into show-stopping difficulties.

The *little* questions are endless, though, and consistent from one new Mac owner to another:

No, there isn't a second button on your mouse. There was a lot of debate on this at Apple, back when the Who still had a plurality of its original members and the industry's idea of advanced ease of use was the ability to print a document without having to bring hexadecimal opcodes into the situation. Every time Apple tested a mouse with more than one button, users kept pushing the wrong one, so simplicity won out. If you still can't get your head around this, just buy a two-button mouse, of which there are many.

Yes, it's normal for the bottom of your Titanium PowerBook G4 to get wicked hot during normal use. It turns out that titanium has the same heat-conductivity profile as stainless steel. Obviously, this is going to be a bigger problem for you folks who expect to actually hold a laptop on your *lap* while you use it. Try to think of it as an advantage. I'll remind you that many people find silky-smooth legs very attractive, particularly after the smell of burned hair has had a chance to clear.

Oddly enough, the heat doesn't hurt the PowerBook a bit. I've fallen asleep with mine sitting open and running next to me in the bed, which blocks the cooling vents and insulates all that heat around the bottom plate—and trust me, the result hurt me a lot more than it hurt the PowerBook. Still, get yourself a Podium CoolPad, from Road Tools (www.roadtools.com). It promotes air circulation under the Titanium PowerBook and keeps both your Mac and your lap from reaching critical mass.

Titanium also dents and scratches easily, incidentally, and it hinders clear reception between your PowerBook and your AirPort Base Station. This is known as "accepting a functional hit for the sake of owning the coolest-looking gear on the planet," and it's often a core component of the Macintosh experience. You will come to accept and enjoy this in time. Until then, if your PowerBook ever falls into the ocean, you can rest assured that those titanium panels won't pick up a single speck of rust.

Why is the Finder called the Finder? That's a good question, but there actually isn't a solid answer. It's up there with "What does the *Q* in *Q-tips* stand for?"

Yes, Apple's famous "1984" commercial has been bootlegged all over the Internet, and it's just one Google search away.

Unix: Don't worry about it.

The Dock: Yeah, I know, and for what it's worth, I, too, thought it was a colossal pain when I started using OS X. You do know that you can push it off to the left or right side of the screen instead of the bottom, right? Maybe if you move it, you won't accidentally activate the thing all the time. Just go to Dock under the Apple menu. If the Dock still causes severe abdominal cramps, you can use James Thomson's DragThing instead (www.dragthing.com).

> Why is the Finder called the Finder? That's a very good question.

I swear to God, you really *don't* need to know anything about Unix. Forget you ever read about it.

No, there's really no way to find out what sort of new hardware Apple will be releasing. Plenty of Web sites insist that they have the straight dope, but plenty also insist that you can clearly see Lee Harvey Oswald in official photos of Apollo 11's so-called "moon landing." The people who really *do* know what's coming have signed nondisclosure agreements; if they blab, Apple will do to them what Popeye traditionally does to Bluto at the end of each cartoon.

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