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Ten Years of EXCELLENCE

contents

16 APPLE'S NEW POWER MAC G4 GOES LIKE A ROCKET – THE 500MHZ G4 IS THREE TIMES FASTER THAN A 600MHZ PENTIUM III PC, AND INCLUDES A SOME VERY NEAT NEW FEATURES. IT LOOKS COOL, TOO.

October 1999

Steve Jobs' keynote speech at the publishing industry's bi-annual bumper bash has been hailed as one of the greats, with the unveiling of the Power Mac G4 and other Apple goodies, such as the blockbuster Cinema Display (page 18). Inevitably, the word revolution was tossed about in the hope that it would stick to at least one of the many announcements. Seybold Boston would have been a more apt venue for this G4 revolution. Had it been Apple Expo/Paris, they'd have struck up the Marseillaise and stormed the Bastille. Such were the levels of mob hysteria at Seybold that Steve would have been justified in decapitating a blue-&-white G3, and holding its wire-shredded G3 chip aloft to the silicon-hungry rebels.

The new Macs feature the fourth generation of PowerPC processors. Obviously, a G4 is faster than a G3 even running at the same number of megahertz. But a little extra speed does not a revolution make. Perhaps to match its black-&-white case, there's a Guinness-like strength in doubling: a possible 2MB of backside cache, and memory bandwidth times two, too.

Max RAM jumps 50 per cent, so memory-intensive applications – show me one that isn't – will liven up no end. Even Sawtooth's USB doubles up – with each USB port boasting its own controller, allowing for two independent 12Mbps data connections. Double is twice as good, but it doesn't make for a new performance paradigm.

The real shift in power comes from some neat engineering by G4 maker Motorola. We've been waiting for AltiVec – a sort of silicon spinach that pumps up certain graphics operations – for over a year, now. And AltiVec courses through the G4's DigitalDNA. Armed with its sexy new "Velocity Engine" brand name, Apple says AltiVec is "revolutionary". Vive Velocity! Top Marx! Creatives of the world unite, and make over! PowerPC to the People!

But the Velocity Engine is more New Labour than New Lenin. Remember when Intel pepped up its Pentium with 57 extra MMX instructions. A similar multimedia war cry went up, but the planned chip coup was soon beaten back and forgotten with the Pentium II subsuming MMX as if it had never existed. The Velocity Engine will avoid the fate of MMX only if developers rewrite their software to take advantage of the extra 162 instructions. Adobe is the high-profile early adopter, having already developed a free Velocity Engine plug-in for Photoshop. Other software developers are rushing to announce Velocity Engine support, so the outlook is far-better for AltiVec than it turned out to be for MMX.

The Mac can already claim Spinning-Jenny status as the apparatus behind a genuinely new way of working, as well as being a major driving force of something new to do, PC desktop publishing. But the Velocity Engine allows us only to do the same old things faster. I'm not knocking it. It's just not revolutionary. Even the G4's potential to dovetail with next year's Mac OS X – enabling true Mac multiprocessing – is an increase in grunt rather than an all-new front.

I certainly don't want to discourage people from going out and buying G4 Power Macs – especially my own IT manager… Extra oomph on the desktop is going to tickle a lot of Mac pros. But it's the software second and the 500MHz G4 some way back in third, when it comes to personal and professional productivity. If the Velocity Engine is nothing without optimized software, then the optimized software is just a CD in a box without your creativity.

A few hundred pounds spent on professional training, and another squeeze of the wallet to update your primary programs will pack more punch to your productivity than any number of AltiVec instructions or expansion of RAM-cache bandwidth. That said, a certificate on the wall and a fancy box on the shelves is never going to look as good as a Graphite G4 with Cinema Display…

The true spark of revolution ignited during Steve's Seybold speech had nothing to do with the Velocity Engine's va-va-voom or Sawtooth's double bubble ingredients. The real deal is still AirPort, Apple's wonderful wireless technology that promises to rid our homes and offices of network piping and phone cables. As part of the iBook (see *Macworld*, September 1999), AirPort looked like fun. Now it's a part of the professional Power Mac armoury and soon to support 50 users per hub, AirPort looks like the business.

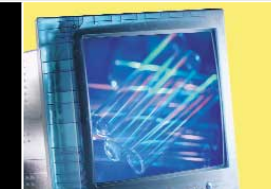The Power Mac G4 is a stunner. But AirPort is the killer.   MW

Macworld

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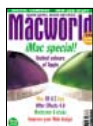
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October's Macworld CD features an exclusive pre-release version of avenue.quark, plus the latest trials, demos, shareware, games and updaters. Vic Lennard works through the folders and files…

Install Me

Before you start working your way through the software on our CD, go to the System Utilities folder and make sure you install the following:

■ **QuickTime 3.0.2**
Many of the demos need this installed. It gives you new versions of QuickTime and the MPEG, VR, Musical Instruments and PowerPlug add-ons.

■ **Acrobat Reader+Search 4**
Install this version to be able to read many of the on-screen manuals.

■ **StuffIt Expander and DropStuff**
Versions 4.5 & 5.1.2 are included.

■ **Also included**
A number of useful utilities such as Apple Game Sprockets 1.1.4, InternetConfig 2.0 and Apple Appearance plus essential items such as Apple Disk Copy and Drive Setup.

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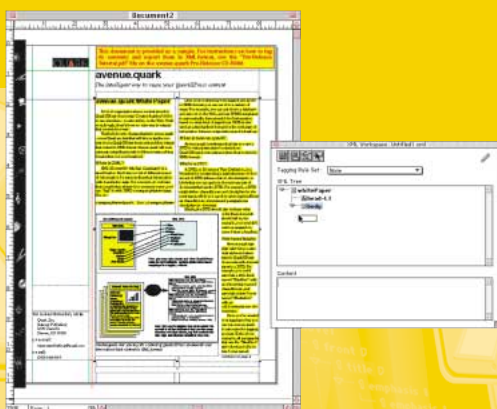
avenue.quark lets you extract the content of QuarkXPress documents and store that content in XML (Extensible Markup Language) format – articles, photographs, interviews and diagrams. You can then reuse these easily in a variety of ways, including in print, on CD-ROM or on the Web. You need only adjust the presentation for each setting – headers, footers and the like. This pre-release software includes the Quark XTension and necessary preference file along with a comprehensive tutorial and PDF-format guide. You'll need to be running a PPC version of QuarkXPress 4.04 or QuarkXPress Passport 4.04 and can use the pre-release until 31 March 2000 at which point it will timeout. See pages 21 and 131 for more details.

Macromedia Director 7
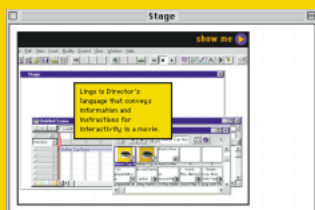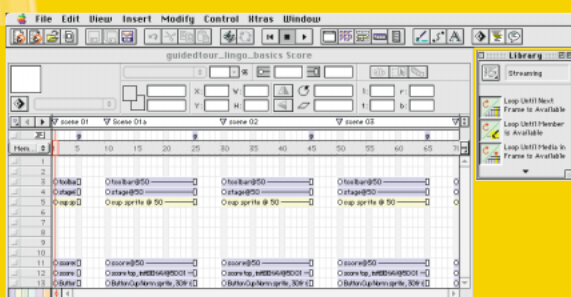
Director 7 delivers higher quality animations, stunning playback and richer experiences – optimized event processing, faster projector startup, increased stability and greater control. Objects come to life with 360° rotation, horizontal/vertical flipping and scalable skewing while new alpha channels elegantly control object transparency, edges and blending.

Super-compressed shocked fonts give great looking text. Easily create intelligent navigation with new built-in support for multimedia hyperlinks and hypertext. For the first time, import HTML text right into Director while maintaining full control of all link references. Integrate existing content with HTML, HTTP, HTTPS and XML. Create extremely small, high-quality shapes with built-in vector drawing tools and import Flash 3 files to use Flash animation, shape morphing, masking, and transparency.

This limited version of Director allows you to save, export, and create executables for 30 days after installation. It does not include studio components such as sound editors, behaviours, Macromedia Fireworks or the Shockwave Multiuser Server.

Serious Software

Extensis PhotoFrame 2

Extensis PhotoFrame 2.0 is a Photoshop plug-in that helps you create professional-quality image frames and border effects. Instantly create an unlimited variety of beautifully rendered effects from high-quality frames designed by professional artists.

There are now more frames – the three combined volumes included with version 2.0 give you over 1,000 total frame files. The new Instant Frames system lets you create edge effects from scratch. Choose from and customize several different shapes such as circles, rectangles, polygons, stars, arrows and hearts – and apply and combine multiple edge distortions to either frame files or Instant Frames.

Yours to try out for 30 days.

Vicomsoft v6.5 software

Vicomsoft Internet Gateway is an integrated suite of extended Internet connectivity modules. They incorporate over 15 extended functions including: NAT (Network Address Translation) for Internet connection sharing; industrial strength TCP/IP router; Web caching server for accelerated throughput; DHCP server for ease of administration; DNS caching for faster access; local DNS server; Remote Access Server; firewall security and multi-hosting to run multiple virtual web sites. New features include an optional Remote Administration function, WebHeaders, a TCP server locator and Timed Access Controls.

SoftRouter Plus offers the same set of features aside from the Timed Access Controls and CyberNOT filter.

Try either of these for 7 days.

Opcode Vision DSP 4.5

Vision DSP is a complete software system for recording, editing, effecting and playback of MIDI and digital audio. Even if you have no specific MIDI hardware, Vision DSP will work with your Mac's QuickTime Musical Instruments extension.

New features in version 4.5 include support for ReWire-compatible softsynths, movement automation (record, playback and edit) of parameters for VST plug-ins and EQ, increased number of Console Strips, improvements in file management, the addition of Mute and Solo buttons in the plug-in and EQ edit window, the ability to lock all events in the designated track to their SMPTE positions and an improved Strip Silence command.

Try the full package for 30 days.
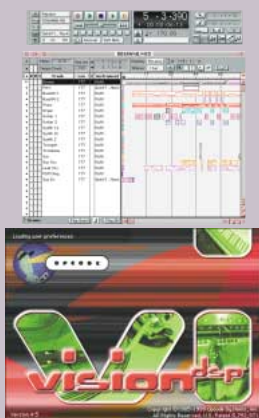
Also on the CD

APPLE (in the System Utilities folder) including:
G3 CD Update 2.0
iMac CD Update 2.0
USB Card Support 1.2

COMMS & INTERNET
Over 20 applications including:
FaxIT+™ 2.0
HTML Markup 3.0.1
VSE Be Found 1.2

GRAPHICS
Nine items including:
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iView Multimedia 3.7
Rainbow Painter 1.3.0
Tracer 3.1.3
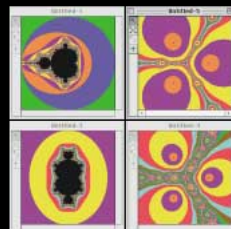
ICONS
Over 40 new desktop backgrounds, plus over 40 superb icons courtesy of IconFactory.

INFO
Six items including:
1984 OLM Issue 2.4
About This Particular Mac 5.08
Apple Wizards – August 1999
GURU 2.8
My Mac Magazine #52
plus six items for developers

MATHS & SCIENCE
Five utilities including:
Poly 1.03
The Atomic Mac v3

NETWORK
Citrix ICA Client 4.1

SOUND & MUSIC
Ten applications including:
MPecker Drop Decoder 1.6.4
PlayerPRO 5.3
Virtual Drummer 4.0.2

UTILITIES
Ten categories comprising almost 70 useful tools for your Mac including:
BatchTyper 2.1
Chef Cuisine Database
Consultant 2.58
FinderPatch v1.3
Installer Observer
Invisible File Copier 1.0
OtherMenu 2.0.2
TextSpresso™ 1.3
XPress MS Word 6-7/8 Filter

UPDATERS
This month's dedicated updaters folder includes nearly 150MB of patches to bring many popular applications bang up-to-date, including:
Adobe Type Manager 4.5.1
Adobe Type Reunion 2.5.1
ATI Universal Installer 4.0.1
Cubase VST 4.1
FileMaker Pro Y2K versions
Flightcheck® v3.61
MarkzTools™ III v7.9
Norton AntiVirus (08/99)
Peak 2.04
Toast 3.5.7
Virex (08/99)
Waves 2.6.1

Other demos include:

Animation Stand	Papyrus 8.0.6
Dragon Web 5.0	PitStop 4.02
Intellihance 4.0.3	Suitcase 8.0.3
MacTicker	Imposer 2.0.3
MarkzScout 1.1	(note – puts
Mask Pro 2.0.2	XPress into demo mode)
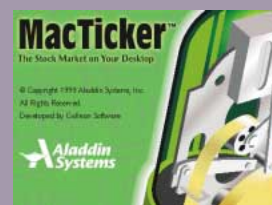
Don't miss…

■ **Cool Extras!** Digital Randomizer 1.5.0 – the simple way to make a choice
.Mac August 1999 – latest issue of the UK-based Mac ezine
Kaleidoscope 2.2 – updated version of the user interface enhancer

■ **Mac ISP** Abel Internet's free Internet access offer

Shareware

Many programs on this CD are shareware, which means that if you keep them and use them for more than the allowed time (usually up to 30 days) then you must pay for them. Treat shareware as budget-priced commercial programs – support shareware authors so that they continue to provide high-quality programs for the Mac.

Caesar III
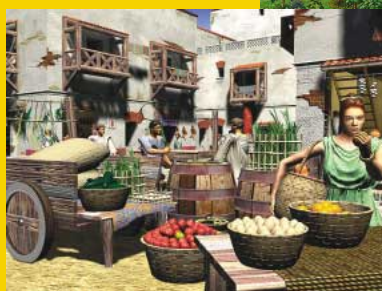
Caesar III casts you as a trainee governor at the very start of the ancient Roman Empire. Your success will lead to promotion and personal financial gains, and could help expand the Empire itself. Ultimately, your goal is to rise all the way to becoming Caesar, Emperor of Rome. This demo version has only two training missions and contains only a fraction of the features available in the full game, but it will give you a good feel for what the game is like.

Each assignment has specific goals toward governing a city within a province of the fledgling Empire. You should allocate areas for housing, and then provide for the basic needs of the people who come to live in your settlement.

Caesar III is a lot more intuitive than its predecessor – follow the messages and briefings on screen.

Games World

This month's Top 10 shareware games will have you glued to your Mac for hours on end. Top pick has to be Goofy Golf, the follow up to GopherGolf (the latest version of which is also included) – play nine holes of the craziest golf you've ever seen! Then there's Pork Barrel – as President of the US of A, can you keep you pre-election promises and survive to full term? Action addicts will enjoy playing Mac Invaders and Meteor Storm, two classic arcaders, while the more cerebral among you can fire up Blobs 3.0, Connect4, Fortune Puzzles and David's BackGammon. And there's always Unicycle! 2.0…

Updaters include Age of Empires 1.2 and Bugdom 1.0.1.

Blobs 3

Goofy Golf
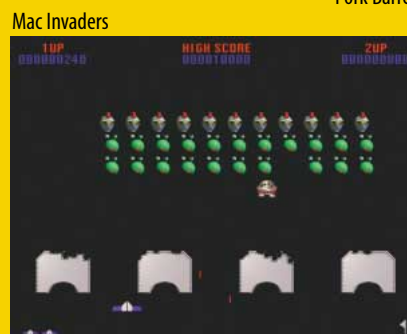
Mac Invaders

Pork Barrel

Macworld CD catalogue

Courtesy of Mark Pirri's superb DiskTracker program, Macworld brings you a searchable catalogue of all our CDs from 1997 and '99 – almost 125,000 files! This will grow month by month to allow you to find any file you want, without wearing out your CD-ROM drive. The latest version of DiskTracker (1.1.4) is also included – don't forget to register if you find our library useful.

G4 power: **Silver dream** machine

Power Mac G4 is up to three times faster than Pentium III – according to Intel tests!

Apple unveiled its latest series of Power Macs at the huge Seybold Seminars publishing show in San Francisco. Running on the incredibly fast PowerPC G4 processor, the new "Graphite" Power Macs are so speedy that the US government has classed them as "dangerous weapons" – a fact leapt upon by the Apple admen. Apple CEO Steve Jobs also showed off a matching set of monitors, including a 22-inch flat-panel Cinema Display (see page 18).

"The Power Mac G4 is not only the fastest Mac ever, it's the fastest personal computer ever," said Jobs. He went on to describe it as the "ultimate Photoshop machine".

He proudly stated that the Power Mac G4 is so fast that it is officially a "supercomputer", capable of performing over one billion floating-point operations per second (gigaflops).

It incorporates a new execution unit named the Velocity Engine – "the heart of a supercomputer miniaturized onto a sliver of silicon", according to chip architects Apple, IBM and Motorola. This new architecture was known previously as AltiVec.

Applications which tap the power of the Velocity Engine, such as Adobe Photoshop,

run over twice as fast as on the latest Pentium III-PCs. In a set of Intel's own Signal Processing Library Tests (**www.intel.com**), the 500MHz G4 was 2.94 times as fast as the 600MHz PIII.

The new G4 chip initially ships in 400-, 450- and 500-MHz systems, all including 1MB of Level-2 backside cache. It comes in the same striking casing as the current G3 machines, but dressed instead in a stunning, translucent clear, silver and graphite enclosure.

The £1,099 entry-level model sports a 400MHz G4 processor, and is based on the same basic motherboard as its predecessor, the Power Mac G3. It comes with 64MB of RAM (on all systems upgradeable to 1.5GB), a 10GB hard disk, 32x CD-ROM drive, and built-in USB and FireWire. Aside from the new colour scheme, the only other major change is the absence of an ADB port for old-style mice, keyboards and other add-ons.

Sawtooth bites

By contrast, the forthcoming 450- and 500MHz Power Mac G4 configurations mark the debut of

the long-rumoured motherboard redesign code-named *Sawtooth*. Sawtooth provides three times the memory bandwidth of the Power Mac G3 line and – at 800Mbits per second – twice the PCI bus throughput, according to Apple. Software DVD decoding is also present only in the two higher-end G4s, which also feature a 2x AGP port filled with an ATI Rage 128 video card with both analogue and digital outputs – the latter for Apple's new Cinema Display. As a result, these models are the only Macs that can drive the Cinema Display (see page 18) without an extra video card.

In addition to its two external FireWire ports, Sawtooth also has a third port located internally – indicating that Apple is moving toward FireWire for high-performance storage.

The Sawtooth models will accommodate AirPort, the wireless networking option first unveiled alongside the iBook at July's Macworld Expo/New York. During his Seybold keynote address, Jobs suggested that AirPort-enabled desktops could serve as bases for a local wireless network, obviating the need for an AirPort base station. Software allows the new Power Macs to act as an AirPort hub, negating the need to buy the £199 AirPort Base Station. (For more details on AirPort, see *Macworld*, September 1999)

The 450-MHz model will ship in the UK at the beginning of October with 128MB of RAM, a 20GB hard drive and DVD-ROM for £1,699. The 500MHz model with 256MB of RAM, 27GB hard drive and DVD-RAM, is due in late October for £2,399. The systems will ship with a Photoshop plug-in to optimize G4 performance when using the image-editing software.

Velocity va-va-voom

The G4 processor features a new multimedia addition: the Velocity Engine, previously dubbed AltiVec. On the hardware side, it includes a vector-processing unit incorporated into the G4 via a 128-bit bus; software comprises 162 new operator instruction extensions.

The Velocity Engine provides for highly parallel operations, allowing for the simultaneous

execution of up to 16 operations in a single clock cycle. Motorola claims this allows some multimedia operations to benefit from a speed increase of 2 to 30 times over current PowerPC processors. Power Mac product manager Stan Ng said the specs translate into dramatic speed boosts for applications that have been optimized for the Velocity Engine. Demos of enabled applications such as Adobe Photoshop and SETI@Home showed a three-to seven-fold improvement. When some of those same demos were run without optimizations, speed increases over comparable G3s were evident but significantly smaller.

This shift in PowerPC technology is so great, says Motorola, that the industry definition of processors will be expanded with its introduction.

A spokesperson for the AltiVec pioneer hinted that G4 will eventually make the move to Apple's consumer lines: "While the initial PowerPC microprocessor utilizing AltiVec technology will target very high-performance applications in networking and computing applications, subsequent AltiVec processors could address markets in which performance must be balanced with power, price and peripheral integration."

In addition, Apple announced that two new Macintosh Server G4s and a new Server G4 with Mac OS X Server will be available in November.

Multiprocessing G4 Power Macs are a distinct possibility when Mac OS X ships early next year. *Report by Daniel Drew Turner, Matthew Rothenberg, John Batteiger, and Ben Wilson* MW

Feel the G4-ce
The new graphite Power Mac G4 – including optional £70 internal Zip drive – alongside Apple's flat-panel Cinema Display.

Hidden wireless treat
Apple's AirPort technology could soon link up to 50 compatible Macs – up from the 10-user version the company first announced – according to CEO Steve Jobs. Here we see the antenna built-in to the Power Mac G4's front handle. The AirPort card slot is on the Sawtooth motherboard.

Programs rev up with Velocity Engine

Hot on the heels of the Power Mac G4's coming-out party at Seybold, Apple announced that more than 60 third-party hardware and software developers are ready to roll with products optimized for the G4's Velocity Engine.

The roster of hardware and software developers includes 3dfx Interactive, ATTO Technology, Adobe, Avid, Bungie Software, Casady & Greene, Linker Systems, Macromedia, Maxon, Media 100, Research Systems, Sonic Solutions, Synthetik Software, Terran Interactive and TeraGlobal.

The products include graphics apps, nonlinear video-editing cards, DVD software and 3D game engines. Optimized versions of Adobe Photoshop 5.5 and Terran's Media Cleaner Pro held centre stage during the Power Mac G4 rollout.

The Velocity Engine includes a vector-processing unit along with 162 new operator extensions in software. When optimized software makes a call to one of the new extensions, the Velocity Engine processes it independently of the CPU, freeing up processor cycles and speeding the application. Stan Ng, Apple product manager for the Power Mac G4 line, said that making Velocity Engine-optimized

Developers optimize applications for G4

versions of existing apps won't require a rewrite of the entire app. "It will require at least a recompile," he said, noting that an upcoming version of Metrowerks' Codewarrior programming environment will be fully Velocity Engine-savvy. Ng said Apple has been working for months with developers on adapting their software to the new platform.

He also said that optimizing modular apps – such as Adobe InDesign – will be even easier. All Power Macintosh G4s will ship with a Photoshop plug-in that enables Velocity Engine acceleration, he said.

Faster Photoshop

"Currently, the G4 is significantly faster than any platform we've seen running Photoshop 5.5," said John Warnock, CEO and chairman of Adobe. "The combination of the G4's speed, the Cinema Display, and Adobe InDesign, Photoshop, Illustrator and Acrobat embodies the professional

publisher's dream system."

"The new G4 is an unbelievable machine for creating compelling content that adds life to the Web," said Rob Burgess, chairman and CEO of Macromedia.

Ng said game developers who write to OpenGL will find it easy to make their games work with the Velocity Engine because of the 3D API's high-level structure.

When asked if Apple has been encouraging makers of AGP 3D cards to develop cards for the new Power Mac G4s (which features AGP), Apple display product line manager Scott Brodrick said the company is "working with graphic-card solutions people" and that "there are 3D card developers working on AGP solutions for the Mac." – Daniel Drew Turner MW

500MHz Power Mac G4 destroys opposition

□ **Best results in test.**

Power Macs compared:

	Graphics	Disk
Power Mac G4 500MHz	4,594	2,079
Power Mac G3 450MHz	3,588	1,466
Power Mac G3 400MHz	2,785	1,427
Power Mac G3 300MHz	2,604	1,272
Power Mac 9600 300MHz	1,074	913
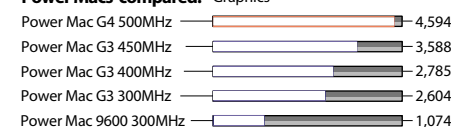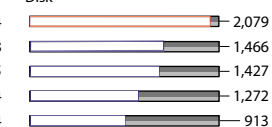
Photoshop test suite: Time in seconds

Power Mac G4 500MHz	86
Pentium III 600MHz	172

Behind our tests The Graphics and Disk scores are results from testing with MacBench 5.0. PowerPC G4 and cross-platform Adobe Photoshop test suite tests performed by Apple; others by the Macworld Test Centre.

No flickers at the Cinema

Stunning digital flat panel offers 24-inch screen; plus new 'graphite' 17- & 21-inch Studio Displays

Apple has matched its new graphite look to its whole range of monitors. And the real show stopper is its blockbuster Cinema Display, a spectacular 22-inch LCD flat panel that is the largest LCD display ever brought to market. The Cinema Display offers the same viewing area as a 24-inch flat CRT display, and features a "letterbox" format with 1,600-x-1,024 pixels.

The Cinema Display is "twice as bright, twice as sharp and has three times the contrast of CRT displays, plus it has zero flicker", according to Apple. Display data is supplied digitally from the high-end new G4 Power Macs. An integrated two-port USB hub makes for easier connection to peripherals. The Cinema Display's clear casing (see left: top and centre) is another triumph for Apple's industrial-design team led by Brit Jonathan Ive.

"This is the display we've all dreamed about for 20 years," said Steve Jobs, Apple's interim CEO. "The Apple Cinema Display is without a doubt the largest, the most advanced and the most beautiful LCD display ever offered."

The Apple Cinema Display (expected to cost around £2,599) will be sold exclusively through the online Apple Store, bundled with a 450MHz and 500MHz Power Mac G4 models when available in October.

Gorgeous graphite

Apple has also announced graphite versions of its 17- and 21-inch Studio Displays.

The 21-inch Trinitron CRT Apple Studio Display (19.8-inch viewable image size; expected price, £939) is optimized for publishing professionals who work with colour-critical applications. The monitor, with a four-port USB hub and tilt-&-swivel stand pictured bottom left, supports 1,600-x-1,200 pixels at 85Hz and features colour calibration using ColorSync technology.

The 17-inch DiamondTron CRT Apple Studio Display (16-inch viewable image size; expected price, £319) supports multiple resolutions up to 1,600-x-1,200 pixels at 60Hz.

Macworld reviewed the blue-&-white Studio Displays in March and May 1999.   MW

Apple sues another 'iMac copy'

Apple has picked another company to sue for allegedly ripping off its iMac design – filing suit against eMachines Inc over its new eOne computer. Apple is seeking unspecified actual and punitive damages from eMachines.

"There is an unlimited number of original designs that eMachines could have created for their computers, but instead they chose to copy Apple's designs," said Apple iCEO Steve Jobs, in a statement. "We've invested a lot of money and effort to create and market our award-winning computer designs, and we intend to protect them under the law."

eMachines claimed that it designed its translucent, blue PC (right) independently of Apple.

"Design concepts in the IT industry have been open in most areas," said Trigem Computer (the company that owns a 51 percent in eMachines).

"We have seriously reviewed the design of Apple's iMac before launching eOne PCs and also conducted a legal review before the launch," it said.

Trigem said that it intends to "smoothly resolve" the issue with Apple. Whether this would include some type of settlement is yet to be revealed.

The eOne is significantly cheaper than the £779 iMac, as low as £259 after rebate.

The iMac has been among the top-selling desktop PCs since its debut a year ago, and its popularity stems mainly from its colourful all-in-one design.

Apple has already sued Future Power and Daewoo (see News, August 1999) for making computers it claims are iMac knock-offs, and there was much speculation the company also would go after eMachines.

eMachines was not immediately available for comment.   MW

– Lisa Bowman
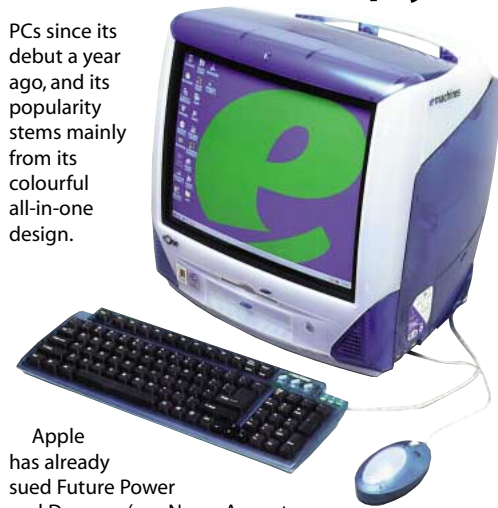
XML streets ahead with avenue.quark

As it seeks an edge in its showdown with Adobe and its "Quark killer" InDesign (see page 46), Quark is directing publishers' attention Webward. At the Seybold "21st Century Publishing" show, Quark unveiled the first component of its suite of "ground-breaking" Internet tools. Avenue.quark is a QuarkXTension that enables customers to easily tag their QuarkXPress content and extract that content in Extensible Markup Language (XML) format. Using Web editors, developers can quickly apply styles to XML data or design templates that integrate with dynamic publishing solutions. The full XTension ships next spring; a beta version will appear in the fourth quarter of this year. A Pre-Release version is included on this month's CD.

Unlike current third-party products such as Gluon's WebXPress and BeyondPress from Extensis, avenue.quark will not convert XPress pages to Web pages, complete with HTML and layout. Instead, Avenue is designed to get content into large-scale publishing systems as XML. This content can then be integrated into databases for archiving or processed through Vignette's Story Server or Allaire's ColdFusion into HTML.

"Content is currency," said Mark Lemmons, Quark's Internet Publishing Business Unit Manager. "Avenue will give QuarkXPress users a way to maximize the value of their content."

"XML is a key technology and we're committed to leveraging XML throughout our product line," said Mark Lemmons, Quark's Internet Publishing Business Unit Manager.

XML, HTML, SGML: what the L?
The World Wide Web Consortium created XML to compensate for the shortcomings of HTML. HTML, a derivative of Standard Generalized Markup Language (SGML), employs a rigid set of rules that optimizes browser-display document viewing. XML, judiciously pruned from SGML, retains SGML's power while reducing complexity.

Unlike HTML, XML allows the document developer to create tags that describe the data, and optionally create a set of rules called Document Type Definitions (DTDs). Any standard XML parser can read, decode, and validate this text-based, self-describing document, extracting the data elements in a platform-independent way.

Version 5.0 of Microsoft's and Netscape's Web browsers understand XML; and Sun has made the standard the portable data language for Java.

Momentum is clearly with XML as a portable data mechanism. The immediate benefit of XML-based e-commerce is that it will allow new and smaller businesses to participate; it's an easy sell, with its promise of simple implementation, wide availability, and lower costs.

At a Quark-Vignette press conference at Seybold, the companies said the product should be priced very aggressively – somewhere in the £99-199 range in the UK.

Quark's corporate communications manager Glen Turpin said that Avenue represents "piece one in a line of Internet tools" to move XPress content to the Web. Already in development: an application to design Web templates using the familiar XPress interface. Turpin promised that QuarkXPress 4.1 will include many "HTML import-export capabilities". **MW**

■ *Read our avenue.quark guide on page 131.*

Quark releases data-driven Web XTension – and Macworld has a world-exclusive version on this month's CD

CABLE PHOTOGRAPH COURTESY OF PHOTODISC, WWW.PHOTODISC.COM/UK

Prepare for 100-fold ethernet speed increase

After ethernet (10BaseT), Fast Ethernet (100BaseT), and the most-recently completed Gigabit Ethernet (1,000BaseT), the industry is already starting to look ahead to the super-speedy 10-Gigabit Ethernet – that's 10,000BaseT. Apple's current systems – from consumer iMac to professional Power Mac – come with built-in automatically switching 10/100BaseT ethernet.

And this just weeks after Team ASA – manufacturers of high-performance pre-press and digital-media networking products – announced a Mac OS X driver for its Stallion-GE-II family of gigabit ethernet PCI Network Interface Cards adaptors.

The Institute of Electrical and Electronics Engineers (IEEE) is already hard at work determining the future standard's parameters – such as media support and distance limitations – for a 10-Gigabit Ethernet standard.

Although currently bogged down in the technical nuts and bolts, it is hoped that a proper project authorization request can be submitted to the IEEE this autumn so development can begin in earnest.

10-Gigabit Ethernet will be aimed at service providers. Previously, the technology has been primarily aimed at local area network (LAN) systems. But now providers are latching onto Gigabit Ethernet as a less-expensive and simpler alternative to Asynchronous transfer mode (ATM) in metropolitan-area networks (MAN).

So what's next? You guessed it. "Before we're done with our work on 10-Gigabit, we'll have to start looking at 100-Gigabit Ethernet," says Dan Dove, principal engineer of LAN physical-layer technologies at Hewlett-Packard. **– Jeff Caruso**

iBook & AirPort :
'wait til October'

A jubilant Apple announced at Seybold that iBook advance sales had reached 140,000, and that's not including the portable-crazy Japanese computer market.

"We are thrilled by the customer response to iBook, and we're working hard to ensure that we can meet the demand", Steve Jobs said during his keynote speech. He claimed that the AirPort Base Station (due to ship in thie UK in October) is capable of supporting up to 50 users – up from the 10 announced at Macworld Expo/New York.

A spokesperson for AppleCentre Micro Anvika told *Macworld*: "One out of every four iBook buyers is also buying AirPort". A spokesperson for retailer Mygate confirmed this, but complained that sales could be "diluted by Apple's lack of a definite release date".

The iBook is available in two colours (similar to the iMac's Tangerine or Blueberry, but darker due to the co-moulded rubber), and is set to

£1,059 plus VAT for rubber laptop

retail in the UK for £1,059 (ex VAT). Confirmed AirPort prices were unavailable at press time; but expect the Base Station to cost £199, and the AirPort Card, £69. Sources report that the iBook should begin UK shipping on 25th September.

Micro Anvika expect it to be another week after that general release date until iBook becomes widely "available".

For more details, see *Macworld*, September 1999. To keep posted on iBook developments, visit Macworld Online, **www.macworld.co.uk**. MW

Mac OS 9:'your Internet co-pilot'

W hile the G4 Power Macs stole most of the thunder from the Seybold keynote address (see page 16), Apple also used the publishing event to provide some new details of Mac OS 9, the next release of the Macintosh operating system due out this October.

The public got its first look at Mac OS 9 during July's Macworld Expo in New York, and while some features were familiar to Expo showgoers, there were plenty of surprises as well.

Steve Jobs calls Mac OS 9 "Your Internet Co-Pilot" and suggests that the new operating system will provide unparalleled Internet connectivity and interactivity. Packed with over 50 new features, the OS is expected to cost £59. Jobs discussed nine Internet "Power Tools" built into Mac OS 9, as well.

Search me
The most hyped feature of the new operating system is Sherlock 2, the next-generation search engine first introduced with Mac OS 8.5 (see screen, right). New features of Sherlock 2 include the ability to search Internet name databases to find people and to search news as well. E-commerce capabilities have also been integrated.

Mac OS 9 also features the ability to maintain multiple user accounts; users of the same Macintosh can maintain separate preferences files with unique access to files and interface customizations.

Voice print passwording is also included

in Mac OS 9; using the feature, users can lock out unauthorized access to their systems by recording a unique voice identification.

The new OS also maintains a database of commonly used passwords in a "keychain" feature; once the system is unlocked utilizing the user's voice print (or more conventional password-protection), all passwords are unlocked as well – freeing users from the tyranny of having to keep track of different passwords for different servers, Internet accounts, and so on.

Users can configure the Mac OS 9 to auto-update itself every time a new release of any major component is available from Apple.

State of the art encryption technology is also included in Mac OS 9. Now, users with high security needs can encrypt and decrypt their files on the fly using built-in system tools.

File sharing in Mac OS 9 has now been extended to the Internet. Much like the Web page-sharing capabilities that Mac OS 8.x users have been able to use to easily distribute information on the Web, Mac OS 9 users will now be able to use the Mac's easy-to-setup file-sharing capabilities to distribute files to other Internet users.

Jobs also mentioned the inclusion of a network browser in Mac OS 9; Jobs indicates that the new technology will simplify the act of finding network servers dramatically.

The feature which interested the Seybold crowd most dramatically was Mac OS 9's ability to incorporate TCP/IP into AppleScript. Phil Schiller, Apple's vice president of worldwide marketing, demonstrated this capability by showing a setup of two computers connected over the Internet.

The two Macs ran a variety of software including FileMaker Pro, Adobe InDesign and Adobe Photoshop. Utilizing a series of AppleScripts, the two machines exchanged data and imagery to produce a completely automated catalogue. MW
– Peter Cohen

IBM opens PowerPC design to Apple rivals

Apple enjoys a unique position among major computer manufacturers as the only one to use the PowerPC chips on its motherboard. But all that's about to change.

IBM engineers attending August's LinuxWorld Conference & Expo in San Jose, California, said manufacturers are now welcome to use its motherboard design to build their own PowerPC-based hardware. That means you may soon be able to buy a computer with a PowerPC version of the Linux operating system pre-installed without buying hardware from Apple.

PC Data's Mark Bates said that IBM's decision could be "an opening for potential competition [to Apple] if a hardware manufacturer were to offer software support" for a PowerPC version of Linux installed on the machine.

CHRP-y cheap

"The novel thing about our approach is it's open – we are giving away the schematics, material, even the artwork for the circuit boards," said Steve Faure, an IBM advisory PowerPC engineer.

Back in the days of Mac clones, the Common Hardware Reference Platform (CHRP) was the great hope of cheap and powerful PowerPC systems. The plan was to take a page from the Wintel world and define a basic set of standard motherboard features for PowerPC-based systems, cutting prices. In those days, Windows NT was also going to be available for PowerPC, not just the Mac. But, Microsoft pulled the plug on NT for PowerPC. This leaves Linux, which is booming.

"The design is based on a very mature CHRP design, not a new design. If I were an OEM I'd want to move quickly, given how hot Linux is now," said Faure.

Operating (multiple) systems
An Apple Power Mac 9500 runs LinuxPPC 99, as well as the Mac OS and Windows 98 under emulation.

First to take IBM up on its offer is Prophet Systems, which will deliver PowerPC G3 and G4 desktop systems in the first quarter of 2000.

High- and low-end models – code-named Ultra and Empra – will feature an integrated chip set that includes 64-bit PCI, Gigabit Ethernet, advanced infra-red connectivity and PC-133 standard memory. They will also offer a modular card-bus slot, a built-in DSL modem, and options for six FireWire ports and seven USB ports.

Mac OS 9, the forthcoming OS scheduled to ship in October, reportedly requires no boot ROM, sources said, but may include essential code that works only with Apple motherboards — thereby blocking any compatibility with computers using motherboards designed by IBM.

– Wendy Mattson & Stephan Somogyi

PC makers plan Linux OS on G3

What is Linux?

While we prefer to applaud only the Mac, we rely on another operating system – one that could turn your Mac into a far more powerful computer.

Unix is the operating system that keeps the Internet up and running, and poses a far-greater threat to Microsoft's monopoly than the Mac. Unix is certainly a more complicated system than the friendly Mac OS, but new versions could turn Macs into screamingly fast Internet servers.

Unix is not one single product from one developer. It's more of a specification for an operating system – there are countless clones and variants, including one of the most popular ones around, Linux (**www.linux.org**). And Apple is hard at work on the upcoming Mac OS X, making the power of Unix more friendly and appealing to the average Macintosh user.

Linux is a free version that is developed by a group of volunteer programmers on the Internet and has taken the software world by storm – mostly because it's free, it's stable, and it doesn't come from Microsoft. Unix is far more efficient than the Mac OS in the way it manages processing horsepower (pre-emptive multi-tasking) and protective memory. As a result, even the slowest Power Mac can be shockingly fast and stable when it's running Linux. And that means you can keep older Macs long after they would've otherwise been written off as useless.
– Stephan Somogyi

Power Mac Linux softens up

Software options are opening up for anyone wanting to run PowerPC versions of the Linux OS.

At the LinuxWorld Conference & Expo, several companies announced plans to release new products.

Hales Corner, in addition to prepping a new version of its Linux OS for PowerPC users, has also been talking to IBM about ways to get its software pre-installed on OEM-produced computers (see above). Meanwhile, the company is readying LinuxPPC 1999 Q3, the name of its latest Linux package for PowerPC hardware.

Another company working with IBM on a Linux project is Terra Soft, distributing Yellow Dog Linux for Mac G3, PowerPC and RS/6000 systems. Terra Soft's Champion Server 1.1, shipping since late July, is a Linux package for networks.

Terra Soft CEO Kai Staats said Champion Server will soon fully support high-end RS/6000 machines from IBM that use a chip from the PowerPC family.

However, Terra Soft's core focus continues to be the G3/G4, Staats said, and its primary goal is working with Apple. Macintosh users will be able to buy the company's Yellow Dog Linux package pre-installed on G3 hardware from Apple-authorized VARs by early October, Staats said.

"That puts Apple in the lead again. Right now you can't go to a store and get a PC with Linux installed," Staats said.

At the show, TurboLinux Inc, showed a PowerPC version of its workstation software, TurboLinux 3.6, running on a Blueberry iMac. Next month, the company also plans to ship a Mac emulator that runs on older SCSI hardware. **MW**

Motorola buys main Mac tools

PowerPC maker invests in programming expertise

Motorola is to buy-out Metrowerks – developer of CodeWarrior and other programming tools – for $95 million. The deal brings together two of the largest players in the Macintosh market.

Motorola Semiconductor is one of two suppliers of PowerPC G3 and G4 chips to Apple (the other is IBM). Metrowerks is a major supplier of Mac-developer tools, most notably its CodeWarrior line of application-development software, as well as tools for producing Palm and Java code. The company also recently debuted tools for Apple's Carbon libraries, which will be introduced with Mac OS X.

Motorola plans to operate Metrowerks as a stand-alone subsidiary – retaining its current name and management team

"Metrowerks has an exceptional team, and its CodeWarrior software development products are among the industry's best for desktop and embedded systems programming," said Hector de J. Ruiz, president of Motorola Semiconductor Products Sector.

Metrowerks CEO Jean Belanger and Billy Edwards, Motorola's director of strategic planning, said the acquisition will bolster Motorola's efforts to expand in the embedded chip market. But both executives said the decision to focus on the embedded market doesn't mean that Motorola will lose interest in PowerPC development for Macs.

Moto bloato

Mac development is key to Metrowerks' success, Belanger said. "We have over 80 per cent market share in the PowerPC market, and we also have a strong footing in the 680x0 market."

Belanger said "we've been told that whatever resources we need will become available." This added resources will also help Metrowerks compete with other tool developers, including Microsoft and, ironically, Apple.

"In the Macintosh space, Adobe has been using our tools for years, but not every developer does," Belanger said. "Some use tools from Apple." **MW**
– Ben Wilson and John Batteiger

Strange days for AIM PowerPC partners

The news from Apple's PowerPC partners just gets curiouser and curiouser. While IBM's and Motorola's recent moves seem to bode well for the RISC architecture the three companies founded back in 1991, is the news equally good for Apple and the Mac OS?

Big Blue and Moto have certainly kept busy over the past month. First, IBM showed off a free reference motherboard design based on the hitherto dormant cross-platform CHRP standard (see page 25). Its stated motive: to encourage a new wave of third-party boxes that will use the PowerPC processor to run distributions of the open-source Linux OS.

Now, Motorola Semiconductor has announced plans to acquire Metrowerks, the developer of programming tools that have been central to the creation of third-party Power Mac applications. Long-time Apple watchers will remember that it was Metrowerks' quick thinking that pulled Apple's proverbial chestnuts out of the fire in 1993:

The Mac maker made the hardware switch to PowerPC but had yet to develop a coherent suite of programming tools for it, and CodeWarrior was the defining software that let developers migrate to the new standard.

On the face of it, the Mac plays only a supporting player in both announcements: IBM is adamant that its primary purpose in pushing PowerPC boards is to increase the processor's role in Linux circles, not to spawn Mac clones, and Motorola is equally articulate in arguing that its Metrowerks buy-out is aimed at speeding development of PowerPC-based embedded solutions.

Nevertheless, both moves raise interesting questions about the Mac OS's future role in the AIM partnership. Observers have been quick to note that a combination of third-party PowerPC boxes and Apple's open-source Darwin OS is just a short step away from running Mac OS X on non-Apple hardware. Meanwhile, although Metrowerks CEO Jean Belanger hastened to assure Macintosh users

that creating tools for the OS will remain a core part of the group's development plans, the jury seems to be out on precisely what percentage of its resources the Motorola-Metrowerks axis will devote to desktop OS development.

There's no question that what's good for the PowerPC is also good for the Mac, the perennial loyal opposition in an Intel-centred world. If the AIM partnership's RISC technology can indeed get in front of two powerful waves – the Linux phenomenon and the rapid rise of intelligent appliances – it can only help to bolster the team's commitment to propelling PowerPC into the next decade.

We look forward to learning how the Mac OS will take advantage of this new vitality on the firmware front. **MW**

SI99RAPH
Los Angeles

3D: Mac renaissance

After years of lagging behind Windows NT, the Mac is fighting back in the third dimension: *Stephen Beale reports from Siggraph 99*

Los Angeles: Siggraph can be a frustrating place if you're a Macintosh user. You walk the aisles, surrounded by the coolest graphics technologies – 3D scanners, motion-capture hardware, virtual-reality systems – and almost none of it runs on a Mac. From the looks of things, Windows NT has thoroughly conquered the high-end graphics arena embodied by August's Siggraph 99 convention, stealing thunder – and market share – from Unix vendors and Apple.

But with Apple's resurgence, its adoption of OpenGL and the prospect for wickedly fast Mac systems running AltiVec-based PowerPC G4 chips, some developers are taking another look at the Mac as a high-end graphics platform. Apple's embrace of OpenGL – a standard set of 3D graphics routines – is a boon for developers because they already use it in their NT products.

While NT dominated, plenty of Mac products were nevertheless on display. MetaCreations unveiled **Painter 6,** an upgrade of the popular natural-media painting software that features new brush controls, new 3D painting features and a new text-on-a-curve function (see page 35).

LightWork Design announced a licensing deal with Adobe to include the former's **Kazoo 3D** rendering technology in future Adobe products. Until now, the Kazoo technology has been available only in Windows software. The technology, which LightWork licenses to other software developers, allows users to manipulate and paint 3D models in real time.

Linker Systems announced that it will offer a version of its Animation Stand software – **Animation Stand Personal Edition** – for free download. The company also announced that Animation Stand 4.1 will include features that take advantage of the advanced capabilities in the AltiVec chip. Linker will delay releasing its software until the first Mac systems with G4/AltiVec processors ship.

Web 3D

When it comes to viewing 3D graphics on the Web, the Macintosh has long been the poor cousin of the computer industry. The reigning 3D Web standard, Virtual Reality Modeling Language (VRML), requires a browser plug-in, and the only such software available for the Mac – Cosmo Player – is buggy and works only with older versions of Netscape Navigator.

However, at Siggraph, the Mac took some important steps toward Web 3D parity. The biggest news came from a little-known organization called Zap Technologies, which has developed a compact VRML/HTML browser called **Twirl**. Zap, which describes itself as a pro bono software developer, is making the browser available on an open-source basis, and Zap founder Frederick Shaul demonstrated the browser during the Web3D Roundup.

Other VRML browsers for the Mac could be in the works. Blaxxun Interactive is making its VRML browser available under an open-source arrangement, meaning that other developers are free to create their own versions of the software. The significance of **blaxxun3D** is that high-quality 3D can be integrated into all kinds of applications without requiring a plug-in.

Several other companies have developed 3D Web technologies that work with the Mac. The best-known is MetaCreations' **MetaStream**, which allows Web site developers to stream 3D content created in Bryce, Poser and other MetaCreations programs. The company has now released the long-awaited MetaStream plug-in for Mac; the PC version has been available for more than a year.

Cult3D, from Cycore Computers, includes a Mac browser plug-in – but with Windows-based authoring tools. Hypercosm has developed a 3D graphics programming language called **OMAR** (Object-oriented Modeling and Rendering) along with the **Hypercosm 3DPlayer**, available in Mac and Windows versions, for viewing content created with OMAR.

The company says that its technology has an advantage over MetaStream and Cult3D because the language allows you to define the function of objects as well as their geometry. Another company, Web developer Pulse Entertainment, has created a Web 3D technology for its own projects. Pulse offers a 200K browser plug-in for the Mac and Windows.

Some developers are using Sun's Java language to generate 3D content for the Web. For example, Shout Interactive has developed a Java-based 3D renderer that runs on any Java-capable computer.

Waiting in the wings is **X3D**, the successor to VRML. Essentially a hybrid of VRML and XML, X3D will be backward-compatible with VRML, meaning you'll be able to view VRML content with X3D-enabled browsers. The Web3D Consortium, responsible for developing the standard, expects the first X3D applications to ship in the first half of next year. **MW**

Welcome to the Millennium Hotel

A chorus of celestial voices beckons you to a darkened entrance bathed in green light. Thin, transparent filaments hang from a giant overhead disk; if you pull on one, new voices – actually MIDI sequences – begin singing. You go inside, surrounded by video images of landscapes, and walk past a full-size 1950s-style Chevy that's partly reduced to wireframe. Then you see a dude in a strange mask pushing a cart…

You've just checked into the Millennium Motel, an exhibition of emerging graphics technologies at Siggraph 99.

Siggraph, being a nonprofit venture, is more than just a trade show. It has a major academic component, as college professors deliver papers on graphics technology. Then there are the Siggraph galleries, curated exhibitions that showcase the outer limits of computer graphics and interactive technologies. Siggraph 99 features two such galleries: The Millennium Motel and TechnOasis.

The Millennium Motel consists almost entirely of interactive projects. Curator Kathryn Saunders describes it as a "place where digital and human guests reconsider, rework and reinterpret life in alternative future formats".

The man in the HyperMask is an actor pushing a cart that contains a SGI workstation. The computer projects an image of a face onto the mask, while tracking the man's head movements to keep the image in place. Controls on the cart allow the actor to control the face's expressions. Developed at Sony Computer Science Laboratories, the system is designed as a theatrical storytelling tool.

From MIT comes the metaField Maze, a 3D video maze, complete with a little ball, that's projected onto the floor. Players stand in various positions to tilt the maze, thus moving the ball toward its destination.

The smaller TechnOasis consists mostly of printed artwork, but there are interactive installations as well. Some combine projected computer images with real-world objects. In one room, visitors play games with projected lights as minimalist music blares.

You can walk into MIT's Luminous Room, in which computer images are projected on a variety of surfaces. Here's how the creators describe it: "The CRT breaks open and the pixels inside leak out to stain everything."

It's a metaphor that could be applied to much of Siggraph 99, as the boundaries that separate the real and digital worlds slowly fade away. Using a motion-tracking system, you can be a virtual puppeteer, controlling the actions of a 3D character in an animated environment. Using a 3D scanner, you can create a digital model of yourself, then turn that model into a statue with a solid object printer. Don a virtual reality rig and you can enter a host of digital environments, and perhaps meet your own avatars (digital recreations of yourself).

These technologies are largely the domain of Unix and Windows NT. But as we also saw at Siggraph 99, the Mac is in a good position to catch up. Apple's adoption of OpenGL will make it much easier for developers to port Windows NT applications to the Mac, and this includes the software that drives some of the most interesting new 3D hardware.

Apple's resurgence – and the prospect of speedy Mac systems with G4/AltiVec processors – also sweetens the pot for developers. As graphics technology moves into a new millennium, it appears now more than ever that Macintosh users won't be left behind. **MW**

New packed iMac 'out in time for Christmas'

DVD & FireWire iMac 'on the way'

Apple is expected to unveil an updated iMac consumer Mac (code-named *Kihei*) either during September's Apple Expo in Paris, or at November's QuickTime Live! Conference in Los Angeles. Both dates offer Apple the chance to penetrate the lucrative Christmas market with its revised consumer Macintosh.

Features are likely to include DVD, fast FireWire (IEEE 1394) connectivity and AirPort wireless technology. A speed bump to between 366 and 400MHz is also probable. The new iMac is likely to ship with Mac OS 9 (see page 23), though an earlier release date would lead to the first batch of the new machines running OS 8.6.1 – a partial upgrade that Apple's software engineers are reported to be working on.

Kihei expectations
The new iMac may pack up to 64MB of RAM, double the current rather limited memory allocation. USB, of course, continues to be supported, but PCI cards are not expected in this or any 1999 iMac revision.

A sixth member of the colourful iMac family is anticipated by many.

The 'Graphite' colour scheme, introduced by the G4 Power Macs (see page 16), would complement the new high-end systems.

Finally, the bundled software package should remain the same, with the optional addition of a stripped-down version of Apple's Final Cut Pro (See Reviews, *Macworld*, August 1999), opening the doors to home video-editing experiments.

A Lite version of Final Cut would tie in with the expected addition of FireWire ports – high-speed connections built into many modern DV camcorders, such as the Sony model pictured above. Sony's IEEE 1394 variant – called iLink – is fully compatible with FireWire.

Visit Macworld Online (**www.macworld.co.uk**) for the latest iMac news. **– Jonny Evans** MW

Apple's back

Apple CEO Steve Jobs kicked off his Seybold keynote presentation with a brief review of Apple's recent financial performance, touting the company's seventh profitable quarter in a row.

"Apple now has more than $3 billion in cash with very little debt," Jobs said. Moreover, the company ended last quarter with less than one day's worth of inventory ("15 hours, to be precise"), which Jobs said far outstripped competitors such as Compaq and Dell.

Apple's share price – just $12 only 20 months ago – hit an all-time high $75 as we went to press.

Jobs said the company has sold two million iMacs in the year since its introduction.

Jobs next introduced the publishing pros to the iBook, the forthcoming consumer portable unveiled at the New York Expo. "This computer is faster than the fastest Mac available last year at any price," he said. According to Jobs, the company has already taken 140,000 iBook pre-orders (see page 23).

G4 on the cards

Simultaneous with Apple's introduction of its new G4 range of high-powered "super computers" (see page 16), upgrade specialists Interex, Newer Technology, and Sonnet unveiled their G4 upgrade-card plans.

Interex Europe (www.xlr8.com) released the XLR8 MACh Carrier G4. This upgrade offers an upgrade path for all Apple's beige systems from the Power Mac 7300 through to the G3, and even some clones. The package is enhanced with custom G4 and Velocity Engine utilities, in addition to performance enhancements for Adobe Photoshop. MACh Carrier is easily installed via its ZIF (Zero Insertion Force) daughtercard.

Newer Technology (www.newertech.co.uk; IMC, 01344 871 329; AM Micro, 01392 426 473) offers the MAXpowr G4 upgrade for upgradeable Power Macs (7300 and up). The card boasts up to 2MB of backside cache – G3 chips are limited to 1MB.

Neither Interex nor Newer specified the speeds at which their G4 upgrades would run. Sonnet Technologies, however, announced G4 upgrades in speeds of 400, 450, and 500MHz.

The Sonnet G4 upgrade cards will begin shipping in Q4 1999, starting with the 400MHz cards. Pricing has not yet been set. Sonnet (CU, 0181 358 5857) also promises to introduce ever-higher speed G3 upgrades as the processors become available.
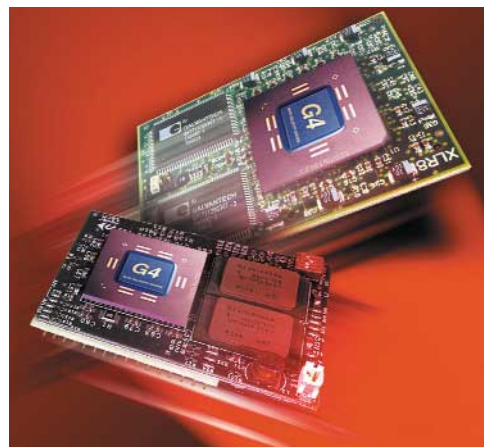
Despite the announcements, many owners of blue-&-white G3 Power Macs expressed worry about upgrade prospects for their machines. Some experts believe that the Apple G3 Firmware Update – released in mid-May for the Power Mac G3 line – locks out the possibility of booting from a G4. Blue-&-white machines that have not had their ROM updated should support a G4 upgrade.

Although technical and political issues remain unresolved, sources said the current barriers are temporary; they assured *Macworld* that an upgrade path will soon be blazed, either by Apple or a third party. More on G4 upgrades next issue.
– Jonny Evans MW
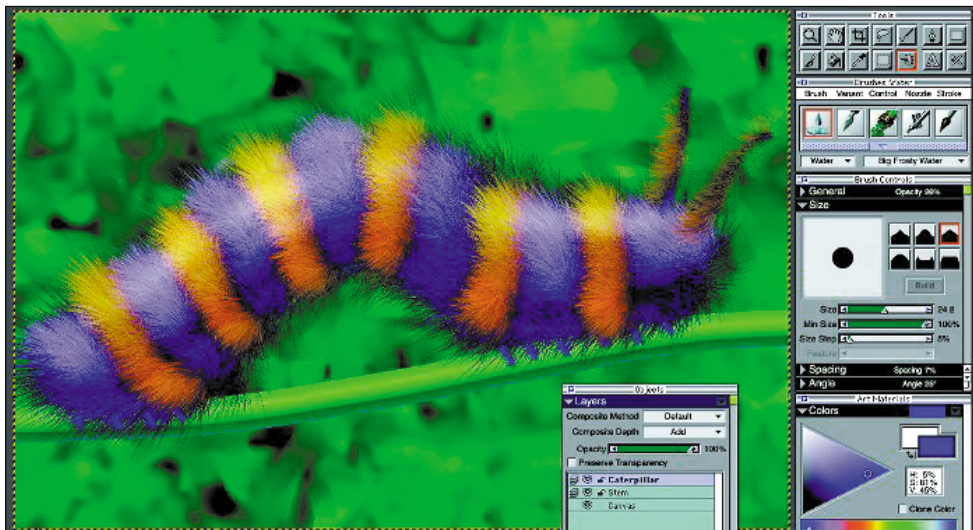
Super furry animal
Painter 6's new interface helped Matt Dineen create the above work, "Caterpillar".

Painter: easel fuel

MetaCreations has unveiled Painter 6 – a new version of its "natural-media" software for creating, compositing and enhancing images. Aimed at graphic designers, artists and Web-content creators, Painter recreates traditional artists' mediums – such as oils, acrylics, airbrushes, charcoals and felt pens.

The new version features brush loading, allowing for multiple-colour painting with each brush stroke. It also offers speed improvements, new brush-engine technology and a revamped interface.

Among the new offerings are the impasto brushes that paint with depth – either building up from the canvas, or cutting through layers of paint – and an Image Hose that sprays images with rotation and scaling based on the bearing, tilt and pressure of the user's hand. Hundreds of Image Hose nozzles are included in Painter.

Other new brushes have been added, for painting with neon, patterns, gradients, or tubes of patterns, and Painter 6 includes multi-stroke spooling, motion damping and cubic interpolation, to ensure fast, smooth painting. Brush-size and shape-cursors provide instant feedback for each painting tool.

Painter's Dynamic Text has been improved, so that users can now run text on a curve, and reshape the baseline by moving beziér-curve handles. Words can be inserted, edited, tilted, rotated, stretched and scaled directly on a curve, with automatic, configurable drop-shadows.

Also new is the responsive palette-knife that picks up, carves and moves paint, while responding to stylus bearing, tile and pressure. It also uses the new brush-loading feature.

A revamped memory-architecture improves performance and an updated plug-in host means plug-ins, like Kai's Power Tools, can be added. CMYK TIFF-support allows easy and fast opening and saving of such images, without the use of additional software. Industry-standard extensive layers are now also supported.

Other features include support for Wacom's Intuos tablet, pen and airbrush; and an improved interface, with expandable palettes and intuitive environment.
Computers Unlimited, 0181 358 5857

Above
Graphic artist Matt Dineen turned to Painter 6 to create Brush Speckled. He used the new Camel Hair Brush and Palette Knife options.

Right
Clo-Nay, by Rhoda Grossman, was fashioned using the new impasto brushes.

Wraps off ShinkWrap

Aladdin Systems is shipping ShrinkWrap 3.5, an enhanced version of its disk-imaging utility. ShrinkWrap is useful for storing, accessing and sharing songs, games and other files. Disk images are created by dragging-&-dropping the item onto the application. The new version now has support for HFS +, and Apple's segmented disk-images can be created, read, written and mounted without using scripting software. ShrinkWrap is available directly from Aladdin Systems for $24.95, upgrades cost $14.95.
Aladdin Systems, www.aladdinsys.com

PowerPrinter muscles in

A high-resolution CD-R printer has been announced by Trace Services. The PowerPrinter prints directly onto the CD's surface at resolutions of up to 1,440-x-720dpi, producing photo-realistic results.

With an input stack of 50 CDs, the unit enables continuous, unsupervized printing, and has an ouput-rate of 72 CDs per hour at 720dpi on a 25 per cent coverage. The £4,995 PowerPrinter is aimed at jobs too large for manual printing, or too small for silk-screening.
Trace, 01462 484 248

Canon on Mac trail

Canon's latest range of bubble-jet printer will be Mac-compatible, thanks to its new USB/parallel adaptor cable. The 2.5-metre converter is available for use with the BJC-6000 and BJC-7100. The £59 adaptor comes with CD-ROM set-up software and a user guide.
Canon 01737 220 000

Verity CD-R enters fray

Verity Systems has launched the VS6000 automatic CD-R duplicator. The stand-alone device can make up to 100 copies of a CD, unattended in four hours.

With an internal 4GB hard disk and upgradeable firmware, the £5,285 VS6000 is targeted at music studios and for in-house company use.
Verity Systems, 01252 317 000

pricing update

Headline Studio

Headline Studio, the Web-banner creation program from MetaCreations, has been reduced from £179 to £79. The software's features include the application of video effects – such as walk-ins, dissolves and fades – to images and text. Headline Studio 1.0 includes customizable Web-safe colour palettes and unlimited undo.
Computers Unlimited, 0181 358 5857

Tally A3 bleed printers

Tally has cut the price of two of its A3 full-bleed colour printers. The T8204 is 17.5 per cent cheaper, at £3,295, and the T8204plus is now £600 cheaper, at £3,895. Both printers include PostScript Level 2, and 10/100BaseT ethernet, and deliver four to eight ppm colour and 16ppm mono. The T8204 produces 600-x-600dpi and ships with 64MB of RAM. And the T8204plus comes with 192MB of RAM and prints at 1,200dpi.
Tally, 0800 525 318

Kodak DCS 560 and 660

Kodak has slashed the price of its flagship professional digital cameras, the DCS 560 and the DCS 660, by 25 per cent. Both cameras now cost £14,995, down from £19,995. The FireWire-equipped DCS 660 is a six-megapixel CCD camera in a Nikon F5 SLR body, offering calibrated colour-response and auto-white balance. The DCS 560 has the same spec but is the Canon equivalent.
Kodak, 0800 281 487

Mayflower Softboard

Mayflower is offering discounts on its Softboard interactive whiteboard range while stocks last. Anything drawn on their surface is captured and displayed on the Mac, and users can export in PICT or SBD file format. The wall-mounted model is down from £3,995 to £1,245; the mobile version is £2,995, down from £4,600; and the portable is £2,150, down from £3,199.
Mayflower, 0800 980 2880

Product blitz
The latest flurry of new product releases from Epson include (clockwise from top left) the Stylus Photo 750, the Stylus Color 1160, the PhotoPC 850z and the PhotoPC 650.

Epson at full tilt

Epson continues its roll-out of new products this month, with eight new models hitting the market. They include Epson's two combination products – the Stylus Scan 2500 and 2000 – that were touted by Steve Jobs at Macworld Expo in New York in July as classic USB offerings.

The Stylus Scan 2500 incorporates PhotoReal printing, multi-page stand-alone copying, scanning, faxing and emailing in one device. Based on the Stylus Color 740 printer and flatbed GT-7000, the product features an LCD panel allowing selection of functions such as number of copies, quality setting, reduction and enlargement, and brightness. Aimed at the SoHo and SME markets, the Stylus Scan 2500 is priced at £288.

The other combination model, the Stylus Scan 2000 (right) is a "printer plus" product, again providing printing, copying, faxing, scanning and emailing, and featuring a one-button operation. This £237 model is designed in "cool white" and has interchangeable lids in all five iMac colours. Both combination-products offer 1,440-dpi, six-picolitre printheads with variable-sized droplets.

The company is also shipping three new ink-jet printers and a brace of digital cameras.

Epson's digital camera range now embraces the PhotoPC 650, an entry-level USB-equipped model priced at £203. The camera has a 1.09megapixel CCD sensor, that captures pictures at 1,152-x-864 pixels. The camera has a 1.8-inch LCD monitor and features a built-in auto-flash and and a five-element, aspherical glass lens with four aperture settings. It ships with an 8MB CompactFlash card.

The company's other digital camera release is the PhotoPC 850Z, a three-megapixel model aimed at business and professional users. Its highest spec digital camera to date, the 850Z costs £629 and includes manual exposure, exposure compensation, spot metering and divided brightness-metering, manual shutter speed, focus and white-balance adjustment, quick-take mode, continuous-shot mode and focus lock.

New to Epson's ink-jet printer range is the Stylus Photo 750 Millennium Edition, with a "futuristic" black and silver design. The £220 printer incorporates Epson's ultra Micro Dot technology and has both USB and serial interfaces. Print speeds are 6ppm mono and 5.5 black and colour text, and the resolution is 1,440 dpi.

The company extended its A3+ business ink-jet printer range with the Stylus Color 1160, aimed at the SoHo and SME markets and entry-level design houses. The £305 printer offers speeds of up to 9ppm mono and 8ppm colour, and 1,440 dpi resolution.

Also in the ink-jet range is the £152 Stylus Color 760. The printer has 1,440 dpi Micro Piezo four-colour printhead and print speeds of up to 7ppm mono and 6.7ppm colour.
Epson, 0800 220 546

Kodak develops digital camera trio

Kodak has unveiled three digital cameras – the DC280, the DC215 and the professional DCS 330. The higher-end DCS 330 incorporates Kodak's new Indium Tin Oxide (ITO) sensor technology, which improves colour accuracy and reduces image-noise by increasing the camera's spectral response. The camera is based on the Nikon Pronea 6I body, and costs £3,995.

Other features include 3-million pixel resolution; an LCD with on-board histogram; a burst-rate of one image per second; Kodak's anti-aliasing filter; 9MB file size; an open Application Programming Interface – allowing third-party developers to create their own software applications; and an external flash sync connector.

The £495 USB-equipped DC280 (below) has a 2.3-megapixel CCD sensor, and can capture images at a resolution of 1,760-x-1,168 pixels.

A 20MB CompactFlash card can store 245 low-resolution images, or 32 high-resolution images. It has a 2x wide-angle optical zoom that can be extended digitally to 6x.

The £289 DC215 (below) is Kodak's most compact megapixel camera to date. The 115-x-43-x-67mm model features a 2x wide-angle optical zoom and can capture images at a resolution of up to 1,152-x-864 pixels.

Its free 4MB memory card can store between 12 and 54 images, depending on resolution.

Other features include multi-lingual display options, JPEG and FPX file formats, and creative-border templates.
Kodak, 0800 281 487

Canon's camcorder first

Canon has introduced the XM1, claiming it to be the world's first digital camcorder with a Fluorite lens. The Fluorite lens is traditionally used in Canon's professional camera lenses. Fluorite – a natural ore that collects light at a single point – provides sharp images and eliminates most colour aberrations. An ND filter reduces the amount of light to the CCD, to beat brightness-blur, caused by sand or snow.

The camcorder also features a 20x high-powered zoom – the equivalent to a 806mm zoom lens on a 35mm SLR camera.

The XM1 has a 180,000-pixel colour viewfinder and 120,000-pixel 2.5 -inch colour LCD screen. Images can be in normal, frame or photo mode. Manual controls can also be used to create soft-focus images, to add red or green colour, or to adjust focus.

Other features include SP/LP recording, self-timer, easy dubbing, picture-sharpness adjustment and a white-balance feature for auto, manual or outdoor situations.
Canon, 0800 616 417

Lac Cie's CD network-solution

La Cie is shipping its new NetCD range of network CD solutions, and has announced a new 6x 4x16 CD-RW (below). The La Cie NetBox and NetTower are Network Attached Storage (NAS) devices, which can be connected directly to an ethernet network without server or software installation.

The £1,395 CD NetBox comprises one CD-ROM drive and an 18GB hard disk. For larger requirements, the £1,955 CD NetTower offers six CD-ROM drives and an 18GB hard disk.

The new CD-RW drive, the CDRW-6416, costs £269 and records data or music on CD-R discs 40 per cent faster than with ordinary 4x technology, claims La Cie.
La Cie, 0171 872 8000

cds and books

Photoshop Bible classes

Photoshop 5 Bible (Gold Edition) by Ruth Maran is the latest release from IDG Books. Priced at £50, the cross-platform guide to Photoshop covers everything from working with layers to customizing graphics for the Web. The book comes with two CDs containing plug-ins, filters, a professional artwork gallery, and QuickTime software.
Transworld Publishers, 0181 231 6732

■ Another Photoshop guide has been published by Butterworth Heinemann. *Photoshop Made Simple*, by Rod Wynne-Powell, costs £8.99 and is for first-time users. The book is based on a task-based tutorial approach and covers Photoshop version 5.0.
Butterworth Heinemann, 01865 310 366

Tongue-taster title

Amharic, the national language of Ethiopia, is the latest addition to the range of £21 Talk Now! series of language-learning CDs from Eurotalk. Designed for beginners, the TalkNow! titles use interactive games built around everyday topics, to help build vocabulary. A recording facility lets the learner listen to their own voice, and compare pronunciation to that of a native speaker.
EuroTalk, 0171 371 7711

Literary learning aid

Sherston has released the Activity Bank: English series, a set of four CDs developed in conjunction with the National Literacy Association. Each of the CDs, one for each year-group, contains six different activity types: missing-word tests, check tests, comprehension, identification, quiz and text-editing. Each CD costs £35, with multi-packs available.
Sherston Software, 01666 843 200

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product news

BBEdit upgrade ready

The new update for the free text editor for Mac OS, BBEdit Lite 4.6. is ready for download. Among the improvements are an enhanced Hard Wrap command, the ability to assign key equivalents to all of BBEdit Lite's menu commands via the Set Menu Keys option, and support for extended Unix-style search characters. BBEdit Lite 4.6 also benefits from numerous interface and performance tweaks. A number of useful plug-ins that automate common text conversion tasks are included with the freeware package.
Bare Bones, www.barebones.com

Mac-to-phone data move

Users of PowerBooks, iMacs, and G3 Power Macs can now send and receive data via a GSM phone, following the launch by TDK of a range of GSM data communications PC cards. TDK's £139 Series 6100 cards support GSM handsets from leading manufacturers, including Motorola, Panasonic and Siemens. The card is supplied with STF-fax Mac software.
TDK Systems, 0118 921 6230

Alps at peak of powers

Alps Electric has announced the UK launch of its MD-5000 printer. The 2,400 dpi photo-quality colour printer retails at £583 and options include a USB kit for the iMac, and Adobe PostScript 3 with Pantone colour matching. There is also an option for a dye-sublimation upgrade kit. The printer uses Alps' patented micro-dry printer technology, incorporating fade-proof, waterproof-pigment dry inks.
Alps, 01344 860 400

Arowana goes flat-out

Arowana, has released its first "flat-panel" speaker, priced at £60. The speaker uses NXT technology and uses a thin, light-weight, rigid panel driven by an exciter element (transducer). This yields complex vibration modes over the entire panel surface, uniformly distributed over the desired frequency range.
Poso, 0121 524 1788

Kritter off the mark

The iREZ division of PAR Technologies has introduced the successor to the Kritter digital-video camera. Kritter 2 (above) features powerful colour-imaging qualities, with light-sensitivity five times as powerful as its predecessor.

Running a 350,000-pixel CCD capable of working at sensitivities as low as one lux – and with a 1mm-to-infinity focus range – Kritter 2 can create image-sizes up to full-screen, using S-video. Software tools included in the bundle are iREZ Reel-Eyes LE and iVisit 2.2 Video Conferencing software. This offers the potential to do video-conferencing without taxing your processor. Kritter 2 is available in two flavours, USB and non-USB, at £109 and £129 respectively.

iREZ also offers the new CapSurePRO Type 2 PCMIA video-capture card (right). This allows users to input and output live streamed-video from any video source. Equipped with a dongle, the card connects to any PAL or NTSC source from camcorders to DVD, and outputs to a wide variety of recording devices.

Zoomed-video technology enables CapSurePRO (below) to bypass the microprocessor, delivering rates up to 27MB direct to the screen's video buffer. Equipped with a full array of editing and special effects tools, the card costs £319.
AM Micro, 01392 426 473

Flat-panel is sheer Brilliance

Philips has announced the 18-inch Brilliance 181 AS – its largest flat-panel monitor to date.

The company claims that it has the smallest footprint in the world for a monitor of its size, taking up far less space than a traditional CRT monitor. The Brilliance 181 AS incorporates wide viewing-angle technology – 160 degrees horizontal and 115 degrees vertical. It carries the latest TCO 99 approval seal, guaranteeing conformance to tough standards in safety, low emission, power consumption and ergonomics.

The £2,999 monitor comes as standard with an on-screen display and one-step user-setting customization, long-life backlight (50,000 hours), and an integrated tilt/swivel base. It also incorporates an auto-set-up feature and OSD lock.
Philips, 0181 689 4444

Play it on Rio ...

The Rio 500, a Macworld Expo Best of Show winner, is the first Mac-compatible portable MP3 player from Diamond Multimedia.

The Rio Audio Manager software included with the player is used to create and store MP3 files from audio CDs, or download audio content from MP3 sites. The player stores up to two hours of digital-quality music and 32 hours of spoken audio programs. Equipped with a USB port for compatibility with the iMac or G3, the Rio 500 comes in teal, purple or solid grey.

The pocket-sized player weighs 2.75 ounces and plays for 13 hours on a single AA battery. As well as MP3, the Rio plays MPEG2.5, ADPCM, and Audible.com content. Rio has a 64MB built-in flash memory, expandable to 96MB, and features a press-&-scroll interface for selecting tracks, and adjusting volume and EQ controls.

It ships with earphones, USB cable, case, battery, software and sample music. The Rio 500 is expected to retail for £175.
Computer 2000, 01256 463 344

All prices exclude VAT

David Fanning

Continuous Internet connection means Mac fans can no longer take security for granted.

Indecent exposure

There is good and bad news for Internet users. The good news is that, by this time next year – or sooner, if you live in the right area – ADSL will probably be available to you. ADSL is a forthcoming high-bandwidth permanent Internet connection that uses existing telephone cabling. The bad news is that, unfortunately, if you live somewhere out of the way, you may not be given the chance to join in the fun. One of the costs of country living, I'm afraid.

But for the rest of us urban-dwelling Internet users, high-bandwidth, permanently connected Internet is on its way.

Before you get too excited, there is something that needs addressing. It's something we Mac enthusiasts like to think doesn't concern us – but not any more: security is now more important than ever.

Hackers, the merry pranksters of the Internet, are as active as ever. In the past, their attentions have been focused on "exposing" security holes in government or military communications – but these are becoming ever scarcer.

What they've now turned to is hacking companies like Microsoft, such as the recent Hotmail hack that let anybody log into anybody else's Hotmail account without a password. Eventually, vulnerable companies will learn the lessons being taught the hard way – and tighten security.

What makes it easy for hackers to attack companies is a permanent Internet connection. So, what are the implications concerning permanent domestic Internet connections? Will it be safe? As time passes, the less safe it will become.

Until now, we have been cosy in the knowledge that it's practically impossible to hack AppleTalk from a TCP/IP connection. They are simply different languages, and TCP/IP can't do anything to AppleTalk. What is changing is that AppleTalk is gradually going to disappear in favour of TCP/IP. But once TCP/IP is used for file transfers, printing, file sharing and so forth – and you have a permanent ADSL connection – then, bingo, you have a security risk.

On the one hand, there are great advantages to using TCP/IP for these things; it's faster and you can communicate with just about any platform you care to mention. You are able to mount your hard disk at work from home if AppleShare IP is running fantastically convenient, but also fantastically vulnerable.

Many people don't worry about security. Why should they if Macs are so safe? Even when entire companies are connected to the Internet, their Macs can be run without a Firewall if AppleShare IP is not being used. But once AppleShare IP is there, security is suddenly extremely important because, in an instant, guest access to your Mac becomes extremely dangerous. Anybody connected to the Internet – about 40 million people and rising – will have access to your hard drive. Not only can they see your personal files, but they can amend, delete, or infect them also. Apple has made it easy for you to get Internet access, but not without giving the same ease of connection to everybody else. Of course, passwords are the first line of defence, and, in the majority of cases, this is all you need.

For large networks, firewalls are a safe, if costly, security measure – but for personal ADSL this may not be an option.

When you're at home with a 512Kbps link to the Internet, you may be tempted to do more than merely browse other people's pages. The continuous nature of ADSL means you may be able to run certain server applications on your home machine. Some of the simplest methods of serving content to the Internet are via Hotline, Carracho or FTP server. These servers can run on your machine and give outsiders access to a certain folder, or your whole hard drive. They can be password-protected, but can also be hacked by malicious or inquisitive parties.

If you want to use any of these server apps, you are also probably savvy enough to know the risks. After all, Hotline and Carracho servers are the staple diet for hackers. A less obvious option is running a Web server from your Mac. This is done by turning on the Web Sharing control panel. In itself, this is not dangerous – but if somebody wants to wrest control of your machine, there is a fair chance that, with the right knowledge, they can.

So, what to do? We may have greater freedom, but it brings us closer to the anarchy of the Internet. Already, firewall companies are launching personal firewall software to safeguard Internet connections. As more and more people hook up to the Internet, such security software will multiply rapidly. I'll certainly be on the lookout for shares in companies that offer this kind of product. **MW**
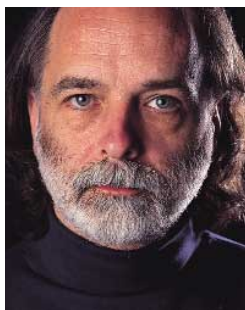
Michael Prochak

Workplace stress is driving us to
'computer rage'. Maybe it's time to chill out.

PC fury all the rage

When riding around a sleepy midwestern suburb in a car with Ken Babbs and Page Browning Ken Kesey suddenly looked pensive and said: "You know, the problem with super-heroes is what to do between phone booths." And, as Dennis Hopper once said: "Just because it happened to you doesn't mean it's interesting." But sometimes, what people – super-heroes or not – do between phone boxes just might be interesting after all.

After a low-profile contemplative 30 years on his farm in Oregon, Kesey resurrected the spirit of the bus, brought it to the UK and drove around looking for Merlin. Instead of sharing the joke, a lot of trendy critics went into a kind of 'hip rage' and were aggressively indignant that a load of old wrinklies could still think of themselves as spiritual and cultural revolutionaries.

Perhaps it's just another case of Sixties-envy. Instead of love and revolution, the 1990s seems doomed to be remembered as a decade of stress and anxiety. The problem is, we can't all be super-heroes all the time. And what we do between phone boxes could be more important to our overall sanity and well-being then what we get in a stress about when we think we're saving the world.

Hot on the heels of road rage, media rage, trolley rage, air rage, and pavement rage, the latest recognized psychotic phenomena is now, apparently, PC rage. A recent Mori survey discovered a growing need for stressed-out users to lash out and retaliate against their IT equipment. At one time or another, most Mac and PC-users will have uttered the odd expletive at the lack of responsiveness or understanding shown by their 'user-friendly' equipment.

But apparently, there's also a growing need for physical retribution – a swift kick or a smack upside the monitor being dispensed by over a quarter of young men polled. Psychologists believe that PC rage is caused by – wait for it – the 'user-friendly nature' of the latest technology. Users also get ugly because PCs remain unruffled by displays of anger, which in turn, can lead to a heightened physical response. The inability to fix technical problems quickly, or even to understand what the problem is, increases anxiety, anger, and stress. The survey also cited that one in six respondents vented their anger on colleagues at work, or on family members. Given the gorgeous design of the iMacs and G3s, it's hard to imagine anyone wanting to bash them

about. As a matter of fact, if you look on Apple's Web site, there are piles of touchy-feely testimonials from users that literally stroke and caress their iMacs on a regular basis.

However, even the coolest computers can annoy us: we all know that feelings of a loss of control, together with pressures of work and deadlines, inevitably leads to high levels of stress and aggro.

So, what can we do to combat this latest in a long line of sad aggressive dysfunctionalities? Well, how about a little Sixties Zen. Apparently, in the States, a guy called Les Kaye – an ex-IBM engineer-turned-Buddhist-monk-turned-meditation trainer – is on-call to help alleviate the tech-induced stresses and strains, suffered by Silicon Valley high-fliers. Corporate giants, such as Apple, IBM, Hewlett-Packard, NEC, Netscape, and Nortel have all retained the monk's services to provide cubicle meditation, so that employees can learn to multi-task in peace.

Each hour-long session consists of 30 minutes of reflection followed by an 'encounter session' (peace, man) where feelings are, like, shared. Kaye says that the service is skill-building and that it helps employees regain control. Essentially, according to the 'monk', the programme aims to reduce stress, and increase productivity, decision making, and problem-solving abilities, and other business-speak nonsense. I can see it now: joss sticks burning alongside multi-coloured iMacs; loads of flickering candles; and a Zen Mac-master sitting in full lotus position saying: "Ah, grass-hopper. When you can take the mouse from my hand, it is time for you to leave."

They say that, at the age of four, children laugh more than 400 times a day. But by the time we reach adulthood – with its attendant worries and strains of work and home-life – that figure drops sadly to around 15.

PC users are so highly pressurized that stress levels and alcoholism are now reckoned to run second only to levels found in the pressure-cooker world inhabited by junior doctors. And we haven't even started talking about substance abuse. Accepting the pace of technological change and the demands that this imposes, I suppose organizations and individuals might well benefit from some sort of cranky, counteractive measures against aggressive stress and burn-out.

Then again, maybe we should all stop taking this crap so seriously, have a laugh... and go looking for Merlin. **MW**

Desktop critic

DAVID POGUE is the author of *iMac for Dummies* (IDG Books Worldwide, 1998) and the *Great Macintosh Easter Egg Hunt* (Berkely Books 1998). He also wrote *Macs for Dummies,* fifth edition, updated for Mac OS 8, *The Weird Wide Web* (IDG Books Worldwide, 1997) and *The Microsloth Joke Book* (Berkeley, 1997).

Steven saves the Mac

Steve Jobs gave his recent Macworld Expo keynote iCEO speech exactly two years after his first in 1997, when he had just rejoined Apple as its newest leader. In those two years, he's turned Apple, then a condemned property, into a hot, thriving, profitable company – a feat that all agreed was impossible. If you've ever read the classic American narrative poem *Casey at the Bat* (confused British readers advised to read the original at **www.historybuff.com/library/refcaseypoem.html**), you can't help but notice a few parallels . . .

The outlook wasn't brilliant
For the Apple team that year;
Its market share was down to four;
The end, they thought, was near.
When revenues went up in smoke,
And laptops did the same,
The die-hard fans themselves
Began to look away in shame.

A straggling few abandoned ship
For Windows. But the rest
Clung to the hope which springs eternal
In the human breast;
They fantasized that Steve Himself,
Evicted long ago,
Might somehow have a crack at being
Saviour/CEO.

But "Diesel" Spindler had the job,
And Gil came after him;
The former was a washout,
And the latter way too grim;
So on the stricken multitudes,
Dark melancholy sat,
For no one thought that Steven Jobs
Would get a chance at bat.

But Diesel blew it big time,
And was ousted by the board,
And Gil, with golden parachute,
Abruptly pulled the cord.
And when the dust had lifted,
And they saw what had occurred,
Now Steve was back at Apple's helm:
The triumph of the nerd!

There was ease in Steven's manner
As he stepped into his place;
There was pride in Steven's bearing
And a smile on Steven's face.
The kid who'd started Apple
With a vision in his teens
Was once again a superstar –
In turtleneck and jeans.

The media was scornful
As he formed the board anew;
The faithful screamed in protest
As he axed the Newton, too.
And now he's on the Expo stage,
And now the world awaits,
And now he tells the world he's made
A deal with William Gates!

The crowd went wild with anger;
There went up a muffled roar,
Like the beating of the storm-waves
On a stern and distant shore.
"Let's kill him! Kill the traitor!"
Shouted someone, red with rage;
And it's sure they would have killed him
Had he not been up onstage.
"My friends, you know not what you say,"
Began the fabled man,
"I still think Apple can be saved –
I've got a secret plan!"
Reporters scoffed. They shouted back:
"No matter what you say,
You cannot run a company
Without an MBA!"

But then there came the iMac:
Steven's baby, Bondi blue;
As sales and shipments rocketed
The stock quadrupled, too.
The profits Apple took in now
Were not to be believed –
No wonder; frills like free support
And floppies had been "Steved."

The ugly beige of yesteryear
Was next in line to go;
The Power Macs, in shades of blue,
Made Pentiums look slow.
And ads, and games, and USB …
He cleaned up Apple's house.
Each choice he made was brilliant!
(Well, except the iMac mouse.)
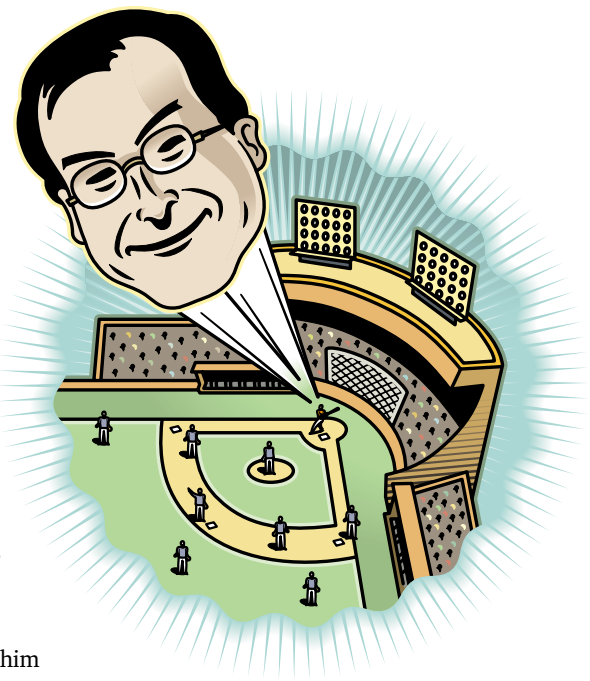
Then one by one, the pundits
Started eating public crow;
The Apple-bashing know-it-alls,
It turns out, didn't know.
Soon buying Macs was cool again,
And cutting-edge, and smart –
As Microsoft got stuck in court
And Compaq fell apart.

Oh, somewhere in this favoured land,
The market share is low,
The red ink's flowing somewhere,
And somewhere sales are slow.
And somewhere critics slaver,
And somewhere moods are black;
But by God, there's joy at Apple –
Steven Jobs has saved the Mac! ⓂⓌ
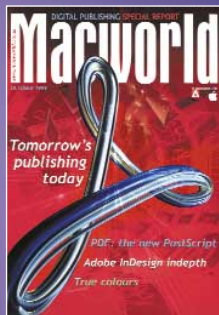
PETER HOEY

MACWORLD RATING ★★★★★/9.0-10.0 = EXCELLENT ★★★★/7.0-8.9 = VERY GOOD ★★★/5.0-6.9 = GOOD
★★/3.0-4.9 = AVERAGE ★/0-2.9 = POOR

MACWORLD POLICY At Macworld, we don't think our readers should have to worry about whether ratings are based on a real product or a prototype. Therefore, we simply don't rate products unless they are real, shipping versions – the products we rate and review are the same products you end up buying. All prices exclude VAT, unless stated.

MACWORLD JACKPOT The Macworld Jackpot gives you the opportunity to win some of the products we review. Simply dial the number indicated on participating reviews. Calls cost 60 pence per minute. Winners are selected by computer the day after the closing date.

Spanking-new DTP software

Adobe InDesign 1.0

Publisher: Adobe
www.adobe.com

Pros: Fully-featured; powerful; cheap, compared with QuarkXPress; will be relatively easy for XPress experts to learn.

Cons: Doesn't print to non-PostScript printers; some features may cost extra; fussy interface.

Price: £199, crossgrade from Photoshop, Illustrator, PageMaker and QuarkXPress (introductory offer until December 31; £399, normal price.

Star Rating: ★★★★/8.4

Ever since PageMaker was unofficially relegated to the SoHo market a few years ago, no software developer has been able to find exactly the right combination of a six-figure marketing budget and the sophisticated software necessary to tackle the dominance of QuarkXPress.

XPress has reigned supreme in the graphic design/page-layout software arena for the past five years; a position not necessarily maintained through the merit of the XPress software itself – but due, in some part, to the absence of decent competition. But, now Adobe's InDesign (ID) is here, and the status quo in graphic-design software is about to change.

Casting XPress in the role of defending champion, the Adobe development team
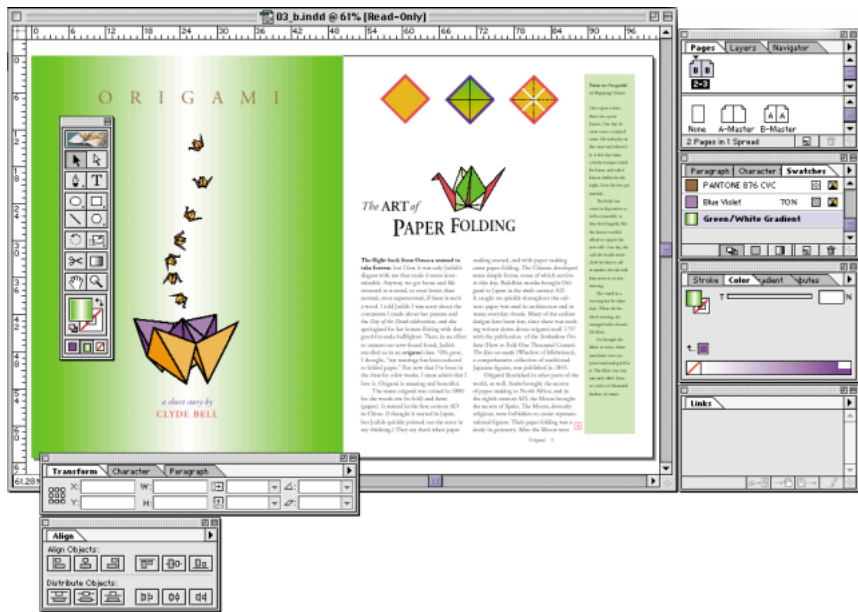
Discerning palette
Designers who use Photoshop buy themselves an extra monitor to keep all their palettes out of the way – will InDesign users have to do the same?

Double vision
Adjust an object in a magnified view, and keep an eye on the overall effect in a smaller view.

has clearly worked with the aim of matching or exceeding its capabilities – so if you have a wish-list for XPress, you'll probably find it in ID.

Want to hang items off the pasteboard edge? Edit EPS graphics in ID? Customize your keyboard shortcuts? Zoom to 4,000 per cent? Specify position values to 0.0001 of a unit? Sheer and rotate a group of text and objects? Convert a picture box ('frame' in ID) to a text box or vice versa? In-built pre-flighting? It's all here, courtesy of a plug-in architecture that's central to the ID philosophy: the core program is tiny (just 2MB), and it's the plug-ins that cover the clever bits.

However, there are one or two important features missing from the standard in-box set of plug-ins: no indexing or automatic table-of-contents generation, for instance. It's not clear yet if these may be added at a later date, or if they'll cost extra.

Family resemblance

At first glance, the ID interface looks a lot like that of sister programs, Illustrator and Photoshop. Any graphic designer familiar with these will be off to a flying start with ID. Tools and navigation aids – such as the Pen, Gradient, Direct Selection, Scissors, Zoom and Line – work in the same way in

all three programs. In fact, the range and sophistication of ID's drawing tools calls into question whether or not you really need a separate drawing program.

Integrating with the natives

The Navigation palette is the same as in Photoshop. And there's also a version of the Layers palette, allowing you to make layers visible or invisible. There's a high level of compatibility between the formats output by Photoshop and Illustrator, and ID – such as the ability to import native Photoshop files, layers being flattened automatically when you print, and the ability to edit Illustrator EPS artwork in InDesign. Swatches can be saved for import into Photoshop and Illustrator (and vice versa) – definitely an advantage over XPress. While we're on the subject, you can also import XPress 3.3x and 4.0 documents into ID, a feature that works slowly, but, on the whole, well.

InDesign's typographic features are superb. There are four kerning options – manual, optical, metrics and range (otherwise known as tracking) – of which the optical kerning is perhaps the most innovative. This determines the ideal spacing for characters visually – a great feature for those cases where different fonts, or sizes, have been used

in a selection. There's also the Flush Space feature, which inserts a right-justified character to signify the end of, say, a magazine story. And there's support for 21 language dictionaries, straight out of the box – Quark demands that you buy a new copy of XPress for each language.

Stunning composition

Perhaps ID's most exciting typographic feature is Adobe's multi-line composer. Most page-design software uses a single-line composer, that considers only the current line when deciding where to make hyphenation breaks. With the multi-line composer, you can tell ID to look up to six lines back to make its hyphenation decisions in context. You can also tell ID to highlight where it's had to break your composition rules, which it does in a fetching shade of yellow – the deeper the shade, the more seriously the rules have been broken.

Adobe is anticipating that studio workflows will turn more towards PDF format in the near future, and the PDF export facilities provided in ID are excellent. Files can be exported directly to PDF format 1.3 – supported by Acrobat 4.0 – from ID without going via Acrobat Distiller. Similarly, PDF files can be imported directly for placing on an ID page.

One potential drawback to using ID in a production workflow, is that it doesn't print to non-PostScript printers: it ships only with drivers for PostScript Level 2 and 3 printers. The theory is, you'll be able to print to your desktop ink-jet using Adobe PressReady, which ships later this year – for the time being, you could export as a PDF and print from Acrobat.

There are lots of clever, time-saving features in ID, the inspiration for many having been pinched from XPress' XTensions. Take the ability to set up a master page as a 'parent', for example: editing the parent master also edits the 'child' master. Or the ability to nest frames within frames, for layered text and graphics effects. Plus, there's the automatic layout-adjustment feature that revises the proportionate distribution of the items on the page when you change page size. And how about multiple views: you can have one window set to 40 per cent, and another set to 300 per cent, to see the effect of your changes on the entire page.

Another great feature is automatic document recovery, which rebuilds your document if you crash – even if you didn't
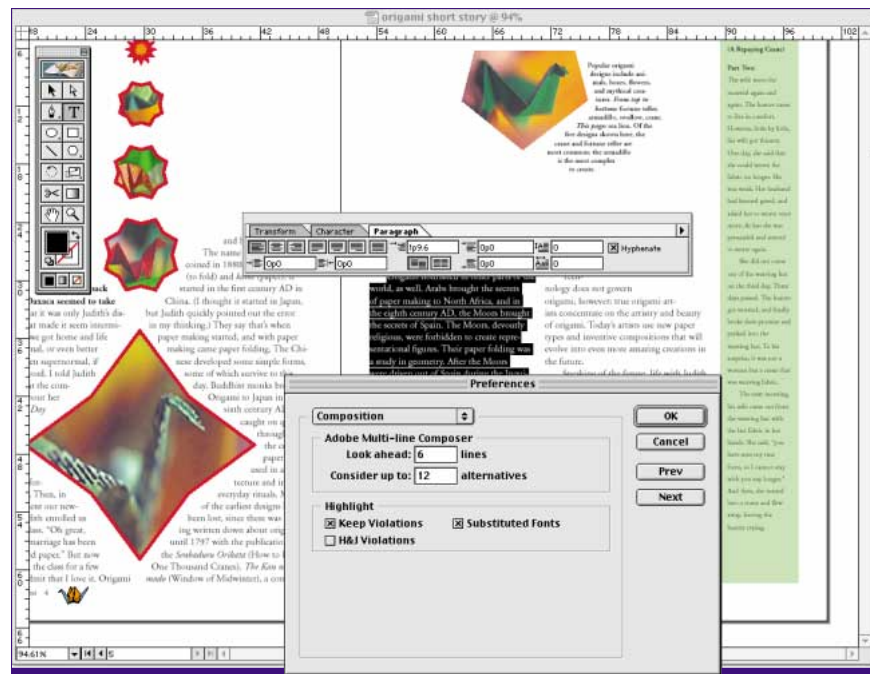
Calm and composed
InDesign's multiline composer looks up to six lines backwards, to make decisions on how to hyphenate.

save. And, unlimited undo and redo. Or the Position Proxy feature, that allows you to specify if a transformation should work from the centre, or any of the corners of a frame. And there's a Guide Manager feature that creates guides automatically. Even the Step and Repeat feature works on guides.

For a first release, ID 1.0 is more unstable than you'd expect: there are quite a few bugs but, presumably, Adobe will fix these shortly – if ID isn't to alienate all its eager early users.

A more significant criticism of ID, at this stage, has to be that the program is less obviously as production-orientated as XPress. For my money, this is a combination of ID's sophistication and Adobe's strategy of palettes rather than dialogue boxes: the result is that there are too many palettes cluttering up the screen, with their contents are too small for easy point-&-click selection.

XPress-fluent designers whose hands hardly ever leave the keyboard will be impatient at the loss of speed that using a mouse over a key-combination entails. But the Keyboard Shortcut Editor could solve a lot of these problems: as well as shipping with a set of QuarkXPress-standard

shortcuts, you can use the Editor to customize your own shortcuts to call up, amend and dismiss palettes via the keyboard.

Macworld's buying advice

In what looks like a bid from Adobe to get bums on seats, the online AdobeShop is selling a full version of ID for just £205. This is where the Adobe marketing muscle really makes its presence felt – the average street price of XPress is between £750 and £800, which hasn't won Quark many friends. ID is definitely worth the paltry purchase price and a few days of dabbling time, but don't expect to plumb its considerable depths in a few days: be prepared to spend a long time getting up to speed.

Karen Charlesworth

Ray Dream Studio 5.5

Publisher: MetaCreations
www.metacreations.com
Distributor: Computers Unlimited (0181 358 5857)
Pros: Wide range of features;
bundled software adds to value.
Cons: Interface a little fiddly;
no hardware graphics-acceleration.
Price: £290
Star Rating: ★★★★/7.9

Throughout its many incarnations, MetaCreations' Ray Dream Studio has been gaining in confidence as a genuinely useful tool for carrying out 3D work. Version 5.5 smooths out a lot of rough edges, and adds a few new features. This should help maintain its image as a "2D-designer-friendly" 3D package.

On opening the application, nothing appears to have changed. The screen is divided between main Workspace, Timeline, Properties and Browser windows. Before we go any further, one point must be made: whenever more than one model is open, Ray Dream Studio keeps the auxiliary windows of every model open. This leads to confusion, and difficulty in knowing which window belongs to which model.

Full model jacket

The Browser window is the key to Ray Dream Studio's success, since it's from here that the user can access an army of ready-mades: objects, deformers, shaders, behaviours – pre-defined for animation

Let's go elemental
Make mountains and molehills with the earth modeller.

sequences – lights, cameras and render filters. Need a fully modelled and rendered motorbike? Drag it from your browser into your scene. Need it to buck up and down? Just drag a Jiggle behaviour onto it in the timeline.

This "kit-of-parts" approach is one of the reasons that Ray Dream Studio has been so popular with 2D artists experimenting in the 3D world. Taking this further, Ray Dream Studio 5.5 also ships with a content CD, containing 200 3DS (3D Studio Max) models and 100 DXF models. However, we couldn't get the 3DS models to import. Also included is a tutorial CD, showing how to model objects.

Another feature of the hand-holding approach is Scene Wizards. These set up basic parameters of a scene, such as lighting and general scene elements, according to categories – exterior, space and interior – from which more specific parameters can be chosen. It's all done within a graphical browser, that makes things easier. In fact, many operations are performed by modules that are external to the core program: Ray Dream Studio has a very healthy plug-ins industry. On the modelling front, the latest of these is the

The friendly ghost
The Blubble module is a live Metaball modeller. Here, you can see the incredibly useful 'Ghost' menu.

Metaballs plug-in, known by the cutesy title of 'Blubbles'. This brings up a separate workspace, in which Metaball primitives can be manipulated.

Ray Dream Studio implements a 'live' preview, so that the Blubbles' interaction updates in real time. The influence of the Metaball primitives on one another – and their strength – can be set from within the interface, which is controlled by a "ghost menu" that gives access to practically every function. It's reminiscent of Alias|Wavefront Maya's 'HotBox' and is a joy to use. Once Metaball models are composed they are dumped back into the main modelling area.

Another external module is the Four Seasons Terrain modeller. Terrains are created by editing a greyscale map, which is then converted to height information on a mesh. It's a useful addition in conjunction with the exterior Scene Wizards, and the built-in Environmental Shaders and realistic Water shader.

Another bundled application is Painter 3D. Although an SE version, it's very nearly complete, lacking only the plug-in brushes and Floaters – floating masks – of the full version. However, Painter 3D itself can be a little hit-and-miss, and needs plenty of power for the best results. That said, Ray Dream Studio contains a plug-in that allows it to exchange data with Painter 3D, importing all the texture maps, masks and projections natively, without the need to reapply them. Kai's Power Tools 3.0 is also bundled.

If you're not up to Painter 3D, you can avail yourself of Ray Dream Studio's excellent Shader tools. These allow you to compose custom-surfaces by combining and mixing shaders – ready-made mini-applets containing parameters for the description of surface features, such as bump, texture and highlight. Ray Dream Studio employs a very powerful Shader Tree concept, that allows shaders to be combined in very subtle ways. But be warned – the Shader Tree takes a bit of getting used to.

On the animation front, not much has changed. Ray Dream Studio 5.5 still employs the tried-and-tested keyframe/timeline approach to animation, that gives a good view of how a scene is put together. Motions can be hand-rolled by the user, using the Translate tools and setting keyframes, or the built-in Behaviours can be dragged and dropped onto the name of the object in the timeline. Although motion paths of objects are still signalled visually, it's a pity you can't yet manipulate them directly.

Macworld's buying advice

When you consider the price – £290 Ray Dream Studio is great value. The interface is a bit fiddly, and its proprietary preview rendering means that QuickDraw 3D, or OpenGL graphics acceleration won't have an effect. But, Ray Dream Studio is an ideal introduction to 3D.
Tim Danaher

Caesar III

Manufacturer: Sierra
www.sierra.co.uk
Distributor: Softline (0181 401 1234)
Pros: Superb graphics; lots of Roman puns.
Cons: Bit hard at times.
Price: £29.78
Star Rating: ★★★★/8.8

Ancient Rome. A time when life was one long toga party, and people had to pop out to take a bath. A bustling city where people built simple, square-pieced jigsaws and fobbed them off as mosaics, and where a gladiator wasn't armed with an oversize cotton-bud and

All roads lead to Rome
The detail in Caesar III even extends to the layered roads and pick axes.

an ego problem. And it forms the heart of Caesar III, a SimCity-style game that charges you with recreating the ancient Roman Empire, in all its marbled glory, in a bid to become the next emperor.

Donning toga, laurel crown and taking the chariot to work doesn't automatically mean you're cut out for Caesarship. There's public health to manage, lions to goad for entertainment, aqueducts to build and legionnaires to train in order to build the heart of the Roman Empire. Add to this the need to collect taxes, forge overseas trade routes, please the gods, lay down plazas and keep the tributes pouring into Caesar himself, and you can quite quickly see why Nero picked up his fiddle while Rome was toasted. After this little lot, you'd probably dance a jig as well.

The Caesar's new clothes

Caesar III is like SimCity 2000, but with shiny, new clothes. You have to build a city from scratch, zoning housing, supplying essential services such as water, health, policing and defence, all in a bid to get people to stop roamin' and start Roman. Later, you'll have to manage taxes, tweak trade goods, establish markets and temples, hold Ben Hur-style chariot races, and even send your troops into battle. But, unlike SimCity, you can opt not only to just build a great city, but you can accept missions to build a certain city size, or repel barbarian invaders, for example.

Graphically, Caesar III is no Brutus. Traders and farmers scurry across plazas, delivery boys call at evolving flats, laughter rises from perfectly formed baths, and

Roman, Roman, Roman – rawhide
Don't rest on your laurels – Rome needs constant attention.

fountains bubble in the streets. Your whole city evolves, with crops that mature and are harvested, while buildings either transform into palaces or collapse into rubble following an out-of-control fire.

You get a lot for your money. A grab-bag of missions, the ability to roll your own map through the landscape editor, and an open-ended city-building mode that keeps going as long as you do. However, it does lose marks for lack of a multiplayer option, and sometimes the game can seem a little hard and unforgiving.

Macworld's buying advice

The sheer attention to detail in Caesar III easily puts this near the top of the sim-game genre. Atmospheric audio, smart graphics, massive missions and maps, and some of the best-quality movies I've seen on a video game, really make this one game that you'll play come rain or hail (Caesar). **Matthew Bath**

Camedia C-2000 Zoom

Manufacturer: Olympus (0800 072 0070)
Pros: Good-looking images; high resolution.
Cons: Viewfinder prone to parallax problems.
Price: £640
Star Rating: ★★★★/8.2

Last year, megapixel digital cameras were the rage. Now it's time for models that produce images with two million pixels, or more. The new Camedia C-2000 Zoom – the first two megapixel camera from Olympus – is a point-&-shoot model that captures images at up to 1,600-x-1,200 pixels. It makes great images, but falls a little short of the Nikon Coolpix 950.

We looked at images captured under a variety of lighting conditions: daylight,

on-board electronic flash, and tungsten lighting in a studio environment. With all three, images came out clear and sharp.

The camera provides a 3x-optical zoom, and lets you automatically, or manually, select an ISO rating of 100, 200, or 400. There's a manual viewfinder – which is nice, because the LCD is a true battery hog. The optional NiMH batteries and recharger are a must. However, the centre-point of the viewfinder lens is 1.5 inches from the centre-point of the picture-taking lens. This causes problems when shooting up-close.

The C-2000 Zoom uses 3.3v SmartMedia cards for storage. It ships with an 8MB card, but you'll need higher capacity if you want to save files in the uncompressed TIFF format, as the files approach 6MB apiece. The card holds about seven images in the highest-quality JPEG mode and 15 images in the medium-quality mode.

Macworld's buying advice

Camedia C-2000 Zoom continues the Olympus tradition of good-quality digital cameras. It captures great-looking images at high resolution, and is reasonably priced. However, I think Nikon's Coolpix 950 still has the edge. **Rick Olando**

Media Cleaner Pro 4.0

Publisher: Terran Interactive
www.terran.com
Pros: One-stop shop for video and sound compression and processing; batch-processing ability.
Cons: Long-winded interface; still-image processing rudimentary compared with video capabilities.
Price: £329; £69 for upgrade from any previous version.
Star Rating: ★★★★/8.4

I f you downloaded any of the *Phantom Menace* trailers from the **starwars.com** site, you already know just what amazing quality Terran's Media Cleaner Pro 4.0 can produce. Cleaner 4.0 is the only media-compression program offering such a high degree of configurability for compressing and re-purposing video, audio and still-images in a wide range of formats. As such, it's both unique and indispensable. What other program lets you specify a high-quality first and last frame, set audio and video fades, crop and scale, normalize sound, check it using a dynamic preview on hundreds of files – and leave it to run overnight?

Although previous versions of Cleaner have supported the creation of Windows-playable media on the Mac, version 4.0 is the first to actually run on both platforms. As such, it supports not only QuickTime and RealG2 but also Windows Media, Microsoft's bid to become the third player in the streaming media-arena. Terran has also made some serious attempts to bring Cleaner's audio processing in line with its impressive video capabilities. Although the program has been known as Media Cleaner Pro since version 3.0, version 4.0 is the first

to justify the change of name from Movie Cleaner, as the first two versions were known. The re-sampling features have been extended, with the addition of filters, such as adaptive noise-removal, dynamic range-compression, noise gate, high-pass and low-pass. Meanwhile, down-sampling capabilities have also been boosted, to produce a better sound quality at lower sample depths and bit-rates.

Cleaner 4.0 now also includes capabilities for still-image processing, although these are not as extensive as the video features, or even the sound-processing capabilities. There's a basic crop and scale, dithering, and support for JPEG, GIF, BMP, QTIF and PICT formats – none of which comes close to matching the capabilities of, say, Equilibrium's DeBabelizer, which offers sophisticated batch-processing facilities.

One of the most significant new features in version 4.0 is the support for new streaming formats. QuickTime 4.0 is supported, including poster frames and enhanced alternate support – which uses a "meta-movie" mechanism to determine which video to stream according to the speed of the receiving modem. The list of included codecs is impressive – QuickTime 4.0, RealG2, AVI, DV, MPEG 1 and Windows Media (ASF). Cleaner 4.0 also supports an upgrade to MPEG-2. Terran has thrown in the Fraunhofer MP3 codec free of charge. Cleaner 4.0 can also convert, without losing quality, between certain formats – say, AVI to QuickTime or ASF – without needing to recompress the file. And there's also support for Variable Bit-rate Encoding, supported in latest-release codecs such as the developer version of the Sorenson codec. Usefully, Cleaner 4.0 also supports direct-to-tape DV output via FireWire.

Cleaner users edit using Premiere, After Effects, Media 100 or Avid set-ups, and use Cleaner to do their final compression. In light of this, Terran developers have been busy developing methods of allowing output directly from the editing software to Cleaner, making the final rendering and
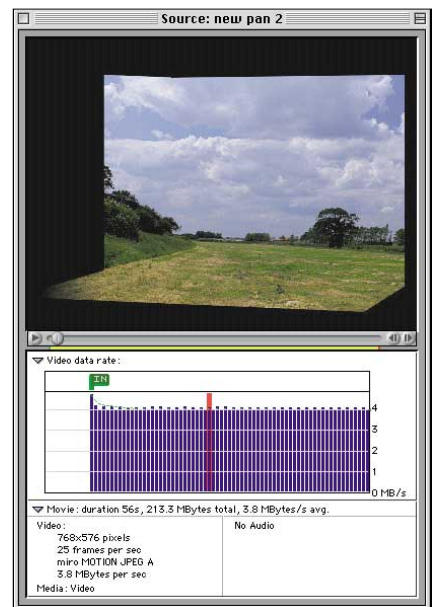
Main source
*Source window showing movie data-rate analysis.*

compression process effectively a single-step job. Version 4.0 comes with an export plug-in for Premiere and direct export capabilities from Avid and Media 100 – as you'd expect, because Terran is now owned by Media 100. We're also promised an After Effects plug-in, in the near future.

Productivity is similarly enhanced by a new HelperApps menu, which opens files in related applications for last-minute pre-compression editing. And if you're new to this compression lark, Cleaner also includes an excellent Settings Wizard that takes a series of basic attributes – streaming of an 'action sequence' to a 36.6Kbps modem, for instance – then shows you a similarly compressed example from its library for your approval. It then sets the appropriate parameters.

Cleaner's batch-processing capabilities have always been one of its strengths, so it's unfortunate that version 4.0 has done nothing to address the clunky interface that you encounter as you try to apply your settings to a batch of media; it involves a lot of unnecessary swapping between the settings list and the batch list. The Preferences in version 4.0 offer the ability to set the interface colourways, but a "make interface work better" button would be more use. This is a minor quibble though, especially when set against the power of being able to apply settings to as many as 2,000 separate files at a time.

Macworld's buying advice
Media Cleaner Pro 4.0's claim to be an all-round media-compression facility rests mainly on its superb video capabilities. There are other packages that handle sound and still-image processing better, although the batch-processing ability still recommends it for sound and still use. But if you edit or re-purpose video, there's no better package. **Karen Charlesworth**
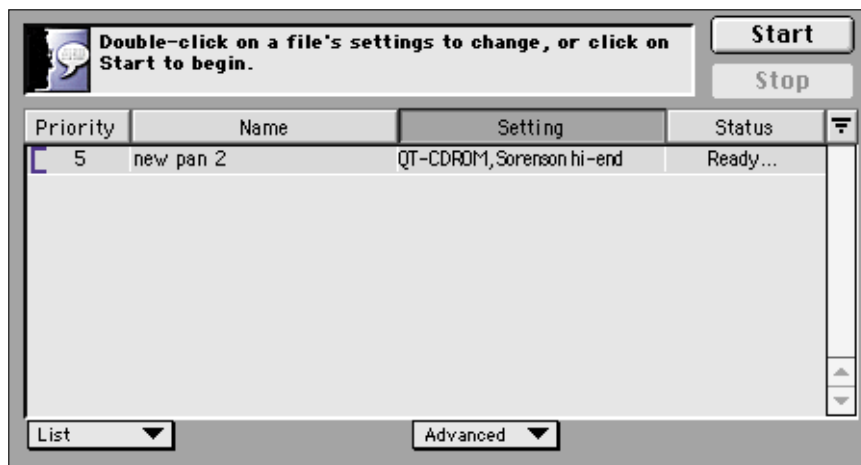
The not-so-new batch
Batch processing has always been one of Media Cleaner Pro's strengths, but its clunky interface remains.

Spell Catcher 8

Publisher: Casady & Greene
www.casadyg.com
Distributor: Softline (01372 726 333)
Pros: Works with all applications; excellent proof-reading facilities; supports multiple languages; good anti-crash feature.
Cons: Thesaurus could be larger; requires System 8.1 or later; problems with XPress 4.
Price: £59.99
Star Rating: ★★★★/8.3

Most modern word processors and DTP packages have built-in spellcheckers, so why consider an external one such as Spell Catcher 8? One reason, is it ensures a UK English dictionary. Also, uniform spelling is guaranteed from one application to another, and you only have to maintain one extra dictionary.

With support for multiple language dictionaries, additional legal and medical terms, and an HTML word list, Spell Catcher 8 offers everything a spellchecker could need. SC8 is now a simple app that presents itself via a menu bar tick, and memory requirements are less than 2MB.

There are two modes. The first, Interactive Checking, filters each word as you finish typing it. It can pick up standard typos, capitalization errors, punctuation errors and double words. Take the time to avail yourself of SC8's Learned Words facility, where you control the possible suffixes for each word added, and the process smooths out. This also allows you to enjoy the advantages of the Shorthand feature, where your common phrases are typed by their initials.

Aside from the basic modes, SC8 can also handle full proof-reading through a number of selectable modules. Change straight quotes into curly ones, capitalize sentences, convert double dashes into em or en versions, or strip double spaces all in one run-through. There is even an anti-crash Ghost Writer facility, where all text is saved as you type it.

In terms of replacing text, SC8 uses one of three methods. Using the clipboard, it can paste with formatting into word processors. Where formatting info is not included in the clipboard, it can automate an application's find-and-replace facility. Unfortunately, both of these methods fail with QuarkXPress 4 where text has to be pasted back without formatting. The
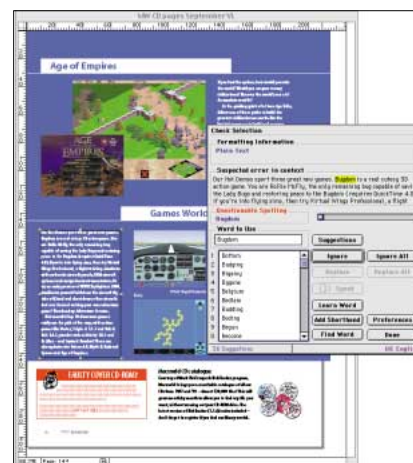
Spell it out
*When looking for errors, Spell Catcher 8 can add anything out of the ordinary to a dictionary.*

only fix is to check a document before formatting text.

Macworld's buying advice
Spell Catcher 8 has almost every conceivable spellchecking facility and is highly customizable.

Downsides? The problem with QuarkXPress 4 is awkward. Even so, it's a decent utility for the price, and there's a demo on this month's CD. **Vic Lennard**
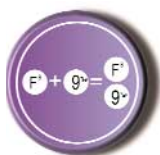
Mathematica 4.0

Publisher: Wolfram Research (01993 883 400)
www.wolfram.co.uk
Pros: Anticipates and solves a wealth of computing and publication problems; faster than version 3.0.
Cons: Professional version expensive.
Price: £1,095; Student Version £75.
Star Rating: ★★★★★/9.1

Anyone who has used Mathematica 3.0 may find it hard to believe, but Wolfram Research actually found a few important improvements to make in version 4.0. With its beefed-up numeric operations and print and Web output, Mathematica 4.0 reaches beyond its roots as a symbolic-computation program – it's now an all-purpose tool kit for any task relating to technical information.

Mathematica's number-crunching abilities – particularly with respect to large arrays of numbers – have improved steadily over the years, but in version 4.0, they're revolutionized. A standard Power Mac G3, running the new version outperforms older SGI RISC workstations, when processing huge data arrays, and when running signal-processing applications. Specifically, the rewritten matrix operations store large and sparse arrays more efficiently, the code for the Fourier-transform routines has been optimized, and the program now reads HDF files at impressive speeds.

The MathWorks' MATLAB, is no longer being developed for the Mac. But, in tests using a ten-item matrix-math test suite, Mathematica 4.0 – on a 266MHz Power Mac G3 – beat MATLAB 5.2 – on a 300MHz Pentium II system – by an average factor of 4.3. And, because Mathematica's automatic translators can convert MATLAB M-files to Mathematica notebooks, developers of custom matrix-processing applications should be able to make the switch easily.

Symbolic advances
In the realm of advanced development aids, Wolfram has further refined Mathematica's rules for simplifying symbolic expressions, and has added to the special-function list some math functions that previously defied useful computer definition. For science and maths development, Mathematica no longer has any direct competitors on the Mac – or, for that matter, on PCs and Unix systems.

Mathematica 3.0 simplified the task of producing journal-quality printed output. It introduced features for using standard textbook-style notation, rather than the computer-code output style used by most other maths programs – including earlier versions of Mathematica. In version 4.0, the word-processing features are so solid that you could easily make Mathematica your primary technical word processor. Not only are its editing features and style sheets more useful for technical work than those in Microsoft Word, but printing as TeX and the newer LaTeX 2e files is also faultless.

Equally impressive are Mathematica 4.0's Web facilities. Notebooks, saved as HTML, generate files of HTML source code and folders of GIFs for artwork; notebooks can also contain hyperlinks to other notebooks or to URLs. The program displays any kind of maths notation beautifully on the Web, and version 4.0 can work with Web-sound and -graphics files.

Macworld's buying advice
Besides being faster and more compact than version 3.0, Mathematica 4.0 has a great range of useful new features. It's the best program I've seen in ten years of reviewing technical software. **Charles Seiter**
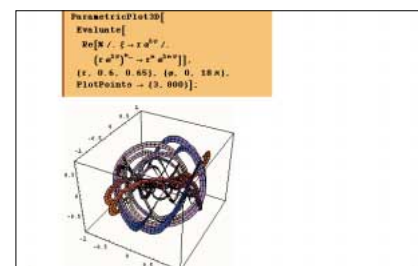
Everywhere at once
Mathematica 4.0 makes long-distance technical collaboration possible.

SkyLine Wireless PC card

Manufacturer: Farallon
www.farallon.com
Distributor: Softline (0181 401 1234)
Pros: No wires, no hassle.
Cons: Not everybody is wireless yet, so you won't have many people to network with.
Price: £230
Star Rating: ★★★★/8.3

Strangely, one of the most popular additions to a PowerBook is a docking station. For PowerBooks users, one of the most tedious things is hooking up to a network to print, share files or back-up. Now Farallon has launched a new solution to the problem of docking – wireless networking. Hot on the heels of the wireless AirPort announcement, Farallon has released SkyLine, a wireless-PC card.

For a PC card, the SkyLine is quite bulky. It sports a bulbous hump that sticks out beyond the PowerBook by about two inches. Setting up is a breeze, but make sure you are running OS 8 or later. The installation consists of an extension and a control panel; and you need to set your network control panel to use the card. The card itself has three lights: power, link and activity. This is helpful and gives a visual cue to the card's status. The control panel also shows the signal strength, so you know when you are getting too far from a base station.

Sky-high
Of course, to use the card you need something to connect to – either another mobile computer or an access point. Access points or base stations are available from a number of manufacturers, such as Lucent, Nokia, Zoom, and, soon, Apple. They all use the IEEE 802.11 wireless communications standard, and so, in theory, are interchangeable.

Just have one connected to your network and anybody within a 500ft range will have access to the network. There are security features that stop anybody strolling up to your building and hacking into your network. Unfortunately there was no access point available for us to test this. But we did have two PowerBooks talking directly to each other, with four floors between them.

When setting up the network, you have a choice between Infrastructure and Ad Hoc mode. In Ad Hoc mode you can choose one of 11 channels, and let anybody join that channel. This is ideal for meetings, in which people want to exchange documents, without resorting to wires.

Macworld's buying advice.
When the iBook and new G4 Power Macs become available, the wireless option will make wireless networking more popular. The more popular it becomes, the more often you will find somebody to network with. SkyLine lets you get in on the action, and hook-up with the un-wired generation.
David Fanning

PhotoFrame 2.0

Publisher: Extensis
www.extensis.com
Distributor: Computers Unlimited (0181 358 5857)
Pros: Incredibly easy to use; lots of free frames included on CD; access to more on new Website.
Cons: Dangerous in the wrong hands.
Price: £129
Star Rating: ★★★★/8.4

Designers with a penchant for gimmicky effects, your attention please: the new upgrade to Extensis PhotoFrame has arrived. Now, with version 2.0 of the Photoshop plug-in, it's even quicker and easier to add thousands of potentially ugly and unsubtle edges to your pictures.

PhotoFrame is a plug-in in the time-honoured Kai's Power Tools tradition: it's very hard to create an image using PhotoFrame without everyone recognizing that you've created it using PhotoFrame. And that's a shame, because for designers prepared to use it judiciously, and not just hit the buttons randomly, PhotoFrame is an excellent piece of software – fast, easy to use, and extremely powerful.

There are two main palettes: Frame, where you apply the frame itself; and Effects, where you add different effects to the applied frame – all visible in the Preview window. The Frame menu is the first port of call: use this to select either an Instant frame (choose from star, heart, ellipse, polygon and arrow – among others), or to import a frame from the Extensis library.

You can apply effects to the edges of the frames using the Edge palette; you can add multiple edge-effects until you get a combination you're happy with. From there, use the Effects palettes to add further variations on the theme: border, glow, shadow, bevel, and texture. Any of these can be re-set at any time, so if you manage to create a particularly hideous effect, you can undo the offending move without jeopardizing the others.

Apply within
When you're satisfied with the frame, the Apply to New Layer button applies the frame to a new Photoshop layer. In version 2.0, you can save your settings for future use: these are stored in the Extensis menu in Photoshop, so you don't need to open the plug-in to apply them.

If the 1,000 sample frames supplied on the CD aren't enough for you, Extensis also offers PhotoFrame users access to a new
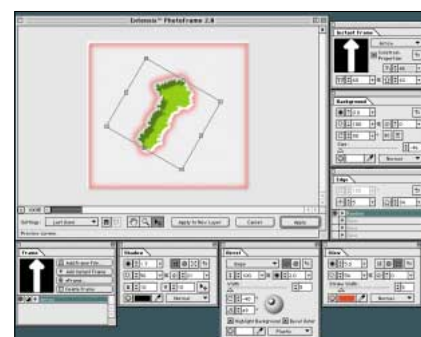
In the frame
PhotoFrame 2.0 offers a choice thousands of frames, that can save hours of time.

companion Web site, eFrame, run by Dynamic Graphics. Simply click the eFrame button in the Frame palette to launch your browser and meander among thousands more frames. You can subscribe for $14.95 a month, or download individual frames for $9.95 ($4.95 to subscribers), on the American Web site.

Macworld's buying advice
You'd probably spend the cost of PhotoFrame 2.0 in studio time creating just a single frame effect of this complexity. If you're bored with square images, this is the program for you. But don't get button-happy – unless you want your images to scream "I used PhotoFrame".
Karen Charlesworth

Magical audio-editing software

Logic Audio 4.0

Publisher: E-Magic
www.emagic.de
Distributor: Sound Technology (01462 480 000)
Pros: User-interface has been improved;
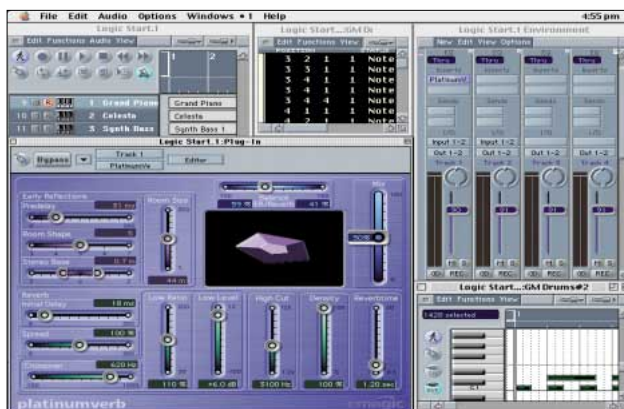the technical advances will make this upgrade
pretty much essential.
Cons: There is still room for the user-interface
design to be improved.
Price: Platinum, £468 (96 tracks,
Time Division Multiplexing support);
Gold, £340 (48 tracks, no TDM-support);
Silver, £169 (24 tracks, limited audio-card support)
Star Rating: ★★★★/8.0

Logical improvement
The best news about
Logic Audio 4.0 is that
the real-time audio
effects have been
redesigned to provide
much better quality –
so you now have Tape
Delay, Stereo Delay,
a choice of SilverVerb,
GoldVerb or
PlatinumVerb, as well
as loads more useful
new effects.

Version 4.0 of Logic Audio is the most extensive upgrade yet to E-magic's audio sequencing and editing software. Logic now supports multiple languages, switchable from the Display Preferences – rather than just having separate English and German versions as previously – and the menus have finally been re-organized – mostly for the better.

The former Structure menu of the Arrange window is completely integrated into the Functions menu and there is a completely new Audio menu, for example. One of the best new features is being able to record simultaneously onto multiple MIDI tracks – finally bringing Logic into line with software like Digital Performer that has always had this capability.

Tracks can also now be displayed, using individual zoom factors – so you can have a detailed view of just the track/s you are working on.

Logic Audio's Environment has three new 'objects' that will please the techies among you: Aliases, Ornament objects and Macro objects. Also, there are two new modes for the Transformer object: Alternating Split and Sysex Mapper.

The best news, is that the real-time audio effects have been fundamentally redesigned to provide much better quality.

You now have Tape Delay, Stereo Delay, a choice of SilverVerb, GoldVerb or PlatinumVerb, and loads more useful new effects – all looking great on screen and, more importantly, sounding good as well. And, when you change the audio driver settings, this will now often work without rebooting Logic. Previously, this was always a pain.

Macworld's buying advice

The biggest competition is from Cubase VST, but Logic Audio Platinum is the software of choice for TDM users, although there is increasing competition from Digital Performer and Studio Vision. When it comes to the Gold or Silver versions, some of the competition starts to look more attractive in terms of value for money. **Mike Collins**

Wall-of-sound speaker

Yamaha YST-MS55D

Manufacturer: Yamaha
www.yamaha.com
Distributor: Ideal Hardware (0181 286 5000)
Pros: Kickin' sound; really do bring the noise
to your Mac.
Cons: USB doesn't work; cheap-skate cable
omissions; Windows manual.
Price: £134
Star Rating: ★★★★/8.0

Want some sound advice? Invest in some serious speakers. Better yet, get some boom boxes so beefy that they'd be banned in the EU.

Why? Because when professional speakers are hooked up to your Mac, they do two things: they liberate the otherwise tinny beeps and blurps of games, and they make your nose bleed.

The USB-based Yamaha YST-MS55D speakers tune into this category to such an extent they should come with a health warning and a packet of Kleenex. Dubbed "multimedia-powered speakers", the set-up includes a breeze-block-sized subwoofer and two satellite speakers, building a wall of sound that will make your hair stand on end.

The audio quality is astounding. I tested this with both audio CDs and a platoon of shoot-'em-ups, and both resulted in my deaf neighbour banging on the wall. The speakers deploy Yamaha's Active Servo Technology – market-speak for their ability to deliver rich, deep base that you can actually feel beating a tune in your stomach. And, when you slip the subwoofer off its leash, the bass really adds a fantastic dimension to games and audio tracks.

In fact, the entire dynamic range is impressive – there's little distortion at full volume, which is very loud, and a there's crisp audio range on display. In use, you could feel every thud as bullets slammed into your space marine in games like Quake, while post-frag audio CDs sounded like they were belting out of a proper home-entertainment system.

I mentioned USB-speakers earlier; USB promises to deliver clearer sound, with less noise and distortion. Only it doesn't – not on a Mac, because the Mac OS doesn't support audio over USB. And it gets worse. Yamaha has included only the USB cable in the box, omitting the expensive 3.5mm stereo jack – about ten pence, last time I looked – so you can't use them without a second trip to your local music Mecca.

There's more to dislike; the entire instruction booklet is geared to Windows – the Mac doesn't even get a swansong – and, the CD is loaded with Windows software. In fact, I even disliked the satellite speaker volume knob – it was way too tiny for accurate turns, and lacked grip features, meaning sweaty fingers tended to slip when adjusting the volume.

Macworld's buying advice

The speakers start on a bum note when you open the box – lousy manual, zero software and no cable. Get past that though, and the real reason you got them in the first place – terrific sound – will quickly make you forgive. Just don't be fooled by the USB overture. **Matthew Bath**

XpressSCSI

Manufacturer: Microtech
www.microtechint.com
Distributor: New Century Computers
(0181 902 6789)
Pros: Hot-swappable; stable; a lifeline for iMac owners with SCSI peripherals.
Cons: Significantly slower than SCSI.
Price: £59
Star Rating: ★★★★/8.9

I got this product to review because SCSI hates my guts, and always has. As production editor of *Macworld*, I rely on it for endless copying to and from 1GB Jaz disks. But it dogs my every step – crashing me in ways that beggar belief and, to date, necessitating three clean installs of my system software.

Fittingly, in the course of Jaz speed-testing the Microtech USB XpressSCSI adaptor against SCSI, my G3 Power Mac blew up. Idiotically – given my track record

– I failed to shut down before moving from from the XpressSCSI adaptor to SCSI. It blew the internal SCSI link on my hard disk, costing myself and our Reviews Editor a day's work. I'm now on a different machine while waiting for a replacement part.

Plug-&-d'oh

This debacle – and similar SCSI fragilities – makes USB's hot-swapability a real plus, whether you need it for an external hard drive, removable media or a scanner. The adaptor supports up to seven devices in plug-&-play fashion, recognizing them on-the-fly. The one-metre adaptor has a standard USB connector on one end, and a male SCSI DB25 connector at the other.

USB 1.1-compliant, the Xpress SCSI also comes with PhotoFolio 2.x photo-correction software. Microtech says that all driver updates will be free of charge and available on its Web site (**www.microtechint.com**).

The company also sells a 25-pin version of the XpressSCSI, which is aimed at owners of older SCSI peripherals.

With USB connectivity, speed is always the rub: this device delivers data at a meagre 1.2MB per second.

After demolishing one machine, I did manage to run my speed tests on another – a 300MHz G3 Power Mac. Using SCSI, a 73.7MB file took 48 seconds to copy to an Iomega 1GB Jaz drive and 26 seconds to copy back.

The XpressSCSI adaptor, though, took 2:25 and 2:11 respectively. In the speed stakes, it's more all-aggro than allegro.

Macworld's buying advice

For iMacs owners with a stack of SCSI peripherals, the XpressSCSI is your only option. With no SCSI-card capability on any iMac, a USB-to-SCSI adaptor is all that can save your SCSI devices from the classified ads. If you're a Power Mac G3 owner – and speed is crucial to your work – you'd be better off buying a SCSI card.

But for SCSI Jonahs like myself, the speed trade-off is less of an issue. The XpressSCSI may be a slowcoach, but at least it's a slowcoach that remains between the kerbs.
Sean Ashcroft

Accel-a-Writer 3G

Manufacturer: Xanté
www.xante.com
Distributor: Infotec (01202 511 448)
Pros: Fast; film-ready; real PostScript 3.
Cons: No colour.
Price: £5,495 (256MB 2,400-x-2,400dpi version); £3,495 (64MB, 1,200-x-1,200dpi version).
Star Rating: ★★★★/8.8

Design in mind
The Accel-a-Writer can print directly to film, a great time and money saver.

You may be forgiven for thinking that, as far as design goes, mono printing is on the way out. Colour lasers, ink-jets and others are certainly the most talked about, but there are still instances where nothing else will do. Xanté has a new printer, the Accel-a-Writer 3G, that offers such high resolutions and large formats, it's ideal for film making.

It would be wrong to compare this printer with run-of-the-mill office laser printers. For a start, it prints on paper up to 330mm-x-901mm in size – that is larger than full-bleed A3. This is because it can print directly to film, and needs to include all crop marks on the page. Resolution is true 2,400-x-2,400, which makes line

screens of up to 150 lines per inch. It is possible to print different line screens on a single page.

Quality and quantity

The speed of the printer is faster than you might expect at this resolution – due to the ten-page per minute print engine, plus the use of Adobe PostScript 3. Other printers that use emulated PostScript have had problems dealing with complex PostScript commands. This can slow the printing process dramatically.

Other things are included to make sure printing is a quick as possible,

like the 133MHz RISC processor and 256MB of RAM.

The results are certainly impressive to the naked eye, but this printer – like other mono lasers – doesn't have a naturally perfect greyscale. In fact, printing a page with different shades of grey – 10, 20, 30 per cent, and so on – is wildly inaccurate when put under a densitometer. This is normal with mono lasers, but the Accel-a-Writer needs more accuracy, because it is used for film printing. To fix this, there is densitometer support built in to the 3G, meaning you can set the greyscales to be far more accurate. It is features like this that make it such a popular model with printers.

Macworld's buying advice

The fact that the Accel-a-Writer is used for film doesn't mean that you can stop using a pre-press company altogether. The film it can print to is polyester – which is not suitable for huge print runs, but fine for up to around 10,000 copies. It is also not really suitable for full-colour printing, though duo-tones are fine. But, for short-run, single-colour printing, it is far quicker and easier than any other method around. This also makes it a great money saver for anybody who needs to do this kind of work on a regular basis. **David Fanning**

G3 colour-coordinated monitor

ProNitron 17/250

Manufacturer: Formac (0181 533 4040)
www.formac.co.uk
Pros: Great flat screen; G3 colour-codinted styling.
Cons: Not a great match for new G4 machines.
Price: £165
Star Rating: ★★★★/7.8

The ProNitron range of monitors from Formac has been around for a long time, earning a reputation for being high quality and low cost. The latest addition has been designed to match the G3 Power Macs, with a translucent blue-&-white casing. Unfortunately, timing hasn't been kind to Formac. As I write, Apple is announcing the Graphite G4 range with a new colour-scheme. This may limit the lifespan of the 17/250, which is a shame, because it is an excellent monitor.

Styling aside, the screen uses a flat tube that cuts down on reflection dramatically. Even Trinitron flat screens have, in the past, only been vertically flat. This screen is flat, both vertically and horizontally. It uses

a shadow-mask tube that, according to traditional characteristics, would not have as high-quality contrast as Trinitron aperture-grille screens. However, shadow-mask technology has advanced, and the contrast is excellent. The usual fault with aperture-grille monitors is with poor convergence, but being a shadow-mask tube, the 17/250 doesn't suffer.

Controls are important, so the brightness, colour, picture size and pin-cushion are all easily accessible. In practice, the image needed almost no adjustment – but it is nice to know that you can get to the controls when you need to. There is one feature missing that prevents the ProNitron being a truly professional monitor, and that is colour calibration. It's true that for most things, the quality of colour is fine, but all monitors change over time – and colour management helps keep them in line. Top-of-the-range monitors use high-tech hardware colour calibration, some like the 21-inch Apple Studio Display have hardware calibration built in. But some models have more basic calibration, using simpler visual comparisons. These are good enough to let you get in the ballpark

– without paying for expensive calibration equipment.

Macworld buying advice

The ProNitron 17/250 is an excellent monitor, and good value for money. However, if you are working on colour-critical documents, it may be worth spending a little extra for a monitor with some calibration. If you own a G3 Power Mac and want a monitor to compliment the colour scheme, and don't care for the 17-inch Studio Display, the ProNitron is the answer.

David Fanning
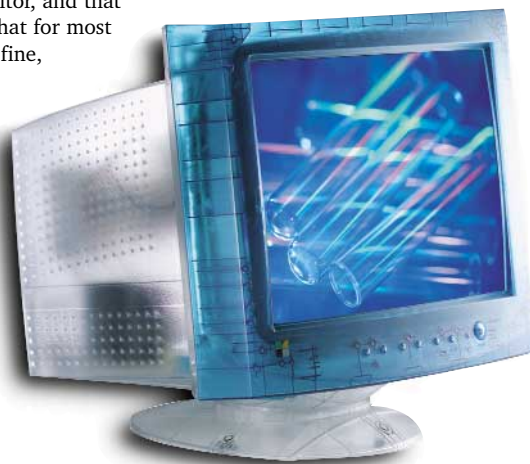
G3 colour-cordinated printer

Phaser 840 Designer Edition

Manufacturer: Tektronix
(0870 241 3245) **www.tek.com**
Pros: Super-fast; free mono prints; luscious colour.
Cons: It clashes with beige.
Price: £3,995
Star Rating: ★★★★/8.8

If you are not familiar with Tektronix and its printers, then I should point out some differences between the Phaser 840 and other printers. While it looks and acts much like a normal colour laser printer, the technology in the Phaser 840 is quite different. Rather than using laser technology, it uses solid-ink technology – a form of ink-jet that uses wax-crayon-like blocks. You won't have seen this technology anywhere else, because it's owned by Tektronix.

There are many advantages to using solid-ink over laser. First of all, because the ink is held in liquid form, it is faster to the

first print than laser. A laser printer needs to heat the fuser before it can get started. Also, the single-pass paper path means that once it starts it can crank out as many as ten pages per minute. Only the Lexmark Optra Color 1200 can match that speed.

Quality of image is paramount to designers, and there is no skimping on this. The Designer Edition uses enhanced Adobe PostScript 3 and ColorSync, for accurate colour. The prints are glossy and sharp – even on grotty photocopier paper.

Older solid-ink printers suffered when excessive ink was laid down. This could cause cracking and other problems when folding. The 840 uses less ink, so the image

is more stable. Connectivity is plentiful – 10/100BaseT ethernet and USB are standard. This can often be a hidden cost with colour laser printers, that don't include a network interface in the base price.

And what about the design of the Designer Edition. Obviously the styling is inspired by the latest G3 Power Macs – with translucent blue and "ice" colouring. The designer tag says as much about the people who will use the machine as the people that designed it. At first glance, the blue looks as though it might not quite match the G3 Macs, but it is close enough. I'm sure that every fashion-conscious ad agency in the West End already has one on order. It's essential office wear, along with matching Studio Displays and G3 Power Macs.

Macworld's buying advice

Aside from the Designer Edition's obvious fruit-fancy, it is also a very powerful machine. It is an obvious choice to replace old mono laser printers, because the black ink is free. Yes, if you want to use this printer for mono prints it will cost nothing. There is a maintenance tray that needs replacing every few thousand prints, otherwise you only pay for the coloured ink.
David Fanning

The Big 6ix: Volume One

Distributor: Softline (0181 401 1234)
Pros: Great value for money; hours of game play.
Cons: The games are all shoot-'em-ups.
Price: £34
Star Rating: ★★★★/7.9

The Big 6ix: Volume Two

Distributor: Softline (0181 401 1234)
Pros: Again, great value for money; good variety of games.
Cons: A few dull games.
Price: £34
Star Rating: ★★★★/8.0

Stick it to 'em
Real Pool has many poor game options, but eight-ball is all you need for a decent game of pool.

The Big 6ix volumes One and Two are bundles of classic Mac games. Volume One contains: Duke Nukem 3D; Duke it out in DC; Shadow Warrior; Prime Target; Damage Incorporated; and Postal. Volume Two comprises: Civilization II; Real Pool; Star Control 3; Dark Colony; Master of Orion II; and Top Gun. At only £34 each, they are great value – even if both are mixed goody bags.

Volume One concentrates on adventure shoot 'em ups. Duke Nukem 3D is the stand-out game from this bunch, with its great visual and sound effects – such as animated signs and roaring beasts. And its weapons are suitably devastating, delivering a high body count and blood-splattered streets.

There are nice touches to this game. You can use mirrors to see if any bad guys are laying-in-wait and, more importantly, Duke can use them to preen himself.

Hard target

The Die Hardesque Prime Target is another good game. A US senator has been killed and it's up to you to find the assassins. The weapons in this game aren't as powerful

as in Duke Nukem, but there are plenty of bad guys to kill, and lots of blood to spill. For an old game, the graphics are smooth, and you can interact with the scenery – but only to a limited extent.

Psycho warrior

Our favourite, though, is Shadow Warrior. Again, it's a first-person shoot 'em up, but this time you're a master of martial arts – armed with everything from from Uzis to rocket launchers. Call us a blood-thirsty savages if you will, but the most satisfying kills are with the humble sword – your hands and the blade get covered in blood.

Volume Two is a far more relaxed, but more challenging, affair.

Civilization II is a gaming classic. Its complexity will please even the most seasoned strategy gamer, as will its ability to allow you to build up an empire over millennia. You begin the game with nothing more than a plot of fertile land, from which can spring cities and all-conquering armies that may have the Romans, Sioux Indians and Egyptians on the back foot.

The game can be slow-paced, but even this works to its advantage, as you need plenty of time to contemplate your next move.

If you prefer your gaming fixes in undemanding bite-size chunks, Real Pool may be for you. It has six game options, five of which range from tedious to plain daft. In "Straight" you have to pot 150 consecutive balls to win; tedious, while "Bumper" is an unholy mix of pinball and bar billiards – plain daft. Good old eight-ball, though, is all you'll need.

True to its pre-PC roots, skill levels range from woeful (a curvy blonde dolly bird) to brilliant (a big, fat bearded bloke).

Apart from some dodgy graphics that let you cue right through balls, the touch and

feel of the game is commendably real. You can also choose two-player or network options.

The best thing about Real Pool, though, is there's no danger of being threatened by a cue-toting, lager-swilling psychopath.

Top Gun, the old man's Falcon 4.0, is truly dated – not so much the game play but the music and the tone. This Cold War flight-sim comes complete with an eighties soundtrack from the film – so, unless you're still wearing pink shirts and playing Bonnie Tyler albums, you might want to scratch the sounds. The controls take a bit of getting used to and, like the film, being a myopic American would probably make it more enjoyable. It's still worth a few hours of your time though.

Macworld's buying advice

The savage in us liked version one, but the more varied game play in version two just gave it the edge. With Star Control 3, Master of Orion and Dark Colony also included in the bundle, Volume Two is a bargain – the individual games cost £15 each – and, there's enough game-play here to keep you going for ages.
Woody Phillips and Sean Ashcroft

The harder they fall
Hard Target lets you leave a trail of bodies.

Patriot games
With eighties music and all-American atmosphere, Top Gun is about as close to the film as you can get.

Stock-market tracker

MacTicker

Publisher: Aladdin Systems
www.aladdinsys.com
Pros: Easy to use; highly flexible.
Cons: A list of companies' abbreviations
would be useful.
Price: $30 download
Star Rating: ★★★★/7.4

MacTicker has all the stock market information you could need – whether you're an enthusiastic amateur or a financial giant. Not only does it give an update of the latest stock prices, but it can also show reports, the latest indexes, and prices for mutual funds.

However, before I get down business, I have to mention the little features MacTicker possesses – the features that make the difference between a blue chip and a bag of chips.

MacTicker is fully customizable,

Desktop trader
MacTicker lets you monitor the stock market movers-and-shakers from the comfort of your desk.

allowing you to change the speed at which the ticker scrolls across the screen, the font it uses and the colours displayed. You can also specify the size of the ticker, the rate that it updates prices at – anything from one minute to one hour for stocks and indexes – and the size and detail of the reports it shows you.

The information it shows can also be changed. If you want your prices

in decimals, fine. If you want them in fractions, no problem. The ticker can also display the stock-market code for a company – MOT, for Motorola for example – or give the company's name in full. A full list of the codes would be a useful addition.

I decided to see how Apple was doing. Reassuringly, it was close to its 52-week high of $62. Even more reassuringly, this was up from a 52-week low of $28.50. If only I had invested a year ago.

Then I checked out Microsoft, hoping against hope that the evil empire would be in free-fall. It wasn't.

Once you have checked out the companies you want, MacTicker will help you trade. Simply go to a drop-down menu at the bottom of each report, click on Trade, and you go straight to your favourite trading site. MacTicker will fill in the name and code for the stock you want to trade – all you have to do is choose the right time.

Macworld's buying advice
MacTicker is perfect for the hobbyist trader; you can keep an eye on the stock market all day, without being too distracted from your work. If you dabble in the markets, or need to keep a constant track for work, MacTicker is for you.   **Woody Phillips**

PC-to-Mac converter

MacDrive 98

Publisher: Media4
www.media4.com
Pros: Mac disks are seamlessly accessible to PC users; easy-to-add file-extension maps; easy-to-format Mac disks on a PC.
**Cons:** No significant cons.
Price: $70 download
Star Rating: ★★★★/8.5

Apple's 1998 introduction of the Mac OS Extended Format (also known as HFS+) created a scramble among developers of disk utilities. They prepared upgrades to support the new format – that increases a drive's effective capacity by reorganizing the way files are stored. Among vendors of disk-mounting utilities for Microsoft Windows, DataViz introduced HFS+-support in MacOpener 4.0 (£53; Reviews, February 1999). Now Media4 Productions has closed the gap by adding HFS+ support to MacDrive 98 3.0, the latest version of its disk-mounting software. Either program is an excellent choice if you want to use Mac media with a Windows PC.

Except for adding HFS+ support, MacDrive 98 3.0 is identical to version 2.0.
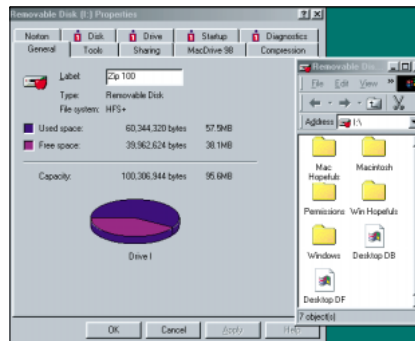
Is it Mac or PC?
With MacDrive 98, you'll quickly forget whether you're using Mac or PC media in your Windows PC.

With it, you can use Macintosh disks on a Windows 95, 98, or NT 4.0 PC. The program handles floppies, Iomega Zip and Jaz cartridges, CDs, external hard-disks, or any other disks available in a PC version. You can read-&-write data to the disks as if they're Windows media. With HFS+ support, the program can now handle media in the new disk-format, as well as the older HFS format.

Forget it
The program remains an install-and-forget-it utility. Without using any special commands, you can access Mac disks from the Windows desktop – in Windows Explorer, and from Open-&-Save dialogue boxes in Windows applications. The only time you'll even remember you're working with Mac media, is when you see the apple that MacDrive 98 adds to disk icons.

However, when you right-click, with the mouse, on the disk icon to bring up Windows' contextual menu, the utility adds Macintosh-specific media options – such as the ability to format a disk for the Mac.

Although it's similar to MacOpener, MacDrive 98 offers a few extra utilities that its rival does not. For example, it can identify the creator and file types of Mac files – handy when you're trying to update extension maps in Mac-disk-mounting software, in cross-platform networking software, or in Mac OS File Exchange. Another handy utility lets you copy Mac disks from your PC's drives. On Media4's Web site, you'll find several other utilities that re-map special symbols between Mac and PC files, so they'll appear correctly when you open a document.

MacDrive 98 doesn't work with Windows 3.1, but neither does MacOpener – which previously supported the older Windows version. DataViz dropped Windows 3.1 support in MacOpener 4.1, a recent update. MacOpener 4.1 is also included with DataViz's £85 Conversions Plus 4.6 cross-platform file-translation utility.

Macworld's buying advice
We prefer MacDrive to MacOpener. It has a few niceties that MacOpener does not, allowing you to map file-name extensions more easily, and providing the handy iconic reminder when you're working with Mac media. Most people probably won't use these extra features, but it's nice to have them if you need them. **Galen Gruman**

DeskJet 970Cxi Professional Series

Manufacturer: Hewlett Packard (0990 474 747)
Pros: Top speed, top quality prints.
Cons: No colour choice for casing.
Price: £279
Star Rating: ★★★★/8.7

In the distant past, Hewlett-Packard was one of the pioneers of ink-jet printing. Alongside rival Canon, it made the best printers – long before Epson got in on the act. In 1999, HP is still one of the top ink-jet printer manufacturers, yet it is hardly mentioned in relation to Macs. This parting of the ways can be traced back to Apple's dark days – in the two years before Steve Jobs came back, the future of Apple looked gloomy. It was around then that HP last updated its DeskJet driver. HP retreated to the PC-only market.

It's back

In the wake of Apple's turnaround – with iMacs proliferating around the world and grabbing new computer users – HP is back, and it's sorry. When I heard that HP had a new Mac product range I was sceptical – I try to be objective, but it's hard to forget the desertion. Anyway, Epson is so far ahead of the game that it can hardly be caught. Now, it's my turn to be wrong. The 970Cxi is far better than I had expected – good enough to give Epson a run for its money.

It's hard to look at an ink-jet printer and not compare it to the Epson range. The first thing many people look at is resolution – a definite number that should give an accurate measurement of quality.

The DeskJet proves this to be untrue in two ways. First of all, it is capable of a staggering 2,400dpi, a full 1,000dpi higher resolution than similar Epson printers.

The burning question is: do the prints look better than Epson's output? It is comparable – not necessarily better, but certainly no worse. Higher resolution doesn't necessarily make for better output, but it helps. Interestingly, the HP – although capable of 2,400dpi – uses a measly 600dpi as a standard setting. You need to force it to use 2,400dpi. The reason is that the colour-layering technology HP uses is so advanced that the printer can match the definition and quality of a 2,400dpi or a 1,440dpi print using just 600dpi.

HP calls this technology PhotoREt II. Standing for Photo Resolution Enhancement Technology, it controls the amount of drops of ink used in each dot. The smaller ink drops – as many as 29 per dot – make it possible to achieve 3,500 colour shades per dot. This means that there is never any halftoning or banding from this printer. The dots are practically invisible. Another effect of the multiple drops is that it takes the pressure off the processor, because less data is needed for a high-resolution appearance. This makes the whole process faster. On top-quality printing, it is a tie between Epson and Hewlett Packard.

Epson recommends that you use special paper for best-quality prints. HP agrees, but also claims to be good at printing on plain paper. In the tests the DeskJet certainly proved to be good at getting regular photocopier paper to display high-quality images. Epson also deals with plain paper well, but it does cut the resolution to do it. This means that the quality doesn't quite match the DeskJet on rough settings.

Speed is something that all ink-jet printers appear to disappoint on. This is because they tend not to have RAM like most laser printers. Laser printers can usually hold the printing images in memory, letting you carry on working while it prints. Ink-jets usually need to get a constant stream of information to print, which means that the faster your machine, the faster the printing.

At 2,400dpi, the HP is deathly slow – that is why it is not a recommended option. However, the recommended option prints at 600dpi, and that makes printing much faster. In fact, HP boasts that the 970Cxi is the fastest ink-jet printer around – claiming 10 colour pages per minute in draught mode.

It certainly seemed fast, but, unfortunately, we didn't have Epson's fastest model – the Stylus Color 900 – available for a direct comparison. When we do a group test on ink-jets in our December issue, and we test both models in the lab, we will find the absolute winner.

Both sides of the story

There are some ways in which the HP DeskJet beats anything Epson has to offer. The design of the printer, though lacking translucent colours, is functional. For example, if you use your printer rarely, you don't want the paper in it to get dusty. Epson leaves your paper out in the open, while the DeskJet has it laying flat underneath the output tray. It is only a small issue, but if you have ever tried to print on dusty paper you'll understand my point. Another nifty bonus with the DeskJet is duplex printing – printing on both sides of the page. It does this by sucking the page back in after printing the first side, and then printing on the back.

Another exclusive HP feature is SmartFocus. This is a set of algorithms that enables low-resolution pictures – such as Web images – to print out sharply. Rather like interpolation, SmartFocus increases resolution, but it somehow manages to keep the image sharp, rather than the blocky effects of interpolation. There is also automatic contrast, so it's likely to print better pictures than you shot in the first place.

The pictures that you do print are also likely to last longer than previous ink-jet prints. The new inks are designed to be fade resistant and should remain bright for twice as long as before.

The ink should also reduce nozzle clogging, a common cause of poor ink-jet prints. This means that the nozzles are cleaned less, resulting in a big saving on ink. Other ink-jet printers use alarming amounts of ink to clean the heads during the startup process.

If you turn on a printer to print one page only every now and again, you can actually use more ink in the cleaning process than in the printing process. The DeskJet doesn't automatically clean its nozzles when it is fired up, thus saving this ink.

Macworld's buying advice

Epson has ruled the roost in the Mac ink-jet market for a few years now. It is refreshing to have a new player to liven things up again. The new DeskJet is in a different league to previous HP ink-jets – in fact, it's a quantum leap. It has all the features of the best Epson printers, as well as some great innovative features – such as duplex and colour layering. I expect Epson will counter this attack on its supremacy soon, but for now HP looks to be on top.
David Fanning

Good to be back
HP's latest DeskJet finally challenges Epson's market dominance.

Red-hot memory cards

CallunaCard

Manufacturer: Calluna Technology
(01592 630810)
Pros: Compact and quick.
Cons: Hot and pricey.
Price: 260MB, £179; 1GB, £299.
Star Rating: ★★★★/8.2

If you are a PowerBook owner your data is at risk. Unless you backup your data, you could lose it at any moment – through theft or even simply dropping your precious machine. There are a number of ways to safeguard your data, but traditional backup requires special cables, and can be both slow and unwieldy. Now, there's the CallunaCard, which requires no power cable, no connection cable, and is small enough to slip into your shirt pocket.

It gets your back-up
The CallunaCards aren't exclusively for backup – but they're certainly ideal for the job. The two cards we looked at were a 260MB Type II PC card and a 1GB Type III PC card. Unfortunately, the very latest PowerBooks ship with just a single Type II slot, so the more useful larger capacity card is not compatible.

Installation is simplicity itself. Just slip the drive into the PC slot on your PowerBook and it mounts on your desktop. It acts like an additional hard drive, indistinguishable from the real thing.

You can copy files to it quickly, so quick backups are a snap.

Another possible use could be to transfer files from one PowerBook to another. *Macworld*'s sales department often needs to copy huge presentations in this way. With a CallunaCard it would be a simple matter of inserting it – no need to even copy the file – then running the presentation directly from the disk.

One observation did cause a little concern – the amount of heat generated by the drive, in particular the 1GB version. It becomes almost hot enough to burn after being used for a while. This prompted me to check with Calluna that this was safe – we had visions of it reducing the PowerBook to a lump of molten plastic and silicon. Calluna assured me that this was normal and safe, but I still felt uncomfortable using it as a full-time drive – the PowerBook gets hot enough without any help.

Macworld's buying advice
The CallunaCard is certainly a simple way of safeguarding your data while on the road. Both drives are light and small – ideal for a hotel safe, or under your mattress. The incidences of RAM theft appear to be on the decline, but PowerBook theft is rife.

Losing your PowerBook is one thing, but loosing your data too would be disaster for many – especially when away from the office. The CallunaCard could avert such a disaster happening to you. **David Fanning**

Professional sound-file editor

TC|Works Spark 1.0

Manufacturer: TC|Works
www.tcworks.de
Distributor: Arbiter Pro Audio
(0181 207 5050)
Pros: Lots of potential.
Cons: Doesn't support Premiere, TDM or AudioSuite plug-ins.
Price: £255
Star Rating: ★★★/6.0

Spark is a professional sound file editor that will provide some competition for BIAS Peak editor (see Reviews, July 1999). There are a few main differences between Spark and Peak. Peak doesn't do VST plug-ins; Spark doesn't do TDM. Spark uses the new 96KHz sampling rate; Peak doesn't. When recording, Spark can have two VST plug-ins in the chain; Peak allows only one.

Spark lets you transfer audio files to and from popular samplers, a major application for this type of software. Also, you can export a playlist from Spark as an image file that you can open into Adaptec's Toast or Jam. Toast Pro is bundled with Spark, but you have to shell out quite a bit extra to get Jam. Jam is the professional CD pre-mastering software required for making commercial CD pre-masters.

Spark has an attractive user-interface, with almost everything in one window – the Browser View. It contains the File database, showing the list of files you have opened into the project; the Playlist – showing the order of the files selected for playback; plus the waveform editor and overview. The Master view contains the Master faders and the FX Machine, which can route up to four parallel streams of audio through a chain of up to five plug-ins. There are 11 VST plug-ins bundled with Spark, including the powerful Native Compressor/Limiter and Native Reverb – which makes Spark an appealing choice for Cubase or Logic users looking for a waveform editor that also has a useful plug-in bundle.

Bright spark
There are a few nifty features. Every time you hit record and stop, a new region is created, and you can append it to any file. Just drag regions to the desktop to make new files. Spark also does real-time

All you need
Spark has an attractive user-interface, with almost everything in one window.

re-sampling. If you load files with any popular sample rate, Spark will playback without you having to change settings in your audio card and converting the file in real time for playback.

Macworld's buying advice
Spark is an excellent tool for mastering audio to CD, for sound-effects design, and for sampler users. For multimedia or Internet audio Peak is better.
Mike Collins

iMac swivel stand

Dance with i

Distributor: Mygate (0800 018 1424)
Pros: The colours match your iMac.
Cons: Stupid name; stupid price; stupid instructions.
Price: £39
Star Rating: ★★★/3.1

With the sort of unlikely name that only a Japanese marketing executive could think up, Dance with i is – disappointingly – a plain swivel stand for the iMac. The blurb on the box muddies the linguistic waters even further with the following printed instruction:

"Stand up Please! Fellow iMac! Dance with i". Crazy name, crazy guys. The brochure has, possibly, the best quote ever: "Receiving fantastic reputations, iMac standard stand 'Dance with i' can be handled easily – even by a lady!!"

Fitting it involves flipping your iMac over – hoping that all your icons don't fall out of the top – yanking off the tilt stand, and lining up the unit's rubber feet with the stand. It's kept in place by two screws, that were tricky to align.

Macworld's buying advice
Whether it's a wise purchase depends on how often, if ever, you miss the ability to be able to tilt your screen to a different angle. It's colour co-ordinated and looks rather fetching. Ergonomically, its greatest benefit is that it raises the screen to a higher and more comfortable position – though that might be a quirk of my upper torso. At any rate, it costs nigh on £40,

Something for the ladies
Dance with i is so easy "even a lady can use it".

which, as your grandparents would tell you, is a lot of money to pay for a bit of coloured plastic.

Please remember though: never ever attempt to dance with electrical equipment, especially when fresh out of the bath.
Chris Hayes

Silicon-enhanced mouse-mat

UniTray

Manufacturer: Contour Designs
www.contourdesigns.com
Distributor: Mygate (0800 018 1424)
Pros: Super squishy wrist pad; nifty colours.
Cons: There's no banana iMac.
Price: £17
Star Rating: ★★★★/8.6

It isn't every day that I review a mouse mat. But then it isn't every day you find a mouse-mat like the Contour UniTray. It is, without a doubt, the most comfortable mouse-mat I have ever had the pleasure to use. The secret ingredient is the gel pad that gently supports your wrist. It has the feel of a surgically enhanced breast, or at least how I imagine this might feel. Perhaps with the likes of Pamela Anderson swapping old implants for smaller ones, there may be a market for recycled silicon.

Macworld's buying advice
Joking aside, the mat is higher than normal, which stops rogue printouts slipping under

your mouse. The gel pad is adjustable in height, so you can make it just right for you. Last, but not least, it's available in all iMac colours: Lime, Tangerine, Strawberry, Grape, Blueberry, and, err…Banana.
David Fanning

Decent non-beige speakers

Apolla Speakers

Manufacturer: Pele
www.pelezone.com
Distributor: Mygate, (0800 018 1424)
Pros: They're blue and cheap.
Cons: They lack beef.
Price: £49
Star Rating: ★★★/6.6

If your iMac also doubles as your CD player, you probably need better speakers than the standard built-in ones. Of course, you don't want to spoil the luscious curves of your iMac by standing a couple of ugly grey boxes next to it. Perhaps the answer is the Apolla speakers from Pele. They certainly look the

part. We looked at is Blueberry speakers, but there are plenty more colours available. The Pele Website at **www.pelezone.com** shows six colours, one for each iMac flavour, plus Bondi blue.

Looks aren't everything when speakers are involved. More important than colour co-ordination is sound. The speakers sound pretty good, not exactly hi-fi separates, but they are decent quality. The thing to remember is the price – you can buy much better speakers, but not for less than £100, and more likely £200.

There is a bass knob, for when you want to get the full recoil from your bazooka while playing Marathon or Quake. It is quite effective for such small speakers, though can't compete with the rumble of a proper powered sub-woofer.

Macworld's buying advice
For iMac owners, the Apolla speakers are

far superior to the built-in ones. Colour co-ordination helps, and they are inexpensive. For the money, you won't find much better speakers for your Mac – but perhaps consider spending more moneyon a system with a sub-woofer (such as YST-MS55D on page 57).
David Fanning

Essential **USB**

W hen Apple's iMac was introduced last year, it represented a revolution not only in industrial design, but it set new technical standards for communication ports. No more SCSI, no more serial ports, not even a floppy drive. The non-Mac press latched on to the lack of floppy drive immediately, but the arrival of the Universal Serial Bus (USB) standard was not so immediately obvious.

In fact, the Windows market had been trying to launch USB unsuccessfully for months (it was invented by Intel), but it was the iMac that really started the barrel rolling. Steve Jobs had successfully changed the way peripherals connect in one clean sweep. This instantly put new the Mac on the cutting edge of communications technology.

Since the iMac, Apple has moved all its systems to the latest connectivity standard. By the end of this year, there will be over 250 USB products on offer. Here's our favourites.
By David Fanning

Printers

USB represents a major upgrade in the speed that your Mac communicates with printers. Previously, the old serial connection caused a bottleneck that held back ink-jet printer speeds. Most manufacturers now have printers that support USB, and have really focused attention on the growing Mac market by producing colour-co-ordinated translucent models. For the moment, the majority are some flavour of blue, but other colours are appearing. Expect to wait a while for G4 Graphite colours, though.

Epson Stylus Color 740i
Epson was the first to market with an iMac-inspired printer. Aside from the coloured plastics, the 740i is identical to the beige 740 – both boasting 1,440dpi resolution and excellent colour output.

Though not as great as the Epson Photo Color series of printers at photographic images, the 740i does an excellent job of printing colour images on plain paper. Adding special coated or glossy paper improves the quality still more. The 740i also has serial and parallel ports for maximum compatibility.
Price: £147 **at** Epson (0171 222 222)
★★★★/8.7

Hewlett-Packard DeskJet 895Cxi
Hewlett-Packard has had a poor record of Macintosh support in recent years. But it has started an about-turn with its current range of USB-equipped printers.

The DeskJet 895Cxi offers outstanding colour on inexpensive plain paper, and manages a speedy 11-pages-per-minute in monochrome in economy mode. Currently, blue is the only colour available in Europe. Until Hewlett-Packard starts making translucent plastics that match up to strict Euro laws, it's either blueberry or grey on this side of the Atlantic.
Price: £199 **at** Hewlett-Packard (0990 474 747)
★★★★/7.8

Tektronix Phaser 840 Designer Edition
Tektronix is the only company to offer a high-end colour printer that is obviously aimed at Mac-based studios. The Designer Edition comes in a translucent blue-&-white case, and sports both 100BaseT ethernet and USB connections.

The Designer Edition is much the same as the regular Phaser 840, which was already terrific, but there's extra memory and other features too. You can see a lot of the workings of the printer through the fun plastics. For a full evaluation of the Designer Edition 840, see Reviews, page 67.
**Price:** £3,995 **at** Tektronix (01628 403 600)
★★★★/8.8

Others

The USB revolution means that there are lots of Windows printers sporting USB. These have the potential to be Mac compatible, but demand the right software drivers. This broadens the choice of printers available to the Mac community, but doesn't necessarily add any value to it. The best ink-jet printers are already Mac compatible. You get no better quality by using an adaptor to use a Windows ink-jet printer. One area where you may want to go to the bother of using a Windows printer is monochrome laser printers. There are few cheap laser printers in the Mac market – perhaps manufacturers imagine we just want colour. In the PC market, however, cheap lasers are all over the place. If you need only mono prints, you can use software and hardware such as PowerPrint from Infowave to take advantage of PC laser bargains. Remember that some fast ink-jets now give cheap lasers a run for their money as well as printing in colour, so compare them both to avoid false economies.
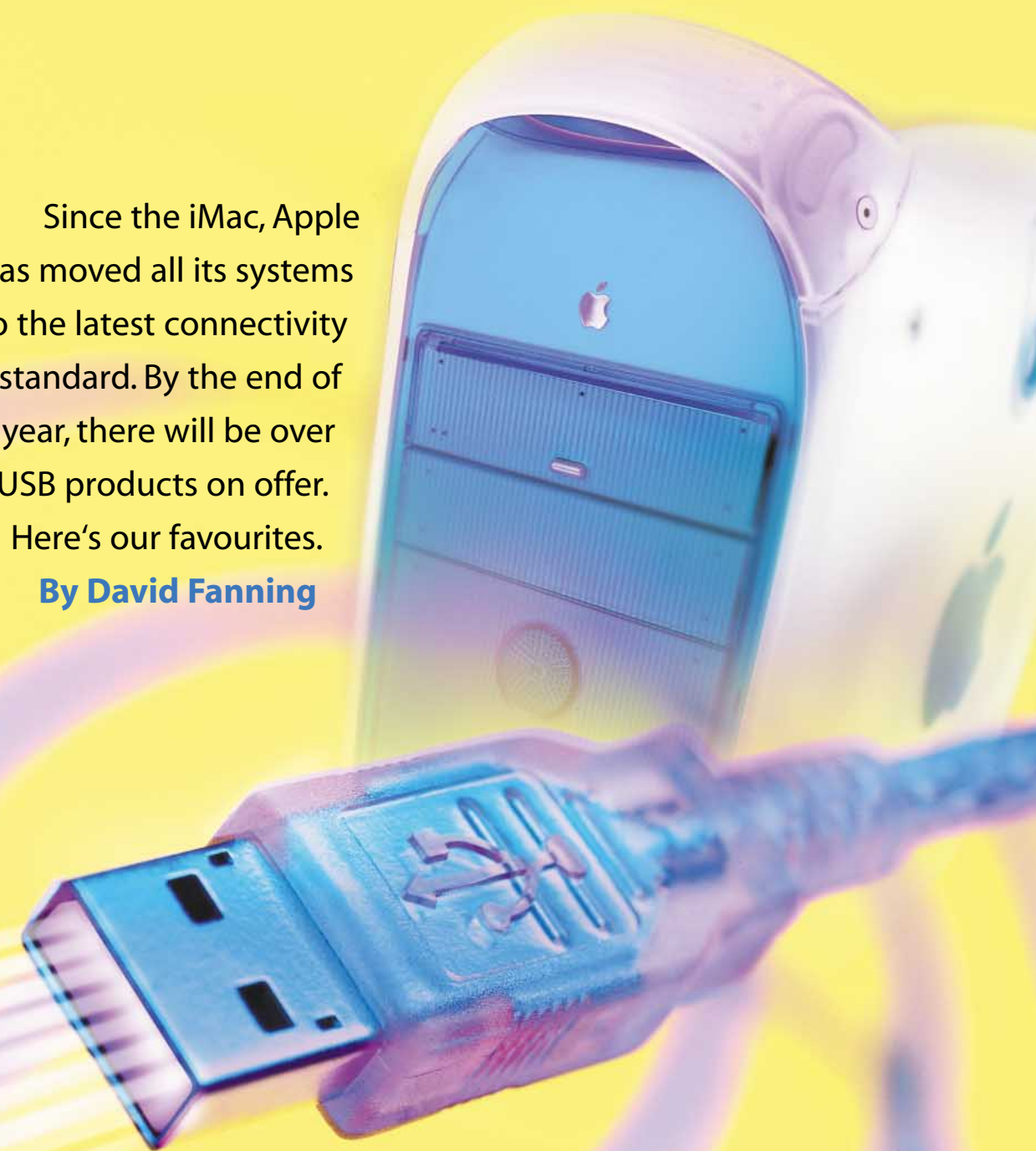
The iMac's move to USB was soon backed up by the introduction of the Power Mac G3 range this January. Now, the professional market was switched on to USB and also Apple's even faster FireWire (IEEE 1394) connection standard. Even SCSI was only an option. These changes in the Mac market didn't go unnoticed by peripheral manufacturers. These companies had been waiting for the USB revolution to start. And when Apple adopted USB across the board, things started happening – usually in some shade of translucent blue. When the iMac was released, Imation was first out with the SuperDrive, in its own blue-&-white colour scheme.

Unfortunately, when technologies are forced to the cutting edge, some things get cut. Professional users' first problems arose from a need for high-end scanners and removable media. High-end scanners still haven't moved beyond SCSI, but there are some options for removable media right now. One of the most popular formats – Iomega Jaz – is yet to be made available in a USB version, but Iomega promises an adaptor soon. If you can't wait that long, there is a USB-to-SCSI adaptor available. This may help a lot of SCSI-starved Power Macs – though if you have more than one SCSI device, a PCI SCSI card is a far-better solution.

One of the benefits of USB being a universal standard is that it is no big deal for traditional PC peripheral makers to make Mac software drivers for the products they sell. Consequently, peripherals like game controllers that were few and far between on Macs are now legion. Even Microsoft's gamesticks work with Macs now.

One thing to remember is that once you have more than two or three USB devices, you will run out of available USB ports. This is easily remedied by adding a USB hub. You need to power the hub to make sure that the devices get enough juice no matter how far down the USB chain they are. Another method is to use a monitor that has a built-in hub, such as Apple's Studio Display 21. Hubs come in all shapes and sizes, but with the proliferation of USB devices you should plan ahead for extra capacity.

As there are so many USB devices available, it would be impractical to cover them all here. Instead, we have chosen a few products that we've found useful in each category. In some categories – such as hubs or mice – there are literally dozens of options. Other categories are more specialized; for example, USB video cameras and graphics tablets. Although these are our favourites, USB devices are appearing at an accelerated rate. Keep reading *Macworld* News and Reviews for all the latest, greatest USB Mac extras.

Adaptors

For those unfortunates who are stranded on the cutting edge, here are some solutions to common problems. Making a change from old to new generally means that you are left with some equipment that didn't make the grade. Depending on how fond of that stuff you are, there is usually a way to get it across the technology barrier. SCSI, ADB or Serial can all be brought across to USB with the right tools. Another challenge is to add USB to your old Mac – so you can buy up-to-date peripherals. SCSI is not an ideal candidate for conversion to USB. USB slows a SCSI connection to a crawl, but if you need to do it then it is at least possible.
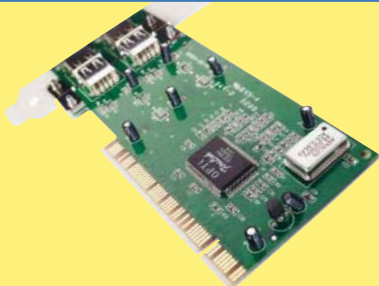
Keyspan PCI-USB
If you are reading this article with a view to getting a USB-equipped Mac in the future, you may not have to wait as long as you thought. Simply install this PCI card into your Mac, and, hey presto, you'll have USB. (If your old Mac doesn't even have PCI – it really is time to buy a whole new one.)

This card means that you can take advantage of USB today. And when you do move to a USB-native machine, your peripherals come too. Remember that some peripherals simply do not have a serial equivalent. For example, just about every decent joystick is available only in USB or PC connections.
Price: £39 **at** AM Micro **on** 01392 425 473
★★★★/8.5

Microtech USB-SCSI
Once you've made the move to the latest Mac, the first thing you are likely to miss is SCSI. It would be nice if we could all simply move directly to FireWire for external communications. However, in real life you are likely to need a Jaz drive or something similar. FireWire Jaz drives, scanners and hard drives are still rarities.

The Microtech USB-SCSI adaptor may not be as fast as SCSI – in fact, it is considerably slower – but you need never again worry about SCSI ID clashes. Without USB adaptors, SCSI drives must have unique ID numbers and can never be plugged in with the power still on.
Price: £69 **at** New Century Computers (0181 902 6789)
★★★★/8.5

Infowave PowerPrint USB-Serial
At first glance, the PowerPrint USB-Serial adaptor looks like an oddity because it connects PC printers to Macs. Why should you want to do that? Well, just about every office and hotel has a printer of some sort – and it's usually a PC printer. PowerPrint gives you access to all this outsider output.

Some canny PC printer manufacturers even include PowerPrint with their printers. Allowing Macs in gives these companies a whole extra market to sell printers to.

PowerPrint supports almost all laser printers that use the PCL printer language. It also supports printer specific features such as duplexing and resolution enhancement.
**Price:** £79 **at** Computer 2000 (01256 453 344)
★★★★/7.4

Others
Where possible it is probably better, and simpler, to avoid adaptors altogether. Unfortunately, they are a necessary evil in some circumstances. The USB to SCSI adaptor is good for a single device, but for faster access you should use a SCSI card from Adaptec or Atto (see *Macworld*, August 1999). That way, you may still be burdened with SCSI and all its headaches – but performance will be fantastic in comparison. USB replaced two previous interfaces: ADB, with which you plugged in your mice and keyboards; and the 8-pin serial connection. There are a few USB to 8-pin serial adaptors around, but these are for use with peripherals such as modems and printers, not networking – previously a task for serial. The advantages of using USB are most apparent when carrying data, as it is much faster than serial.
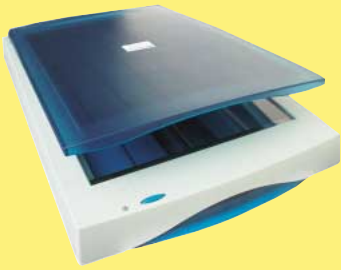
Scanners

Artec 1236USB

The most wonderful thing about this scanner isn't the fact that it's tiny. It isn't that it looks really cool. The really neat feature is the fact that is doesn't require a power supply.

Because the Artec takes power from its USB connection there are a lot less thick black cables to deal with. This makes for a nice, tidy desk – and an eminently portable scanner. It comes with Adobe's PhotoDeluxe 2 easy image editor and TextBridge Lite optical-character recognition software.

Price: £79 **at** New Century (0181 902 6789)

★★★★/8.7

Agfa SnapScan 1212U

The Agfa SnapScan 1212U was already a great scanner before the translucent dark-blue version became available. Boasting a healthy resolution of 600-x-1,200dpi, the SnapScan is good enough for any consumer-level scanning.

For the professional user armed with a USB-equipped Power Mac, the SnapScan can provide quick and sharp positional scans. This is all helped by the impressive software bundle, which includes FotoLook, FotoSnap and OmniPage Lite OCR.

Price: £129 **at** Agfa **on** 0181 231 4903

★★★★/8.3

Umax Astra 1220U

The Umax Astra 1220U has none of the co-ordinated translucent styling of the other scanners here, but it does have a secret weapon. It is cheap. At just £84, the Astra 1220 is just about the cheapest scanner available for Mac. The price isn't reflected in the quality of the scanner. It scans as well as any other, and also comes with an excellent software bundle that includes Adobe PhotoDeluxe 2 and OmniPage OCR. If you need a scanner and money is tight, then the Astra is an excellent choice.

Price: £84 **at** IMC (01344 871 329)

★★★★/8.2

Extra extra

USB is an ideal connection for scanners as their data throughput isn't quite as fast as hard drives, so they are not hindered by slower transfer rates. This would still be the case for more professional models, but manufacturers appear to be determined to stick with SCSI for now – and perhaps even faster FireWire in the future. For now, all the USB scanners available are aimed at the entry-level or consumer markets. However, the specifications of even the cheapest machines are remarkable. Just about all the scanners around toting USB have 600-x-1,200dpi resolution – which is perfectly acceptable for most non-professional jobs. One thing to keep an eye out for is the software bundle included with scanners. Make sure you have at least some kind of image editor and OCR package. Be careful to check this when you are buying the scanner, as these bundles may vary or be limited, special offers. See *Macworld*, June 1999, for our feature on consumer scanners.

Input devices

Interex Scrolling Mouse

Many of the USB mice around at the moment are basically two- or three-button PC mice. This is fine except that a Mac mouse uses only a single-button mouse, so the system software doesn't use the extra buttons. Driver software is needed to take advantage of the extra buttons, and sometimes PC mice don't have Mac drivers.

The Scrolling Mouse has all the drivers necessary to get the most from two buttons, plus a wheel that lets you scroll pages without clicking on any arrows.

Price: £22 **at** Interex (01923 263 108)

★★★★/8.3

Mac Ally iKey

The latest Power Macs look terrific, but many people complain about the kindergarten keyboard that accompanies them. Grown-up hands tend to prefer slightly larger keyboards. Old ADB keyboards will work with G3 Power Macs, but fashion frowns on grey keyboards these days. And the new G4 Power Macs shun ADB altogether. The iKey is a full-size USB keyboard in modern Mac translucent blue-&-white. It includes all the function keys, number pad and direction keys nicely spaced for adult hands.

Price: £49 **at** Mac Accessary Centre (0191 296 1500)

★★★★/8.5

Wacom Intuos USB

If mousing around isn't arty enough for you, the Intuos graphics tablet is the answer. Traditional artists will particularly like the pressure-sensitive stylus for natural-media painting applications. Sweeping brush-strokes and airbrush pressures are achieved by 1,024 sensitive levels.

There are additional tools available, so whether you prefer to use an airbrush, puck or stylus there is something here to fit the bill. The tools are wireless, while the tablet is plugged in via trusty USB.

Price: £249 **at** Computers Unlimited (0181 358 5857)

★★★★/8.9

Hubs

Entrega Seven-Port USB hub

Entrega has a whole range of iMac colour-co-ordinated hubs and other adaptors. The seven-port USB hub will allow you to keep all your peripherals connected together. If you fill all the seven ports, you can easily stack another on top.

The hubs are coloured with the now ubiquitous translucent plastics. You can buy different pieces, so whichever iMac you own you will always have matching USB livery.

Price: £79 **at** Ingram Micro (01908 260 160)
★★★★/8.0

VIS 4 Port Hub

This tiny hub offers four ports and is available in all the iMac colours. Don't let its diminutive stature alarm you, it is quite capable of powering four USB devices because of its external power supply. Always choose a powered hub because the further down the USB chain a device is, the less juice it gets. This isn't a problem for things with built-in power supplies, but it can be for devices that use the power from USB.

Price: £39 **at** VIS (01344 360 220)
★★★★/8.0

New Motion iDock

Here is an example of killing three birds with one stone. The iDock is a swivel stand for your iMac, raising it a few inches with a side-to-side swivel. It is also home to a small USB hub, with three ports. On top of this, there is a USB-to-PC-serial converter built in. It may not be the most aesthetic iMac peripheral, but, if you need even two of its three functions, it is a good one. If you need all three, then it's the bargain of the century.

Price: £129 **at** IMC (01344 871 329)
★★★★/7.1

Others

In many ways, hubs are all the same – certainly they all do the same job. Choosing is mostly a matter of accurately guessing how many ports you will need. There are other things to consider, but they're mostly matters of taste, or more accurately colour co-ordination. You can also take the multiple-function route to choosing your hub. Apple makes a fine hub for £939 – that might seem pricey, but it does include a 21inch Studio Display. In fact, many monitors now have a hub built in. Don't worry it it appears to be a PC monitor – hubs don't usually require software to make them work, so PC hubs are just the same as Mac ones.

Communications

Hermstedt WebShuttle

The WebShuttle is one of many ISDN terminal adaptors available, but shines because it's the most Mac friendly. It supports dual-channel ISDN access like the majority of others – but it makes using it easier than most.

The purple casing was designed to kind of co-exist with the original Bondi Blue iMac – but when the Grape iMac was released, it found a perfect partner. ISDN terminal adaptors are basically external ISDN cards that work in a similar way to modems. To use one for connecting to the Internet, you need BT's Highway service and an ISP that supports ISDN connections.

Price: £159 **at** Hermstedt (0171 242 4050)
★★★★★/9.0

MultiTech USB V.90 Modem

The iMac has a built-in modem, so it doesn't require any additional hardware to connect to the Internet. Power Macs have a space for an internal modem, but they don't come supplied as standard. Without a serial port, you must use a USB modem.

Pace used to be tops in this department, but recently went belly up. Fortunately, MulitTech has recently released a Macintosh solution.

The MultiTech USB V.90 offers 56Kbps access to the Internet, plus fax capabilities with appropriate software (not included). It runs from the power provided by USB, so the cabling is neat.

Price: £99 **at** MultiTech (0118 959 7774)
★★★★/7.3

Global Village USB 56K

The USB 56K modem marks a welcome return for Global Village, a champion of the Mac for many years. Global Village has been off the scene for a while since its modem business was sold to Boca Research. Anyone familiar with the Teleport range of modems will recognize this as the same, but now boasting a translucent design.

The great thing about Global Village modems is software support. Installation is a breeze, and you will be online in no time. Also, the higher bandwidth of USB means you never need to worry about whether your serial connection is slowing transfer rates.

Price: £99 **at** Global Village (0990 420 421)
★★★★/7.8

Storage devices

In the absence of SCSI, the iMac was stuck for a while with no external storage options. Only the Imation SuperDisk filled the gap for a while, but now more choices are arriving every month. Floppy drives are available for anybody wishing to access historical disks, but more forward-thinking readers will be more interested in Iomega Zip drives and optical options. Fixed-drive options are also becoming more widely available. La Cie, for example, has a wide range of USB hard drives. For the Power Mac user, though, a FireWire drive is a faster option. *Macworld* will be lab-testing FireWire drives in next month's issue.

Iomega ZIP USB

Iomega has two main removable formats that are now almost universally used: 100MB Zip and 1-2GB Jaz. Unfortunately, only one of these formats is compatible with the new Power Macs. So, for now, you can enjoy only the Zip format for USB. A Jaz adaptor will be available in the next few months.

The Zip disk was widely touted as the next generation of floppy, and, to a certain extent, it has fulfilled that promise. The USB version comes in a fetching translucent blue casing, perfect for the new Macs. Iomega is just about to release a 250MB USB-friendly version of the Zip drive.

Price: £84 **at** Iomega (01628 822 444)
★★★★/8.1
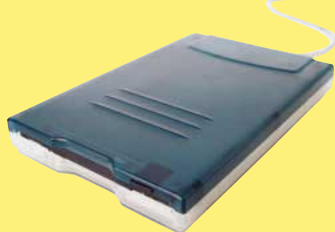
Teac Floppy Drive

The lack of floppy drive in the iMac, and then the Power Mac really rocked the computing world. PC users though it stupid, but then they've only just stopped using 5.25-inch floppies… Personally I was glad to be rid of them, having hardly used them for years anyway.

Unfortunately, the need for floppies hasn't entirely disappeared. For instance, QuarkXPress 4.x requires a floppy for installation, and some other applications require a floppy for anti-piracy reasons. Teac has the smallest and neatest USB floppy drive around. It's almost as thin and flat as a floppy disk itself.

Price: £59 **at** Mac & More (01442 870 300)
★★★★/7.7

Imation SuperDisk

The Imation SuperDisk was released almost simultaneously with the iMac, providing the solution to the blown-up lack-of-floppy controversy. It even shared some of the iMac's styling. Each disk can handle up to 120MB of data. In the absence of any other choices, the SuperDisk was a godsend. And although Iomega's Zip drive is more widely used, it lacks the SuperDisk's floppy compatibility.

If you don't need to exchange data with other people, the SuperDisk is fine – and its compatibility with floppies is handy. But if you want to share with most people, Zip is the better option.

Price: £149 Imation (01344 402 200)
★★★/6.9

La Cie Plug'n'Store USB 10MB Hard Drive

USB isn't really the ideal choice as an interface for a hard drive. Unfortunately, if you have filled your iMac's disk you don't really have a choice. The only interface even close to being up to the job is USB.

La Cie has designed a hard drive to work with the iMac or Power Mac via USB. It works well, even though it's slower than average. If you have a new Power Mac, however, you'd be best advised to get a SCSI card and SCSI drive – or better still one of the new FireWire drives. But for less-flexible iMac users, it's a perfect solution for an imperfect situation.

Price: £189 **at** La Cie (0171 872 8000)
★★★★/7.5

Que! CD-RW drive

If you want to exchange information with other people, and your files are too big to send via email, you need another solution. The most widely accepted format after floppy is CD-ROM. So if you invest in a rewritable CD-RW, you get instant compatibility with most modern computers.

The Que! CD-RW is cheap and stylish with colour-coordinated plastics and even a nifty carry case. It can record CDs as fast as 4x, and also uses re-writable media. This all adds up to make it one of the most versatile USB peripherals you can get for an iMac or Power Mac.

Price: £239 **at** Compu B (0800 118 6625)
★★★★/8.9

La Cie 640MB optical

One of the longest-running storage formats is the 3.5 inch optical disc, which over the years has evolved from a 120MB format to a 640MB double-sided cartridge. For long-lasting archives, optical discs are unbeatable. They are not affected by magnetic fields, so they don't deteriorate like other magnetic media, and the cartridge keeps them safer than CD-ROM.

If you want to keep your data safe into the next millennium, optical is the way to go. If you want to use optical discs on your USB Mac then the La Cie 640MB optical drive is exactly what you need.

Price: £229 **at** La Cie (0171 872 8000)
★★★★/7.8

Other USB essentials

Kodak DC265 Digital Camera

Kodak is building in USB connectivity in to all of its new digital cameras. The DC265 offers professional high-resolution images with a very simple point-and-click interface.

It has a 1.6-megapixel resolution (1,536-x-1,024dpi), which is good enough for A4 prints. Best of all, you can avoid lengthy download times by using USB to transfer the images to your Mac. In the past, pictures of this size could take an age to download using a serial connection. If you already own a digital camera that uses a SmartMedia or Compact Flash card, buy a USB card reader.

Price: £749 **at** Kodak (0870 243 0270)

★★★★/8.5

XLR8 InterView

If you want to add video to your Web site or multimedia presentation, and all you have is an iMac, InterView will sort you out. It lets you plug in your VCR and capture small video movies.

The basic hardware consists of a small-but-clever black box with S-video and Composite connecting cables. On the software side, Avid VideoShop allows you to edit and play the captured movies.

You can even save the movies to attach to emails. Making mini-movies really is simple with InterView.

Price: £99 **at** Interex (01923 266 400)

★★★★/8.7

Zoom USB Video camera

The Zoom Video camera may not seem immediately useful, but you can have hours of fun with it. It comes with a demo of SiteCam and a full-working version of the non-shareware version of CU-SeeMe 3.1.

SiteCam allows you to very simply set up a Web cam with quite sophisticated controls. Of course, you need a permanent connection to the Internet to use it properly. If you don't have that luxury, you can use your camera for video conferencing with CU-SeeMe. Ironically, the only thing you can't do with this camera is zoom.

Price: £70 **at** Zoom (01245 352 403)

★★★★/8.6

Microsoft GameStick

One of the best things that USB has brought to Mac entertainment is a wider selection of game controllers. Choice was severely limited before USB, but now just about all devices are USB equipped. However, there are some quirks with USB game controllers when compared to traditional ADB controllers. There are no software drivers for USB controllers, so the controls need to be built into the game.

And not every game supports USB controllers. But, generally, if a game is new and appropriate, it will support USB. The Microsoft Game Stick is one of the best.

Price: £43 **at** Microsoft (0345 002 000)

★★★★/8.5

Apple Studio Display 21

The Studio Display 21 monitor is a huge beast that incorporates a handy USB hub. The quality of the image is outstanding and, more importantly, it will remain so for years. The reason for this is that it can calibrate itself with amazing push-button ease and accuracy. As always, beauty is in the eye of the beholder – so sample before purchase. Part of its bulky design does actually save space, because the legs allow the keyboard to be stored underneath. Apple has updated the Studio Displays to the new Graphite colour scheme, so blue Power Mac owners should quickly snap up older stock.

Price: £939 **at** Apple **on** 0870 600 6010

★★★★★/9.0

Apple Studio Display Flat

Apple seemed ready to drop out of the monitor market a year or two ago. But it bounced back with monitors as stunning as this LCD Studio Display. The sleek design has changed colours twice already to allow colour-coordination with the latest models. Expect a Graphite version

A USB connection is used to adjust the screen's features from a control panel. The Studio Display has proved a favourite with set-designers and can often be seen in shows like *Who wants to be a Millionaire?* and *Film 99*.

Price: £879 **at** Apple **on** 0870 600 6010

★★★★/9.2

Service station

You need to shop around for the best
Internet service provider.

By David Fanning and Selena Laye

A *Macworld* survey earlier this year showed that 90 per cent of our readers either have – or will soon have – access to the Internet. Some are newcomers and some are old hands who know it all. Whatever category you fall into, now is a great time to take a look at what's new in the world of Internet Service Providers (ISPs). Free ISPs are springing up like bluebells in spring, and, at first glance, it certainly looks like there's pressure on the traditional £10-per-month ISPs.

And for those of you who believe there really is "nowt-for-owt" – prepare to be convinced.

Here, we are not examining the deals offered by every ISP in the land, but looking at ISPs capable of supporting Macs without asking what a Mac is.

The purpose of the feature is to equip you with the expertise to make the right decision when choosing your first ISP, or when switching ISPs. The trick is knowing if you're getting the most from your ISP, or if you're paying for features that you don't use. It's maybe time to re-evaluate your choices.

A new user, starting with a clean slate, is going to need the most help when connecting to the Internet. It can be pretty scary and more than a little confusing for a first-time user. I know when I made that first leap, it took weeks to appreciate all that the Internet could offer – and months to understand how it all worked.

Things are not quite so bad now. Years ago you needed more than a dozen bits of software to get things done. Now, you can get away with Microsoft's Internet Explorer and Outlook Express, or Netscape's Communicator suite.

At the risk of sounding like an old fart from a *Monty Python* sketch, in my day, you needed three applications just to receive email – never mind ftp, gopher, finger, IRC and Telnet. When they invented the World Wide Web it got even more confusing.

The key to helping new Net users is good installation software. The simplest of installation software is to be found on the iMac. The iMac comes with a limited choice of ISPs, each with a simple registration script. However, a new user may not have the information available to make the choice that's right for them. Worse, if you're on the same junk-mailing lists as me, you probably have daily deliveries of installer disks for various ISPs.

The first names that'll be familiar to a new user are most likely those seen advertised on television. AOL (America On Line) is probably the biggest advertiser, but what do you get for your money?

There are a number of different AOL pricing tiers available. For £4.95 per month you get three hours of Internet time, with additional hours costing £2.35. This might be suitable for people just using email, but it hardly gives you time to look at the AOL-exclusive

What the ISPs offer

COMPANY	COST	WEB SPACE (MB)	V.90 DIAL UP	ISDN	DUAL-CHANNEL ISDN	CABLE ACCESS	ROAMING	MAC INSTALLER-SOFTWARE	TECH SUPPORT (COST AND OFFICE HOURS)	MULTIPLE-EMAIL ADDRESSES	WEB ADDRESS	CONTACT
AOL	£9.99 per month	10	Yes	No	No	Yes	Yes	Yes	Free; weekdays – 8am-10:30pm; Sat, 9am-5:30pm; Sun, 11am-7:30pm	5	www.aol.co.uk	0800 3765432
Abel Internet	£9.50 per month/£90 per year	50	Yes	Yes	Yes	No	No	Yes	Free; 9am-11pm	Unlimited	www.abel.net.uk	0131 445 5555
Apple OnLine	Free	25	Yes	Yes	Yes	No	No	Yes	National; 9am-7pm	Unlimited	www.appleonline.net	08707 444411
Atlas Internet	£10/month; £120/year	0	Yes	Yes	Yes	No	Yes	Yes	Free; 9am-8pm	Unlimited	www.atlas.co.uk	0171 3120400
BT Internet	£10/month; £110/year	10	Yes	Yes	Yes	Yes	Yes	Yes	Local rate; 24-hour;	Unlimited	www.btinternet.com	0800 800001
Cable and Wireless	£5.99/month (Inc. 12hours call time); 35 hours Internet call-time – £14.99; 75 hours Internet call-time – £29.99	20	Yes	Yes	No	No	Yes	Yes	24 hour; Premium rate 50p/minute	5	www.cwcom.net	0800 0923013
Claranet	£5.99/month; 12 hours' free calls; £99.99/year; £11.90 evenings and weekends; £14.99/35 hours	50	Yes	Yes	Yes	Yes	No	Yes	Local rate; 24-hour	Unlimited	www.clara.net	0171 9033000
Compuserve	$9.95, 5 hours free, $2.95 thereafter/$29.50 Unlimited access package	10	Yes	Yes	No	No	Yes	Yes	Free; 8am-12pm	Unlimited	www.compuserve.co.uk	0870 6000800
Direct Connection	£4/3hrs – and then £1.70/hr; £11.49 unlimited for one month; £100/year	20	Yes	Yes	Yes	Yes	Yes	Yes	Local rate; 9am-9pm	Unlimited	www.dircon.net	0800 072 0000
Demon Internet	£10/month; £120/year	20	Yes	Yes	Yes	No	No	Yes	Free; 24-hour	Unlimited	www.demon.net	0845 2722999
Freezone	Free	20	Yes	Yes	Yes	No	No	No	Premium 50p/minute; 9am-9pm	Unlimited	www.freezone.co.uk	0870 744 1111
Global Internet	£10/month; £89.99/year	50	Yes	Yes	Yes	No	No	Yes	National; 24-hour	Unlimited	www.global.net.uk	0870 9098000
Macace	£120/year	5	Yes	Yes	Yes	No	Yes	Yes	National; 9am-8pm; 24-hour; second-party referral	2	www.macace.net	01208 72503
Moose Internet Services	£10/month; £100/year	20	Yes	Yes	Yes	No	No	No	Free; 9am-6:30pm	Unlimited	www.moose.co.uk	0181950 6633
Netcom	£14.95/month; £119/year	25	Yes	Yes	Yes	No	Yes	No	Free; 24-hour	20	www.netcom.net.uk	0870 5668008
Netkonect	£10/month; £100/year	2	Yes	Yes	Yes	No	No	Yes	National; 9am-6pm, Mon-Fri	Unlimited	www.netkonect.net	0171 3457777
Net Direct	£8.99/month	25	Yes	Yes	Yes	No	No	Yes	National; Mon-Fri, 9am-9pm; w/end, 9am-6pm	Unlimited	www.netdirect.net.uk	0181293 7000
Primex Internet Solutions	£120/year	25	Yes	Yes	Yes	No	No	No	Free; 8am-9pm	Unlimited	www.primex.co.uk	0870 7878456
Scotland On-Line	£10/month; £99/year	10	Yes	Yes	No	No	Yes	Yes	local; 24-hour	Unlimited	www.sol.co.uk	0845 2700027
Sniff Out	Free	20	Yes	Yes	Yes	No	No	No	National; 24-hour	Unlimited	www.sniffout.net	01883 742510
UK2NET	Free	50	Yes	Yes	Yes	No	No	No	Free; 9am-2pm	Unlimited	www.uk2.net	0171 9871200
Virgin Net	Free	10	Yes	Yes	Yes	Yes	Yes	Yes	£5.99/month; £1/minute; 24-hour	5	www.virgin.net	0171 6646070

content, never mind the rest of the Web. For a less hurried look at the Web a better option would be the £9.99 unlimited access deal.

AOL pricing options are a symptom of US-style billing. As the US has free local calls it isn't expensive to pay per hour. In the UK, though, local calls aren't free, and additional hourly billing can be pricey. CompuServe also has similar billing options, but generally, hourly billing is a bad idea.

Ironically, the same company that owns both AOL and CompuServe has just launched Netscape On-Line, a free ISP. It will offer similar content to AOL and CompuServe, but isn't available for Mac owners. The promotional material claims Netscape On-Line is aimed predominantly at single males aged between 18-30. (A good description of a PC user, if ever I heard one).

Probably a better bet than AOL for the new user is either Direct Connection or Demon. Both companies are on the iMac installer-disks and have been providing Internet access for many years. Demon was the first company to offer Internet access to UK residents – but, even before this, Direct Connection was running a hugely popular bulletin board, which evolved into full Internet access. Both companies – though not free ISPs – offer competitive services, including dual-channel ISDN access and excellent tech support.

The other two options are BT Internet and Virgin Internet. BT's payment methods are similar to AOL's, but, interestingly, it has plans to offer free 0800 Internet access at weekends. This is 12am Friday-to-12am Sunday service, and could prove popular with on-line gamers and other heavy Net users. Virgin doesn't currently offer 0800 access, but it doesn't charge a subscription fee. They are part of the new free ISP revolution.

All that glitters…

Increasingly, we are being told that we shouldn't be paying for Internet access. But are the free ISPs all they're cracked up to be? I have watched with interest the list of free ISPs grow rapidly. It remains unclear how this business model is meant to work. Freeserve was the company that started the ball rolling, offering a seemingly unbeatable service. To begin with, at least, demand outstripped its ability to provide a service comparable with paid-for ISPs. This need not worry Mac owners, because Freeserve doesn't support Macs. However, there are work-arounds for such platformism; a quick search of the Internet will bring up methods of beating the system.

Frankly, I feel that if they don't want us, then they shouldn't enjoy our custom.

Virgin is a Mac-friendly free ISP. Virgin Internet appears to offer similar facilities as paid-for services, but there's a slight sting in the tail. Technical support is £5.99 per month – or £1 per minute. If you ever need to call it, you may be better choosing a different ISP. I don't often have problem with my ISP, but I'm sure I've spent more than 30 minutes on the telephone to its tech guys. I would hate to think of the cost if I had a real problem with Virgin Internet.

Charging for tech support is common among free ISPs. UK2.net and FreeZone also have similar – albeit slightly cheaper – support at 50p per minute. The only free service that charges at a national call-rate is Apple OnLine (**www.appleonline.net**). This, as the name suggests, is very Mac oriented, and a quick look at the Web site will demonstrate just how committed it is to working solely with Macs. It might be a bit cheesy, but it's nice to think that somewhere in the world, PC users are treated as second-class citizens.

One thing you definitely need if you're yet to pop your Internet cherry, is an installation disc. You can do it without one, but it's far from straightforward if you're unfamiliar with the Internet. A good installation disc will hold your hand throughout the process of getting on-line. If an ISP doesn't have a Mac installation disc, then new users should look for one that has.

Flexible email

An email address for life is difficult to achieve, especially when you change service provider regularly. The problem lies in the addresses provided by your ISP. It normally includes a reference to the ISP in the address – so, change ISP and you must change address. This also applies to people that change jobs when they have a work email address.

The solution is to subscribe to a free Web-based email service. This is a double-edged sword because, on the one hand, you get a free and flexible email address, but on the other you are at the mercy of yet another provider. They are just as likely as any free ISP to go belly-up. You can cut the risk of this by going with a leading free email provider – such as Microsoft's Hotmail service – but even a Microsoft service isn't without its hazards. Famously, a hacker recently posted a Web site that acted as a gateway to the Hotmail server. It allowed people to log in to any Hotmail account – without using a password. Microsoft has plugged this alarming breach in its security, but it makes one wonder how secure mail is when using free email providers. It is possible that smaller companies have even slacker security.

The only way to guarantee personalized email is to register your own domain and move it whenever you change ISP. It is not the cheapest or easiest way, but is the only way you can be sure you get exactly what you want.

Connecting methods

There are a number of ways to connect to the Internet: modem, ISDN cable modem, and even satellite access, has been tried. For the majority of users, though, a 56Kbps modem is the way to go. It needs no special lines – plugging into your telephone socket – and it is accepted by all ISPs. The 56Kbps speed refers to the download speed that is theoretically possible. In practise, 50Kbps is the limit. Uploading is still slower, at 33.6Kbps. If this isn't fast enough for you, perhaps ISDN is what you need. BT launched Home Highway last year – after years of milking businesses for corporate ISDN charges. The calls cost the same as normal telephone calls, unless two channels are used. For full 128Kbps speeds, two lines are used at once – but costing the same as two simultaneous telephone calls. The equipment needed costs a little more than a modem, but if you don't have a USB-equipped Mac you'll need an ISDN card. This will cost considerably more than an external terminal adaptor.

If you're lucky enough to have cable television, check with your cable provider for any Internet services it offers. Such set-ups are few and far between, but if you get lucky you can get continuous, high-speed Internet access for a low price. This deal is even better than the

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How free ISPs work

You may wonder how ISPs can make money through free Internet access. It was something tried before Freeserve came up with its business model. In the US, some firms looked at ways to force advertising on the user – to pay for the service.

This never worked, because users always found a way to avoid – or at least ignore – the adverts.

Other methods included free Internet access for buying particular supermarket goods. If you bought Heinz ketchup instead of Daddies sauce, for example, you could send off the receipt and get a number of hours free access. This could have worked – if it wasn't for the sending of the receipts, which was fiddly.

Eventually, someone figured out that BT was making bundles of cash from Internet calls and that, if those calls could be routed though another telecommunication firm, there would be enough money from the kickback to support the service.

So now all companies offering free Internet access are supported by a cut of the telephone charges that are passed on to you, the consumer.

This all makes perfect sense – except for one thing. If these companies can cut this deal with the telephone companies, why don't the other ISPs? Or perhaps they already are.

What is ADSL?

The biggest thing to hit the Internet next year will be ADSL (Asymmetric Digital Subscriber Line). It's set to revolutionize the way we use the Internet – offering untold new uses. Details are just emerging on how ADSL will be implemented. For the consumer, a massive 512Kbps pipe for downloads and a healthy 256Kbps for uploads will be standard.

This will have a wholesale price of £40 per month to the ISPs, which doesn't include the actual Internet service. By the time the ISPs pass on the charges and add their own, it's likely to cost around £60 per month. This might seem pricey. If you're not a heavy Internet user, it's certainly more than your current Internet costs. However, there are other benefits.

The connection is a permanent one: your connection is made by a special modem/router that you connect via ethernet. You'll never need to dial-up again – no more waiting for the static hiss and tones of the modem handshake.

A permanent connection means you'll be able to serve your Web pages from your own machine, or have an FTP, Hotline or Carracho site, and even run your own Web cam.

The extra bandwidth will make Internet telephony – and even video conferencing – useable, and maybe even higher quality. Everything you do will be faster. Permanent access does have a number of drawbacks, though. If you're live on the Internet it does give unscrupulous folk a chance to hack your server. This is not normally a problem – but if you're not used to being on a large network it's easy to forget about issues like passwords and security. And this is just one of what are sure to become many home network security issues, for which products are already being introduced.

ADSL trial

■ BT has announced the areas it will be using for the ADSL trials it is running before a full roll-out next year. These include: London and Manchester (from November 22); Birmingham, Coventry, Edinburgh, Cardiff, Glasgow and Newcastle (from December 1); and Leeds and Milton Keynes (from 1 February 2000). ASDL coverage in the above-mentioned cities will not be total: it is aimed at particular exchanges and telephone numbers. The trial is limited to as few as 5,000 households. For more information about coverage and the trial in general, you can visit: **http://www.isn.bt.com/SP/ broadband/rollout.doc**

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fastest possible connection: ADSL (see "What is ADSL?" on page 92).

If you happen to be one of the very privileged few in west London that's taking part in the ADSL trials, you don't need telling how cool it is. The rest of us will need to wait until next March before the service is publicly available. Even then, it's only in big cities that it's being rolled out. If you live more than two and a half kilometres from a telephone exchange, ADSL may take some time to arrive. In the meantime, ISDN is your fastest option.

Internet extras

Roaming In the cut-throat business of Internet service provision, all the players are looking for additional services to offer. A popular provision for business travellers is a "roaming" feature. This allows you to go to, say, New York and dial a local server, rather than making long-distance calls from your hotel. Depending on the wiredness of your destination you may have a choice of local numbers, or even free-phone numbers. Freephone numbers are not totally free, though, because you pay for your normal monthly bills. What it does do is give you considerable savings on hotel call charges. It's an invaluable service for the hard-core traveller.

CompuServe has one of the best world-wide networks of dial-up Internet access. However, the service is pitched at businesses and is expensive for the casual user.

Free Webspace All ISPs now offer an amount of free Web space, but be sure to read the small print for terms and conditions. Many place limitations on what you can do with the site, the kind of files you can upload, and the type of businesses advertised. They are more geared to serving family or small-business-type Web sites rather than e-commerce or pirate sites. You may also be limited in the amount of traffic allowed.

It's easy to think that the more Web space offered the better the deal, but a well-produced Web site is rarely over the standard 5MB offered. If your site is larger than this, then you have either put in a lot of work and have dozens of pages, or the site is badly designed and has lots of heavy graphics or files to download. Average free Web-space is around 15MB – plenty for most non-commercial uses.

Telephone support One provision often overlooked is telephone support. With luck, you'll never need it, but if you do, you want it to be worthwhile and prompt. Although many ISPs offer around-the-clock support, most problems are not going to be solved at 4am. It's better to have good support during normal hours that 24-hour support that is, at best, patchy. When choosing your ISP, ask how many of its support team know Macs. The correct answer should be "all of them", but this is rarely the case. Direct Connection prides itself on its support record, and particularly with Macs. All its support staff are trained to answer questions about Macs and PCs, so you don't have to wait days to catch the Mac guy. In fact, Macs are far easier to hook into the Internet than PCs, so you shouldn't have much trouble – although it's nice to know it's there when you need it.

email addresses Multiple email addresses are excellent for families accessing the Internet. Most ISPs offer unlimited email addresses, but some are limited to five or less. Granted, you may not need an unlimited number of addresses, but you can soon use up five if you have a Web site, or a large family. It's good to have separate addresses for Webmaster@, sales@, mum@, and so forth.

Macworld ISP advice

You should now have a good idea what to look for in an ISP. Free ISPs are good value, but it's possible that you'll want to change from one to another as better deals become available. This means either keeping all you friends informed every time you change, or, better still, getting a Web-based email service. For a more stable service, choose an ISP with a good pedigree and then, when ADSL arrives, it should be able to change your service without you having to change your ISP. You may think that ADSL is something you won't need, but, then again, you may think your Mac doesn't need to be any faster either. I guarantee that, in two or three years' time, modem access will be only for die-hard Internet Luddites.

Never underestimate the pain of changing email addresses and Web sites: it's very easy to get stuck with an ISP that you're not happy with – but can not be bothered to change.

Also, if you don't already have a service provider, choose one that you'll want to stick with. If you do have an ISP, then – unless you're getting a poor service – you're better off sticking with it. Beware of so-called "free" deals. Some are good, but read the small print – and be prepared to change again when you want ADSL. **MW**

Remote control

How to master remote collaboration. By Jim Heid and David Fanning

DAVE ANGEL

It used to be that the people who worked together on a project were located under the same roof. Today, they might not be on the same continent. The Internet has enabled workers to scatter like dandelion seeds in a gale, and it isn't unusual to find yourself working closely with someone you've never met in person.

Telecommuting is wonderful, but it does introduce complications. How can you proof and comment on page designs and other documents without the delay and expense of couriers? How can you brainstorm in real time without racking up huge phone bills? How can you monitor or control a Web server that's located a thousand miles away? Several software tools can help you address these issues. Here's a guide to stocking a remote-collaboration toolbox, and some tips for our favourite tools.

"Please comment ASAP"

This is a common request, along with: "Look over the latest brochure layout and get back to me." "Approve the new logo design." "Proof the annual report before tomorrow."

These chores used to mean last-minute sprints to the post office or a visit from a hairy motorcycle courier. Then fax machines came along and made their contributions to eyestrain and aggravation. The advent of email has made it far more convenient to move documents around, and business software has evolved accordingly – Microsoft Word and Excel, for instance, have features for adding annotations to documents. These sticky-note-like comments don't appear within a document's text, but instead show up as small icons. Double-click on an annotation's icon, and up pops a small window containing the comment. But graphics and design programs generally don't offer annotation features. And even with Word and Excel, there's the risk that someone will make changes to a document without letting others know about it.

The answer: Adobe Acrobat 4.0. Acrobat has always been a great tool for distributing documents electronically – convert a file into Acrobat's Portable Document Format (PDF), and then send the PDF to your colleagues, who can review it and print it using the free Acrobat Reader software. Acrobat adeptly preserves the original document's formatting, even simulating fonts not installed on a recipient's system.

Tools for teleworking

COMPANY	PRODUCT	STAR RATING	PRICE	COMMENT	CONTACT	TELEPHONE
Adobe	Adobe Acrobat 4.0	★★★★/7.8	£159	Indispensable cross-platform document file-format.	Adobe	0181 606 4001
Netopia	Timbuktu Pro	★★★★/8.3	£149	Remote-control for your Mac, from anywhere in the world.	SQP IT UK	01582 673 000
ICQ	ICQ	★★★★/7.9	Free	ICQ has become the de facto standard for instant messaging, with millions of users.	www.icq.com	
JPY	ISDN Share	★★★★/8.7	£500	ISDN Share is the only routing-software to successfully spoof AppleTalk.	JPY	0181 390 8487

Acrobat 4.0 goes beyond these basics to pack a full array of collaboration tools (see "Acrobat annotated"). Each member of a workgroup can attach annotations to a document and review annotations others have made. Acrobat 4.0 also enables you to mark up a document: you can, for instance, draw a strike-through bar to mark a section of text for deletion, and then attach replacement text by typing it in a pop-up window. Because reviewers are working on a PDF file, and not the original, there's no worrying about changes to the original file, or over whose copy is the current version.

Chat and swap
Annotation features are noteworthy, but they don't allow for real-time remote brainstorming and collaboration. The telephone does, but can lead to a hefty phone bill.

One potential solution is instant-messaging (IM) software. Several free IM programs are available for both the Mac OS and Windows, and although they're most commonly associated with love-lorn teens, they can be powerful collaboration tools, too.

From a telecommuter's perspective, the best IM software for the Mac is the freeware ICQ (www.icq.com). ICQ's interface is cluttered and cumbersome at times, but the software has two crucial features: it supports file transfers and URL exchange. Apple is planning to collaborate with AOL to produce an instant messaging standard.

Remote nirvana
ICQ does the job for occasional telebrainstorming, but if remote collaboration is a big part of your work life, go all the way to Timbuktu. Available for both the Mac OS and Windows, Netopia's Timbuktu (£149; SQP IT UK, 01582 673 000) provides first-rate chat and file-exchange features and even an intercom mode that lets you chat using your vocal cords instead of your hands.

But these goodies are only side-dishes; Timbuktu's main course is remote observation and control. Outfit two or more computers with Timbuktu, and each user can watch the others' screens, or even control other computers via a modem, local network, or the Internet.

You get real power by combining remote observation with Timbuktu's chat, intercom, and file-exchange features, as in the following example:

"I've got the latest layout on my screen. What do you think?"
"Change the headline font to Ransom Note Bold."
"OK. How's that?"
"Good. And by the way, I rescanned the photo. I'm sending you a revised version now."

This live collaboration is faster than annotating and emailing PDFs. It's almost like sitting alongside a colleague, except you can't catch his or her cold.

One of the beauties of Timbuktu is its support for multiple platforms and protocols. You can tap into other Macs on your network via AppleTalk, or you can use the Internet to tap into remote Macs or Windows machines using TCP/IP. You can even mix and match within a single chat window, connecting to local Macs via AppleTalk and remote machines via TCP/IP. (For more tips, see "Telecommuting with Timbuktu").

Another way to approach this kind of collaboration is by using a bridge or router, which is used to link two Apple networks. This allows you to join another network seamlessly, either as an individual or an entire remote network.

There are, though, problems with some of the available bridges. This is because the ISDN line used as the link is called up automatically when there is any network activity. On Apple networks, this can be costly, because – as the server checks that other

servers are working – they generate a preponderance of low-level network activity. Such activity can include OS 8's insistence on checking regularly the contents of other network users' wastebaskets. Unsurprisingly a normal router does not hold this information, so the ISDN line is dialled immediately to check. Only one company, JPY, has found a way around this problem: ISDNShare (JPY, 0181 390 8487). It costs £500 for the software and £495 for the router.

JPY is alone in managing to crack the problem of "spoofing" AppleTalk. Spoofing is a tactic used by PC bridges to reduce network traffic between sites. ISDNShare works via routers at each site that kick in when a server issues a request to check that the other site is working. Instead of calling up the other site, the router simply replies with the equivalent of "chill". This will work until the server poses a question that the router can't answer with its store of information. At this point, the ISDN line is dialled, so that the machines can talk directly. Only ISDNShare has been able to overcome this and other peculiarities to successfully spoof AppleTalk.

The package consists of a 3Com OfficeConnect Remote, plus the ISDNShare software. As a router, it can be accessed by an individual or an entire network, and can be configured to link to other ISDNShare routers, or even the Internet.

You can permanently keep a remote volume – maybe your hard disk at work – on your desktop. The only time the connection dials up is when you are copying to or from the volume.

When used with the Internet, ISDNShare can mount volumes from machines on the other side of the world – at the cost of a local call. You can also share databases, cutting down the need for synchronizing separate records.

One of the most useful things in the graphics industry is being able to print remotely. You can send to printers or image setters simply by selecting them through the Chooser. In fact, all remote volumes and printers are accessed via the Chooser, so no special networking knowledge is required.

Hopefully, it won't be long before we needn't fret about the cost of remote working. The technology is already here but the price of telephone calls remains an issue. ISDN is faster, but no cheaper. But another option should be available by next year – ADSL. This promises continuous networking, no dial-ups and no per-minute charges. For remote access, it is these features that are more important than bandwidth. However, the bandwidth of ADSL is huge compared to the average modem or even ISDN dial-up link. With a little luck, this service may reduce the cost of alternative ways of connecting to the Internet.

It's no picnic
Remote-collaboration tools can span the miles, but they aren't always a perfect substitute for getting together in what some call "meatspace". A lengthy chat can take its toll on your wrists.

Intercom features such as Timbuktu's can address these shortcomings, but voice-over-Internet technology lacks the sound quality and reliability of the telephone.

Video-conferencing also holds promise. However, all but the most expensive video-conferencing tools deliver frustratingly poor quality. Until we all have Jetsonsesque-quality video-conferencing systems, the best tools for remote collaboration are the ones we've discussed here. Remote conferencing tools don't allow for the spontaneous brainstorms that can occur in office hallways – but the advantages do outweigh the disadvantages.

The pros include geographic and scheduling versatility, significant savings, and the flexibility to choose colleagues based on their talents, rather than their location. **MW**

Acrobat annotated

Acrobat 4.0's annotation and mark-up features simplify reviewing and commenting on documents.

Tips for working with Acrobat annotations
■ To change an annotation's properties – for example, to use a different icon for notes, or a different graphic for stamps – press control while (clicking on it, then choose Properties from the pop-up menu.

■ To make an annotation with a custom size – for example, a very large Note – don't just click. Instead, drag across the PDF until the rectangle is the desired size and then release the mouse button.

■ You can import and export annotations with the File menu's Import and Export sub-menus. One reason to do so is to combine annotations from several people into one master file. Each user exports his or her annotations and then emails the file to whoever is assembling the master list. That person then imports all the annotation files into a single PDF.

■ Want to see only a certain type of annotation, or view only one person's comments? Choose Filter Manager from the Tools menu's Annotations sub-menu, and then choose which or whose annotations you want to see.
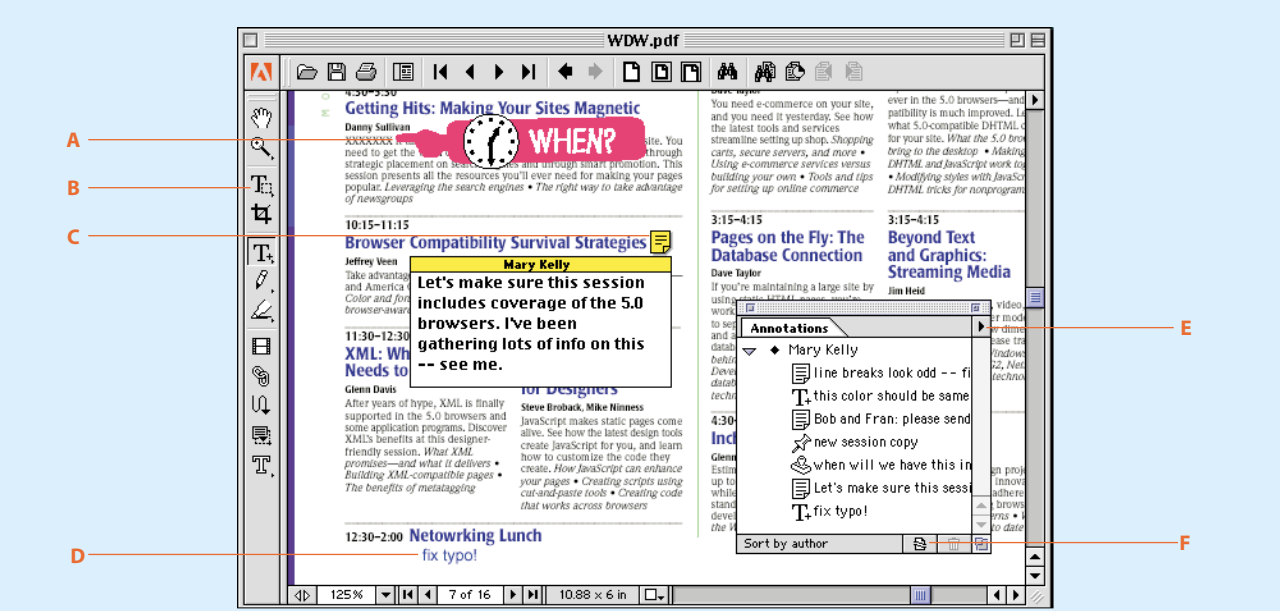
(A) The Stamp tool is a virtual rubber stamp. Acrobat includes dozens of stamp graphics – everything from the usual Confidential and Approved to off-beat ones like Nuke This.
(B) The preset annotation tool is the Notes tool. To choose other annotation tools, point to the Notes tool and hold down the mouse button to make a pop-up menu appear, then drag to select the desired tool.
(C) The page icon denotes a Note. Double-click on the icon to view the annotation.
(D) A Text annotation appears directly on the PDF – there's no need to double-click an icon to view it.
(E) Click on the triangle for a import, export, and sort shortcut menu.
(F) Click this icon to scan the PDF for annotations and update the contents of the Annotations palette.


Telecommuting with Timbuktu

Netopia's Timbuktu Pro is a telecommutor's dream, giving remote control, file transfer, and chat into a single application available for Macs and Windows alike.

Tips for working with Timbuktu
■ Timbuktu Pro provides two ways to send files. The Exchange window (C) provides two-way exchanges. That's convenient, but it's much slower than the Send command, which simply zaps a file from one machine to another.
■ Timbuktu Pro does a remarkable job of enabling you to remote-control a computer via a modem connection. It feels like running under water sometimes, but it works. To ensure that remote-control sessions run as fast as possible, eliminate any background images from your Mac or Windows desktops. Solid-coloured backgrounds yield the best results.
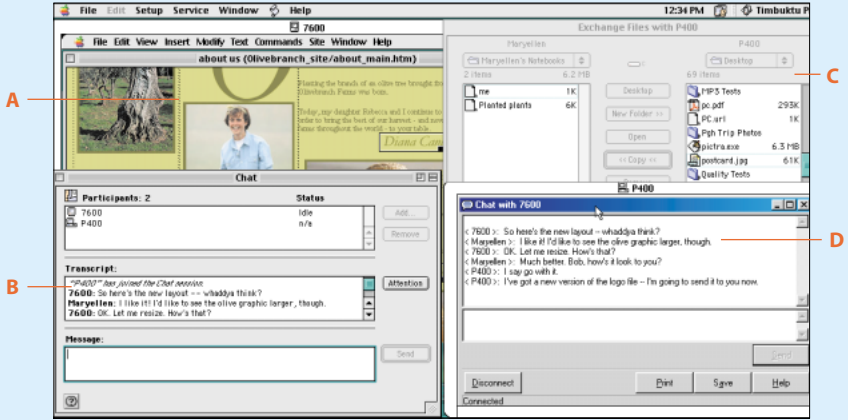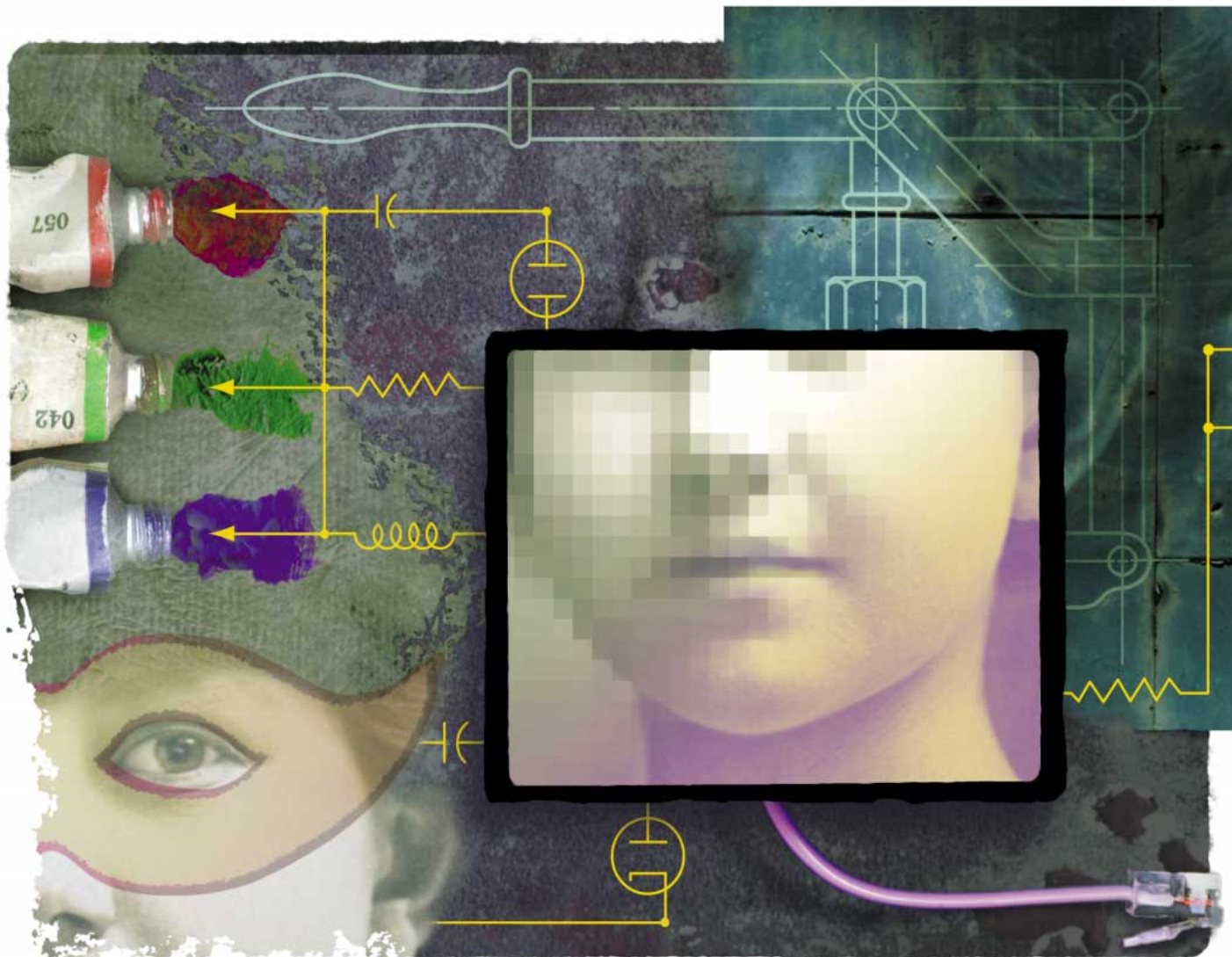

(A) A distant Web designer's latest layout appears on a colleague's local Mac.
(B) Both designers are chatting with a third colleague about the layout.
(C) The file-exchange window lets you beam files between machines and platforms.
(D) No platform barriers – here a Mac controls a Windows 98 machine remotely.

Net gain

Version 5.5 sees Photoshop getting Web-savvy – at last. **By Jason Snell**

When it comes to the Web, Adobe Photoshop has always been a program fraught with contradictions. It's probably the most popular tool used by people in the Web-design and Web-graphics businesses, whether it's to shape images for the Web or to sketch out a Web-site design before implementing it in HTML code. Despite all that, the flagship product of Adobe Systems (**www.adobe.com**) has never been particularly Internet-savvy – a situation that has led to the creation of a whole industry based on plug-ins and programs that perform the vital jobs that Photoshop simply doesn't do.

But as of version 5.5, Photoshop has finally embraced the Web. Sure, this upgrade adds some features that will be attractive to Photoshop's traditional-print fans (see the sidebar "Not just for the Web"), but the bulk of the changes to the venerable image editor are meant to satisfy the long-suffering Web-graphics community.

How'd they do it? Basically, Adobe rolled in most of the features found in the Web-graphics product the company released last year – Adobe ImageReady. In a move that shows both how far Web design has come and what a mis-step leaving Web features out

of Photoshop proved to be, Adobe has now made ImageReady available only as part of the Photoshop 5.5 package.

A new version, ImageReady 2.0, is bundled with Photoshop. It handles higher-end tasks, such as Web animation, and other fancy techniques, such as using JavaScript rollovers and image slicing.

Window to the Web

With Web graphics, you've always got to walk a tightrope between creating high-quality images and making ones that download quickly over slow modem lines. Web designers work primarily with JPEG files (for photographs) and GIF files (for text, logos, and other graphics with large blocks of solid colour). Careful tweaking makes all the difference with images saved in either of these formats. The more control designers have when making trade-offs between beauty and speed, the better.

Until this newest version, Photoshop lacked that control, so most designers instead used Photoshop plug-ins, such as the £30 ProJPEG and £45 PhotoGIF from BoxTop Software (**www.boxtopsoft.com**), or programs such as ImageReady and Fireworks 2.0 from Macromedia

(£139; Software Warehouse, 0800 0355 355). These tools allowed designers to manipulate the file size and quality of JPEG and GIF images, with immediate visual feedback. However, none of them are able to match Photoshop's all-powerful image-editing features. As a result, prepping graphics for the Web often involves constant switching between Photoshop and a Web-savvy application.

The biggest addition to Photoshop 5.5 is the Save For Web menu item, located on the File menu. Choosing Save For Web doesn't bring up the usual Save dialogue box; instead, a large window appears that lets you modify your image in various important ways. This won't be exotic to anyone who has used Macromedia's Fireworks (see the screen shots, "Separated at birth"), which offers an almost identical interface. ImageReady 2.0 also has this feature.

JPEG mojo   In the Save For Web window, you can scale the level of quality (from 0 to 100) for files in the JPEG format. As you move the Quality slider toward 0, you'll see the quality of your image drop – the more compressed a JPEG becomes, the more blocky image artifacts you'll see – but in the lower left corner of the window, you'll see its file size drop as well. By clicking on the window's 2-Up or 4-Up tabs, which let you compare two or four versions of your image (with different JPEG and/or GIF options selected) in the same window, you can quickly compare different settings.

GIF control   Some of Photoshop's best new features involve perfecting GIF images. Unlike JPEG files, which use millions of colours, GIF images are limited to a palette of only 256. In order to make a GIF look good, then, you need to pick the right colours for the job. Photoshop 5.5 gives you an impressive amount of control over GIF images' characteristics.

As in ImageReady 1.0, Photoshop's Save For Web window lets you see and control all the colours in a GIF image's palette. By cleverly controlling the palette of a GIF image, you can dramatically reduce the file size. The first thing Photoshop must do is take your source image and throw away all but 256 of its colours. To make this easier, the program lets you choose from a series of pre-set palettes, including not only a "Web-safe" palette but also an Adaptive palette, optimized for the colours that appear most often in the image, and a Perceptual palette, weighted toward the colours in the image that the eye notices most.

Although choosing one of these palettes is a good shortcut to creating a fairly small, good-looking GIF file, perfectionists will want to make even more changes. After all, just because you can have as many as 256 colours doesn't mean it's a good idea. The fewer colours you have, the smaller the file size of the image and the shorter its downloading time.

One option in the Save For Web window helps you slim down your colours by directly controlling the number in your GIF image. We took a sample image with 204 colours and knocked it down to 64 colours. In the process, the image's size fell from 15.3K to only 9.3K.

Palette power   A limited colour palette may make a faster-downloading image file, but it can also make a deathly boring one. One way to approximate a more expansive variety of colours is through dithering – simulating a colour by placing dots of two other colours close together so that from a distance, they appear to be a third colour.

Photoshop 5.5 offers three different dithering effects. It also allows you to set a dithering percentage, so you can vary the amount of dithering in your image and see how it affects image quality and file size. Although it's nice to have these options, avoid using dithering if you can. It usually increases file size.

For the ultimate in colour control, Photoshop lets you edit the GIF colour palette. This is a powerful and quite useful feature, allowing you to lock colours that you don't want to change under any circumstance (for example, the colours in a company's logo). You can also select individual colours and shift them to their nearest Web-safe equivalent (so they won't dither, even on a monitor that can display only 256 colours), or delete colours one by one from the palette to simplify your images and reduce their file sizes.

One innovation   The features in the Save For Web window are new to Photoshop, but it's only fair to point out that they're not new altogether – most of them will be familiar to users of ImageReady or Fireworks. There is one unique feature offered for the first time in Photoshop 5.5: the lossy GIF.

Adobe's lossy-GIF algorithm cleverly exploits the way that GIF images are compressed, by taking large areas of a single colour and describing them in shorthand, rather than pixel by pixel. This lets it create a lower-quality image with a smaller file size. As you increase the lossy compression, you'll start to see distortions, including 1-pixel-high horizontal streaks across your image, but you may not mind when you're in a pinch.

Photoshop's new pal

Artfully exporting files in the GIF or JPEG format is far from the be-all and end-all of Web-graphics production. There are several Web-specific features of vital importance to Web-graphics professionals that don't appear in Photoshop 5.5. Instead, those features are a part of the much improved ImageReady 2.0.

Tight integration   Although Photoshop and ImageReady are clearly meant to work together, they've also been developed to work successfully apart. Many users used to grumble about ImageReady's lack of image-editing tools, such as the rubber stamp and the airbrush – features that were available in its competitor Fireworks. If you were among those people, you'll be happy to see the program's more comprehensive set of image-editing tools.

Even though everyone who owns ImageReady 2.0 will now automatically have Photoshop too, these tools will save you from toggling back and forth between the two programs just to do minor touch-ups. When you must toggle, switching between the two applications is now a much easier task too: both fully understand the Photoshop file format, and clicking on a button at the bottom of each program's tool palette opens the currently active document in the other program.

Slicing and dicing   Most Photoshop users don't spend a lot of time taking the images they've carefully created and cutting them up into little bits. Yet the practice of slicing an image is quite common

Separated at Birth
Many of Photoshop 5.5's new features will look very familiar to Macromedia Fireworks users. For example, the new Save For Web window (top) offers features also available in Fireworks' similar Export Preview window (bottom), such as the ability to compare up to four versions of an image with different compression schemes.

Quick-'n-easier masking

Whether you're working on images destined for the Web or for print, selecting exactly what you want is never easy. Fortunately, Photoshop 5.5 offers tools that at least make it easier. One of these is the new Extract feature. What makes Extract truly special is that it performs colour decontamination (removes the strange halo) along the edge of your selection. This is important, because the success of any selection is based entirely on the transition between what is selected and what is not. A lousy transition means that you get some of the original background along with the object you actually want. This line along the edge of an object is a dead giveaway it came from somewhere else.

Note, that the Extract feature doesn't make a mask. Rather, because it needs to remove the background colour from edge pixels, it actually deletes the background. This is unfortunate because using Extract rarely results in a perfect selection and you'll need to do some fine-tuning. For this reason, it's a good idea to duplicate your layer before using Extract. Again, no one ever said it was going to be easy. Just easier.

1 When you select Extract from the Image menu, the Extract dialogue box appears, containing a proxy of your image that you can work on.
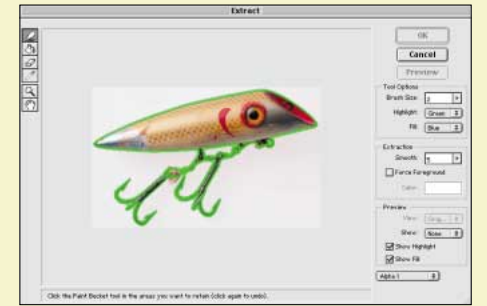
2 the brush tool to paint along the edge of the object you're trying to select. The default colour of this "paint" is green, but you can change it to red or blue if your image has a lot of green in it. If you make a mistake, you can erase some of the "paint" with the eraser tool.
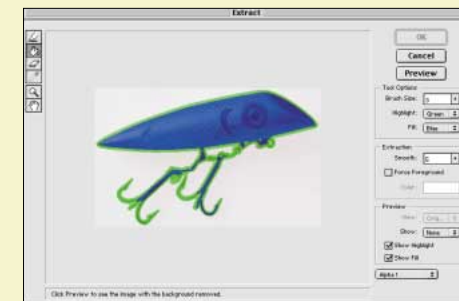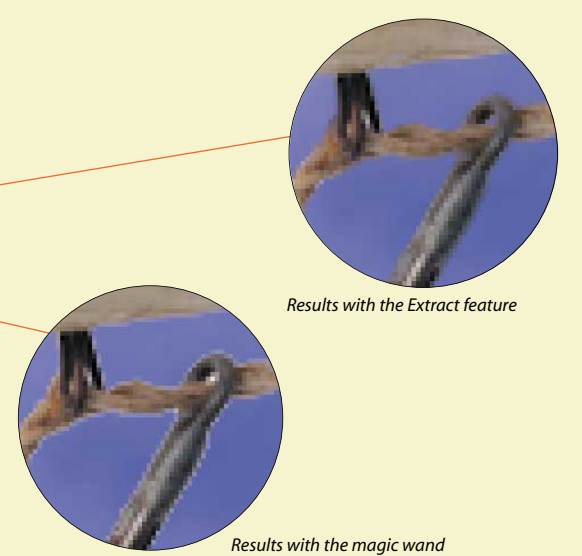

3 After specifying the edge of the selection, click on the object with the paint bucket tool. This tells Photoshop which side of the green line is the inside – the object itself.

4 Click on Preview to see the extracted object on top of a transparent background. If you like what you see, click on OK. If not, you can make further adjustments to your edge with the brush tool or adjust other settings in the dialogue box and preview the extraction again.

Results with the Extract feature

Results with the magic wand

5 In the end, you'll get noticeably better results with less effort. Traditional selection methods, such as using the magic wand, can pick up edge spill and often result in a sharper, less realistic edge (see the example at right). The Extract feature removes the background color from edge pixels, leaving a semi-transparent edge, which makes the foreground object blend more smoothly into whatever new background you choose.

Not Just for the Web

Although the Web publishers of the world have reason to rejoice at the release of Photoshop 5.5, the rest of us – the mere mortals who still have to make a living based on print publishing – can quietly cheer at several features in this upgrade that may make our days easier too.

Carefree compositing If you do any photocompositing (cutting an image out and putting it into another), your nemesis is most likely edge spill, where the background of the original image appears as a gritty halo around the composited graphic. Now to the rescue come the new Extract feature and the Background Eraser tool. Both erase pixels relatively intelligently, but, more important, both perform edge-colour decontamination – they carefully remove the background colour from pixels at the cut-out object's edge.

Where the Extract feature deletes the background colour all at once (see the sidebar "Quick-'n-easier masking"), the Background Eraser tool lets you paint away (or erase) the background in a smooth, intelligent way until it becomes transparent. Unfortunately, neither tool works particularly well with really tricky images that contain, for example, breezy blonde hair against a sunny golden beach.

Another compositing tool, the Magic Eraser, gets essentially the same results as using the paint bucket tool with a "clear" fill instead of a colour. However, it's too blunt an instrument to be particularly helpful for anything but very rough, first-draft work. Ultimately, although these new features are powerful, they don't obviate the need for additional masking plug-ins, available from companies such as Ultimatte, Extensis, and Human Software. These still offer features above and beyond Photoshop's, including help in building clipping paths.

Better text Adobe blundered with its type control in Photoshop 5.0, especially in the rasterizing of small text (which looked terrible). Several features in version 5.5 help fix these problems. Three levels of antialiasing and the option of using fractional widths (most letters aren't an even number of pixels wide) help you set good-looking type at all sizes. Less exciting, but still useful, is the ability to fake bold, underlined, and italic text. Note that if you don't upgrade, Photoshop 5.0 will be able to read type layers that are created in version 5.5 but will ignore all of the new features.

Simple pleasures Sometimes it's the simple things that are most likely to get an "ooh-aah" response. And this may be the case for you when you open the Automate sub-menu (under the File menu) and see the new macros contained therein. Picture Package is a boon to any photographer tired of duplicating, rotating, and scaling photos in order to fit several versions of the same picture onto one sheet of film (for instance, when you're creating school photos, where you want a certain number to be wallet-size, and so on).

Similarly, the Contact Sheet feature – which puts thumbnail images on a single page – contains new options, such as the ability to add file names under a thumbnail and include all the images in nested folders.

If you're not the type to muck about with HTML code and need to get photos on the Web quickly, you'll also appreciate the Web Gallery feature. Select a folder of photos, and Photoshop will automatically convert them to the JPEG file format and generate HTML pages with links between these images and small thumbnail versions of them that it also creates.

Show me the Monet In a nod toward fine artists, Adobe has included the Art History Brush, which lets you create various impressionistic effects simply by brushing it over your images. Unfortunately, the artsy options – with names such as Tight Short, Dab, and Loose Curl – are a far cry from what you can create in MetaCreations' Painter. With luck, future versions of Photoshop will expand on this tool. Most of features in this upgrade are for Web professionals. But there are a few gems that may tempt the rest of us to upgrade too.
David Blatner

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on the Web, since one giant image is less efficient in table-based HTML layouts and JavaScript-laden interactive designs than the same image cut into sections.

In version 2.0, ImageReady matches the slicing versatility of Fireworks 2.0: you can select areas to be sliced up, either by dragging guides out from a ruler or by choosing the Slice tool and drawing a rectangle over a particular area. You can choose a different GIF and JPEG setting for each slice. This is particularly useful if you've designed a Web page as a graphic and distinct parts of it (say, the photograph in one corner and the text in the other) require different compression methods.

Simple JavaScript You'd think that creating graphics and wading into the world of HTML coding would be two separate jobs. But with so many of the bells and whistles on Web pages being the result of JavaScript rollovers, images that change when you move your mouse over them, it makes sense that ImageReady includes some HTML-related features. You can still separate the jobs – a Photoshop user can create a big image or a series of sliced-up ones and send it to an HTML jockey who adds the necessary JavaScript code to make the razzle-dazzle happen. ImageReady 2.0, however, can also generate all the necessary HTML magic by itself. From within ImageReady, you can set up rollovers (even images that change in one place when you move your mouse over a different place), and the program will generate an HTML file.

Fireworks 2.0 offers this feature too, and as you might expect, compatibility is an issue. Rollovers generated in ImageReady work well in Adobe GoLive, but may not in Macromedia Dreamweaver. Rollovers from Fireworks, on the other hand, work in Macromedia Dreamweaver and GoLive if you download a template from **www.macromedia.com** that lets Fireworks export HTML in GoLive style.

Jumping GIFs In the past, Photoshop users had to resort to shareware programs such as Yves Piguet's free GIFBuilder to create GIF animations, usually after painfully generating each frame within

Photoshop. The arrival of ImageReady and Fireworks changed that by adding robust animation tools. ImageReady 2.0 carries on that tradition, matching Fireworks 2.0 at every step.

You can create animated GIFs by using ImageReady's Animation palette, moving layers (or switching them on and off) to achieve animated effects. For those of us who are too lazy to move items through a series of steps to get the final animated effect we seek, there's ImageReady's Tween command, which uses the information in "before" and "after" frames (for example, a red ball at the bottom of the screen and at the top) to figure out and create what would come in between. ***MW***

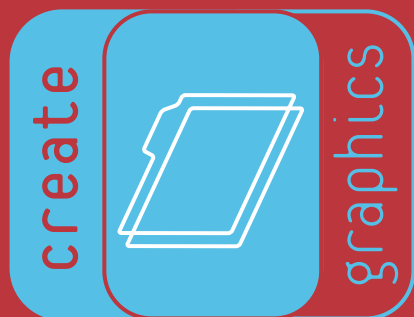**Top image-editor finally gets Internet savvy**

Photoshop 5.5

Publisher: Adobe   (0181 606 4001)   **www.adobe.co.uk**

After years of ignoring the Web, Photoshop is finally Internet-savvy – but is it too late? Macromedia's competing product, Fireworks 2.0, is powerful and popular. Although its mix of drawing-program and Photoshop-like abilities makes it harder for many people to learn, it also gives the program unique strengths. It's also tightly integrated with Dreamweaver – an HTML editor that seems to have a lot of momentum, at least for now. On the other hand, if Photoshop and ImageReady can provide most of Fireworks' features in one package with one price tag, Adobe may have a major advantage. Regardless of who wins this battle, one fact can't be denied: Web pros who use Photoshop finally won't have to pay extra to get the basic tools they need. It's been a long time coming, but Photoshop has finally embraced the Web.

Price: £379. Upgrades: from v.5.0, £85; from v4.0, £129.

Star Rating: ★★★★★/9.5

Moments in time

Use digital-image editing to twist time and create motion
By Mike Wooldrige

O
ne of the many freedoms that digital-image manipulation offers, is the capability to depict motion without need of a video camera. You can give the feeling of movement and the impression of passing time in a single image by using digital effects – a combination of still images – and your imagination.

Photographer Jeff Schewe used digital techniques to add a temporal twist to an image of a long-jumper in flight. By compositing seven photos – which were shot with a motor-driven, film-based camera – and applying subtle Adobe Photoshop effects to blur the trailing edges of the jumper's body, he conveys the feel of a short movie-clip in a single image.

The long-jump piece, designed for a Motorola marketing brochure, is typical of Schewe's photo-realistic style. He prefers to scan his photos at very high resolutions and then work with the high-res files in Photoshop.

For this image, he took dozens of photos in his studio of a man jumping, picked the best ones to create a cohesive series of motion, and applied masking techniques and blur effects in Photoshop.

Schewe also tries to retain the fine detail associated with film in his digital creations. Here, he added an extra layer atop the images to recover some of the grainy texture present in the original film, but lost during the Photoshop manipulation. As a result, the final image doesn't appear digitized, even at close range.

Because the Photoshop files, with all their layers, can be as large as 1GB, Schewe's computer has to pack a lot of power. For this project, he used a DayStar Genesis Mac clone with a 400MHz Newer G3 upgrade and 1GB of RAM. Schewe also uses an Imacon FlexTight Precision II scanner, plus a Seagate Sidewinder AIT tape drive for archiving his super-size projects. He shot the original photographs with a Canon EOS-1N RS 35mm camera. His primary software tool is Adobe Photoshop 5.0.

Mike Wooldrige is a freelance writer and new-media artist.

Get moving
Schewe's final image is the result of compositing the best seven images out of dozens of photographs and applying blur effects to enhance the look and feeling of motion. The interplay between sharp and blurred edges – which gives the piece its real impact and movement – would have been difficult to achieve by camera alone.

Condensing time

1 The long-jumper image combines both outdoor and indoor photographs. Schewe first shot photos of the runway and sandpit outside at a track-and-field stadium on a misty day.

2 He then photographed the long jumper in front of a blue screen in his studio, using a motor-driven camera that captured the action at six frames per second. Schewe took many photos of the model jumping, and then mixed and matched shots from the different takes to get seven sequential images that fit together aesthetically. He scanned the seven chosen photographs at 3,200 dpi, brought each one into its own layer in a Photoshop file, and masked the jumper from the blue background so he could swap in the misty background.

3 To accentuate the appearance of motion in the images, Schewe added blur at the edge of the jumper's body. He did this by duplicating each frame, lowering each duplicate's opacity, and then staggering the duplicates underneath and to the left of the original frames. This added a faint blur trailing each image of the jumper, while leaving the sharp details of the jumper's body intact.
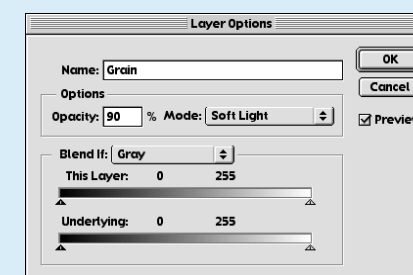
4 The Photoshop manipulation caused some of the original photos' graininess to drop out. To recover it, Schewe created a grainy grey layer, set the layer to Soft Light and Blend If: Grey in the Layer Options dialogue box, and added the layer on top of the composite image.
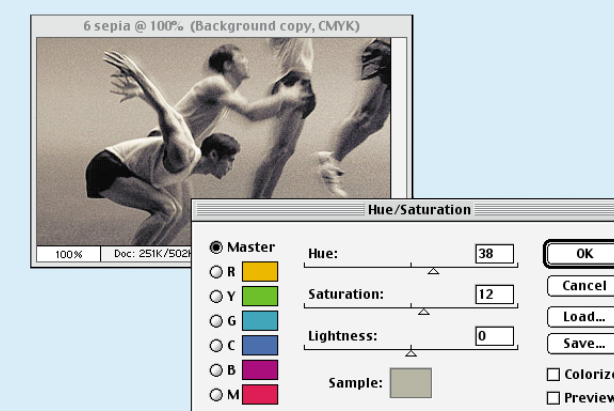
5 Schewe finished by converting the colour image to sepia, by applying a Hue/Saturation adjustment layer with Hue set to 38 and Saturation set to 12.

XML XPress avenue.quark

Turn your print content into Web-friendly XML.

Do you have valuable content stored in your QuarkXPress documents – content that you'd like to use elsewhere, maybe on the Web. Until now, though, there's been no easy or affordable way for you to extract that content for re-use.

Some organizations have assembled their own systems for moving QuarkXPress content to the Web, but such systems are often costly, slow, and difficult – requiring multiple tools and many intermediate steps.

That's all about to change, thanks to avenue.quark – a new QuarkXTension that will lets you tag the content of your QuarkXPress documents and then extract that content in XML format. Avenue.quark will even automate a significant portion of the process, making it easier than you ever imagined.

Avenue.quark is based on one of the Internet's hottest new standards: XML.

A "neutral" format

XML – Extensible Markup Language – is a "neutral" format in that it contains no information about formatting. Because of this, it can be used with a wide variety of applications, which can apply different kinds of formatting when the content is presented through different kinds of media.

What can I do with content stored in XML format? Once you've extracted the content from a QuarkXPress document, you can use that content in a variety of ways. For example, you can dynamically translate XML-tagged content into HTML format and serve it on the Web. This method of converting QuarkXPress content to HTML is superior to simple HTML export because it lets you easily format, reformat, and reorganize the content.

What exactly is XML?

XML is a way for you to specify the meaning and structure of content. Why do we need to specify meaning? Because although we can pick up a magazine, such as *Macworld*, and know that a particular line of text is a headline, such distinctions aren't so easy for a computer. XML lets you "label" information in a way that computers

can understand. And once a computer understands that a particular line of text is a headline, it can automatically format that line as a headline.

To specify the meaning of a piece of content, you insert an opening XML tag before the content, and a closing XML tag after the content, like so:

<headline>Internet Grows by 400%</headline>

As you can see, an opening tag consists of an element name between a **<** and a **>**. A closing tag is the same, with a **/** after the **<**. Here, we've "tagged" the text "Internet Grows by 400%" as a headline by putting it between opening and closing **<headline>** tags.

Identifying structure

We know that a news story generally consists of a headline, a byline, body text, and some photos or diagrams with captions. However, computers don't know such things until you tell them.

XML lets you describe the structure of your documents with DTDs, or *document type definitions*. A DTD specifies a particular XML markup language, with its own particular tags and structure rules. For example, a DTD for a news story might specify that:

■ Each story must have exactly one **<headline>**.

■ Each story may or may not have a **<byline>**.

■ Each story must have at least one **<paragraph>**.

■ Each story may have zero or more **<illustration>** elements.

■ Each illustration must be immediately followed by exactly one **<caption>**.

By consistently adhering to the rules of a DTD, an organization can ensure that its information is always structured predictably and consistently. This makes it much easier for organizations to move content from one medium to another – for example, from print to the Web, or vice versa.

Because computer programs have been developed by many different people and organizations for many different uses, they store information in many different formats.
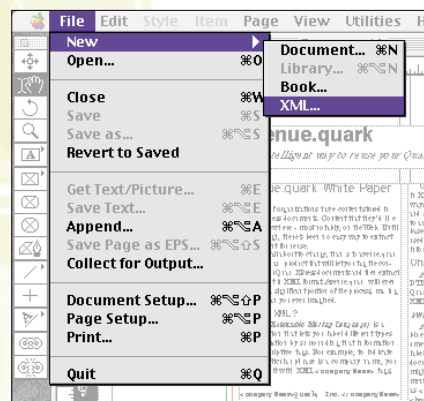
Macworld is proud to bring you a world-exclusive pre-release version of avenue.quark on its cover CD this month.

The version of avenue.quark included on our CD enables you to start reusing your QuarkXPress content straight-away. The final version, which is expected to ship in spring next year, will include a more complete feature set.
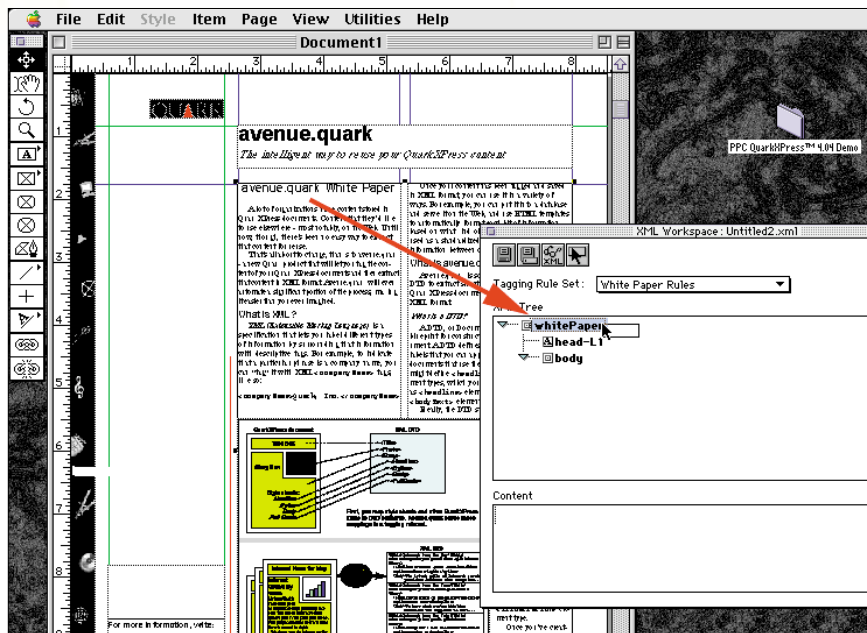
More information

For more information on how to use this software, go to the Macworld CD and open the "avenue.quark Pre-Release Guide.pdf" document.
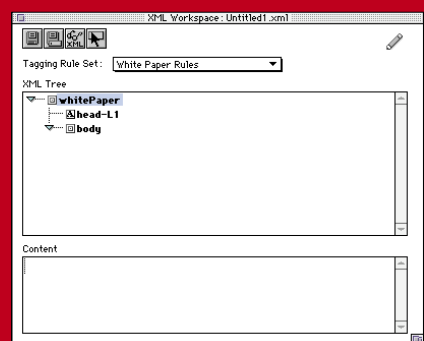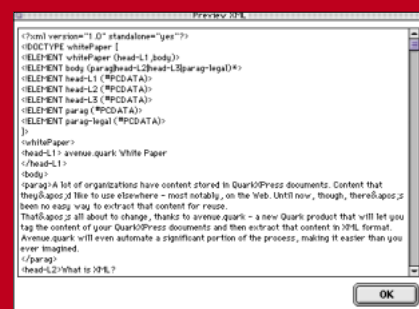
create
web

To create a new XML document in avenue.quark, first choose File > New > XML.

For example, two different companies may store their customer information in two completely different formats, even though the kinds of customer info the companies store (name, address, phone number, and so forth) are basically identical.

XML solves this kind of problem by providing a standardized, non-proprietary format for the transfer of information between applications. XML was developed, refined, and approved by a group of professionals from different industries working together as part of the World Wide Web Consortium (W3C).

XML is often referred to as a "meta-language" because it lets you define cutomized markup languages for specific uses. Each DTD specifies what kind of information may go into a document, how the various parts should be tagged (labelled), the order in which the parts should occur, and how many of each part are allowed.

If two companies agree to add software that can convert their records to XML with an agreed-upon DTD, they can exchange those records at will, with no risk of data loss due to incompatible formats.

Specialized DTDs have been developed for chemistry, mathematics, technical documentation, and even fictional works. Potential applications include just about any other field of endeavour that involves the exchange of structured information.

HTML has proved to be a powerful and versatile format for displaying information on the Web. However, it has two major shortcomings: it describes only the formatting of data, not its meaning, and you cannot create new HTML tags.

XML solves both of these problems. If you describe the meaning of data in an XML document, you can then base the HTML formatting on that meaning.

Say you have an XML document that includes a list of companies and some information about each of those companies. To transform this list into an HTML Web page in which every company name is bold, you simply use an XML-to-HTML converter,

One of the unique features of avenue.quark is rule-based tagging. In rule-based tagging, you create a set of tagging rules that tell avenue.quark, for example, that a paragraph that uses the "Headline" style sheet usually should be tagged as a **<Title>**. You can also use tagging rule sets to specify how particular character style sheets, boxes, and local formatting styles should be tagged. When you create a tagging rule set, the first thing you must do is specify a corresponding DTD. This is because the tagging rule set makes associations between element types in the DTD and parts of the XPress document. To use rule-based tagging on the contents of a QuarkXPress text box, just press the ⌘ key and drag the text box to the appropriate element in the XML Workspace palette (see above).

The XML Workspace palette lets you view and edit the content of an XML document. Buttons let you save and preview the active XML doc., and turn XPress dragging on and off.

The XML Preview button lets you preview your XML before you save it. You can copy text from this dialogue box and paste it elsewhere, but you cannot edit the text in the dialogue box.

Rule-based tagging automatically copies the contents of the text box into the XML Workspace palette.

Quark recommends that you use this software only with version 4.04 of QuarkXPress or QuarkXPress Passport. To be on the safe side, make copies of your original QuarkXPress documents.

This pre-release version of avenue.quark will remain usable only until March 31, 2000. It has the following limitations, which will be removed in the final shipping version:
■ In its current state, avenue.quark may create non-valid XML files when used with DTDs other than "WhitePaper.dtd." Avenue.quark will not reopen such files, since they contain invalid XML.
■ It can open only XML files that were created by avenue.quark.
■ It does not support the display or use of entities and attributes in DTDs.
■ It does not allow the insertion of data into attributes.
■ It can use only DTDs stored in the local file system. It does not support DTDs accessed over the Internet.
■ It does not allow you to choose a root element for a DTD. The first element in a DTD is assumed to be the root element.

■ If you add content to an element in the XML Workspace palette by dragging it from a QuarkXPress document, that content cannot be edited in the XML Workspace palette. However, you can still edit it in the QuarkXPress document, and if you do, the text in the XML Workspace palette will be updated automatically.
■ If an element may contain one of a list of elements (for example: <!ELEMENT a (b|c|d)>), avenue.quark automatically inserts one of the elements in the list. If all of the elements have an occurrence of one or more (for example: <!ELEMENT a (b+|c|d+)>), or all of the elements are optional (for example: <!ELEMENT a (b*|c?|d*)>), the first element in the list is used. If some of the elements are optional and others have an occurrence of one or more (for example: <!ELEMENT a (b?|c*|d)>), the first non-optional element is used (in this case, <d>). This is necessary to preserve validity.
■ If QuarkXPress crashes when you attempt to exit the program or create a new XML document, try disabling Adobe Type Manager and restarting your computer.

and instruct the converter to embolden every line that's tagged as a **<companyName>**.

This means you no longer have to go through and format each company name and address manually. The potential time savings for Web-site creators are huge.

What is content?
Content is the information that makes your documents valuable. The content of a magazine, for example, may include articles, photographs, interviews, and diagrams.

Content can also be defined by what it is not. For example, headers, footers, and "Continued on page x" notes are generally not considered to be part of a magazine's content. Rather, they're part of the magazine's presentation – aspects of the magazine that are desirable only when the magazine is being presented in printed format. Presentation may change depending on the medium through which information is published, but content generally stays the same.

Avenue.quark lets you separate content from presentation by extracting that content from your QuarkXPress documents and storing it in XML format.
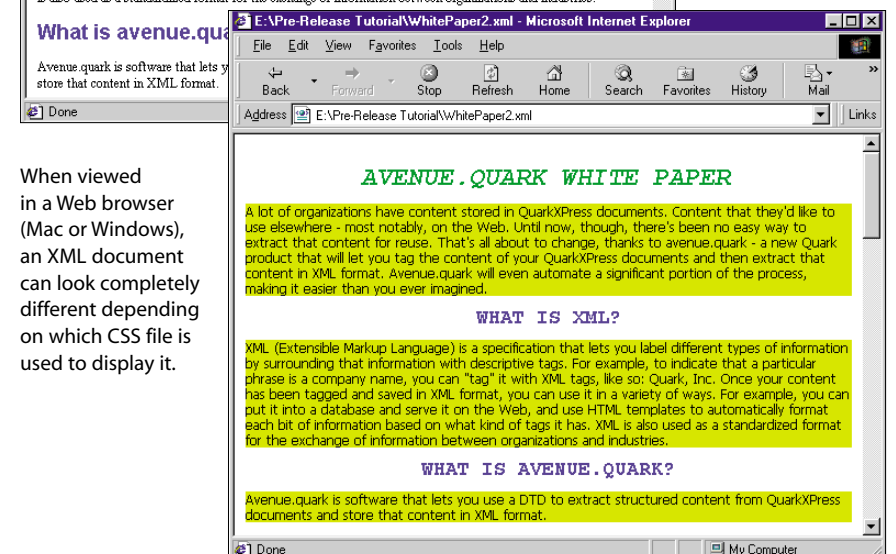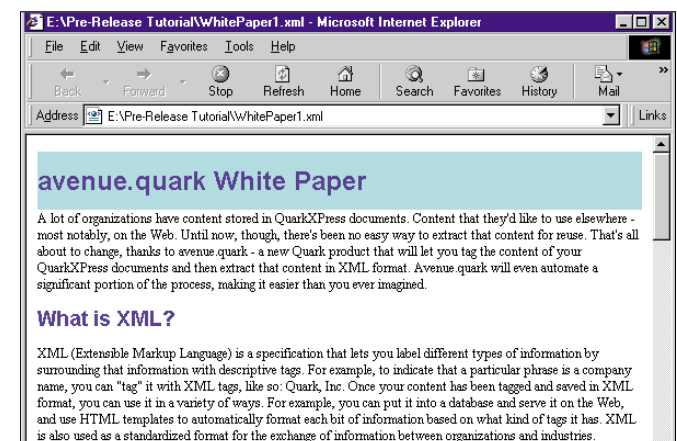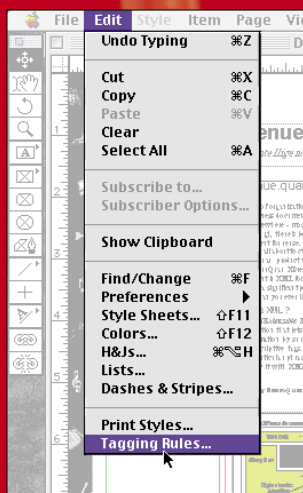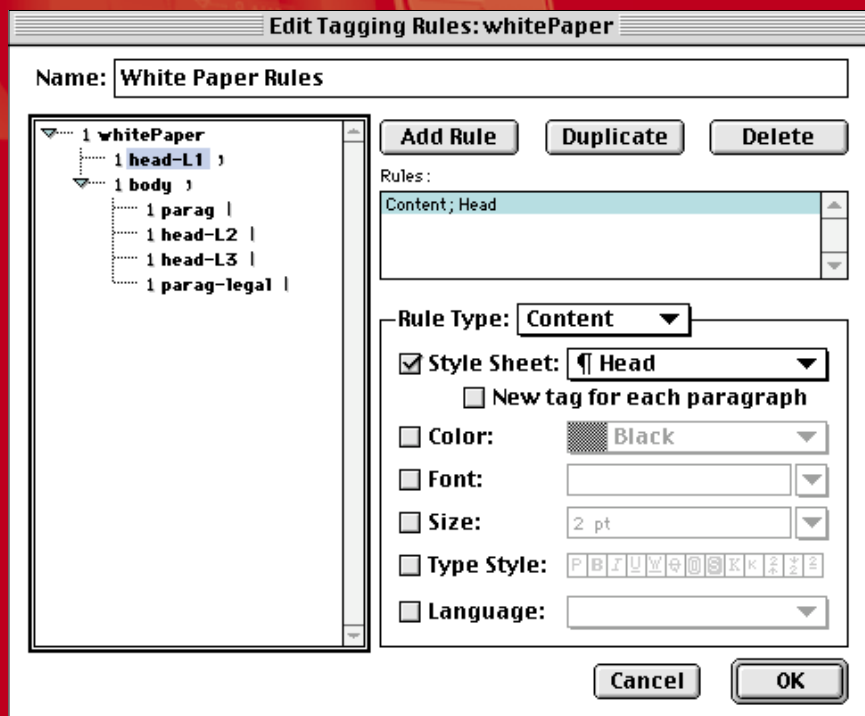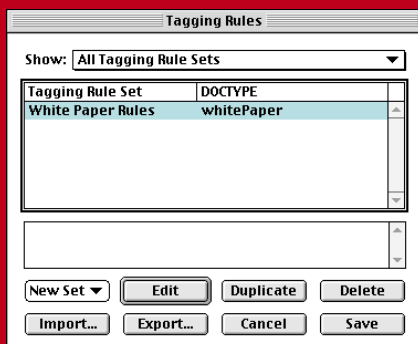
Then you can re-use that content with different presentations – in print, on the Web, on CD-ROM, and so forth. You need only adjust the presentation for each setting.   MW
■ *For more information on avenue.quark, see Seybold News (page 21), and page 134.*

When viewed in a Web browser (Mac or Windows), an XML document can look completely different depending on which CSS file is used to display it.

create web

1 To edit a tagging rule set, first choose Edit > Tagging Rules.

2 Next, select the tagging rule set in the scroll list and click Edit.

3 Now that the new rule is installed, paragraphs that use the "Legal Text" style sheet can be automatically tagged.
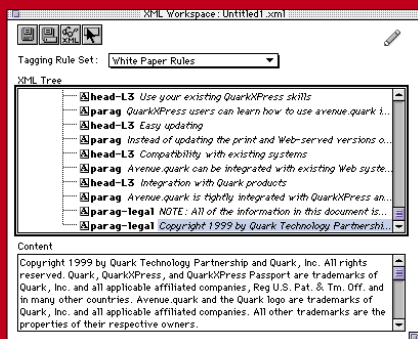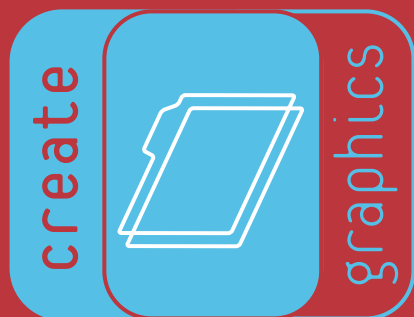

4 To see which tagging rules are assigned to an element type, click the element name in the scroll list on the left. The Rules list (upper right) shows the rules assigned to that element type. The Rule Type area (lower right) displays the rule selected in the Rules list and allows you to edit that rule. The rule displayed here specifies that paragraphs that use the "Head" style sheet should be tagged as **<head-L1>** elements.

5 To add a new tagging rule, first select an element type in the scroll list on the left. Next, click Add Rule to add a new rule for that element type. Then choose options in the Rule Type area to configure the rule. Here, we've added a rule that will tag paragraphs that use the "Legal Text" style sheet as **<parag-legal>** elements.
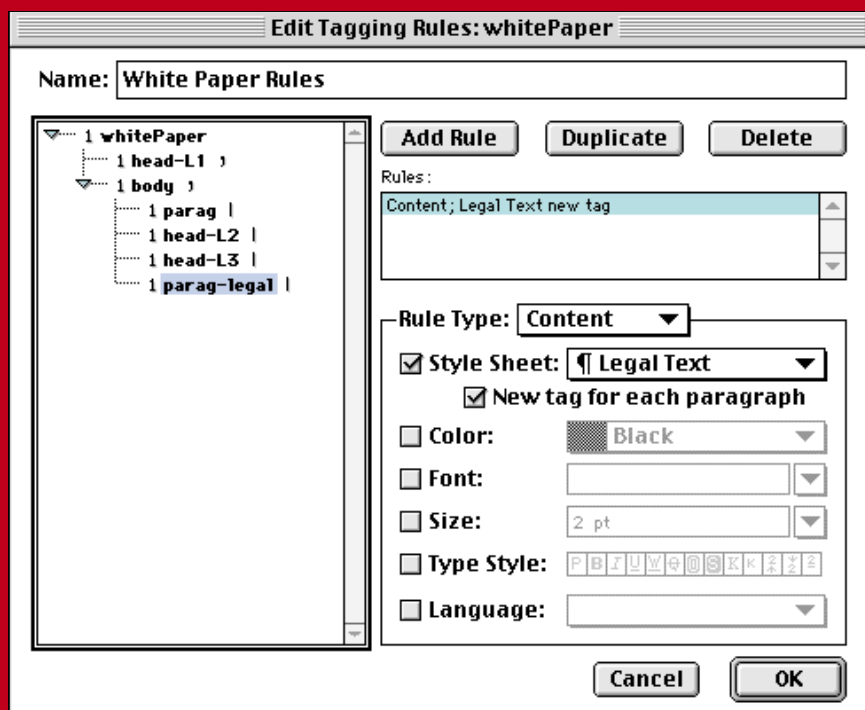
Digital goes live

Digital cameras can bring freshness to your art.
By Mike Wooldridge

JOHN LUND

Full steam ahead
The completed Live Picture collage included 51 layers. Lund finished by rendering the image as a TIFF file, and then bringing it into Photoshop to touch up any remaining stray pixels. He also adjusted the Hue/Saturation controls in Photoshop to give the piece its sepia colouring. The resulting image is a surreal, and startling, juxtaposition of photo elements that required no trips to Max Spielman's.

igital cameras still can't quite match film's image quality at the high-end of the photography market, but they do offer distinct advantages when it comes to the artistic process. With a digital camera, you don't have to interrupt your creative flow by sending out film for processing. Instead, you can immediately dive into the results of photo sessions and begin creating.

Photographer John Lund, though schooled in traditional film-based techniques, discovered digital imaging eight years ago. He likes to use a digital camera so he can begin work on his photo art only moments after shooting – with no need for a trip to Max Spielman's.

For this Magritte-like photo collage, *Blinders*, Lund shot most of the elements – the train, the umbrella-toting man, and the blinders, composed of a belt and a wallet – in his studio with a digital camera. This piece, which included 51 layers, is typical of the surreal – and complicated – artwork he creates for his many clients – including Federal Express, IBM, Kodak, and UPS. You can view more of Lund's art at **www.johnlund.com.**

Digital artists tend to rely exclusively on Adobe Photoshop for digital-image editing, but Lund says that many artists – including himself – prefer Live Picture. He finds its brush-based tools more efficient and precise than Photoshop's filters, for mixing the different photographic elements in his work. However, he did use Photoshop's Hue/Saturation controls to create the picture's sepia colouring.

Lund shoots images in his studio using a Leaf DCB I digital camera with 2,048-x-2,048-pixel resolution. For Blinders he also used stock images to create the steam effect. He then imports them onto a DayStar Genesis Mac clone with four 200MHz processors.
He used Live Picture 2.5.1, and Photoshop 4 and 5 to create *Blinders*. **MW**

Mike Wooldridge is a freelance writer and new-media developer.

All aboard for Live Picture
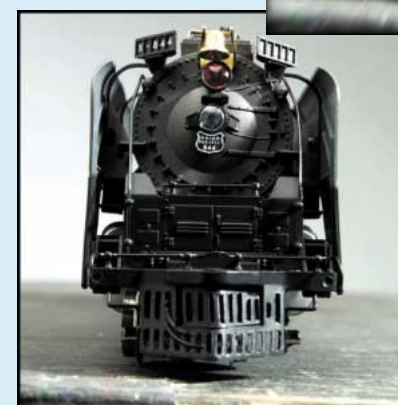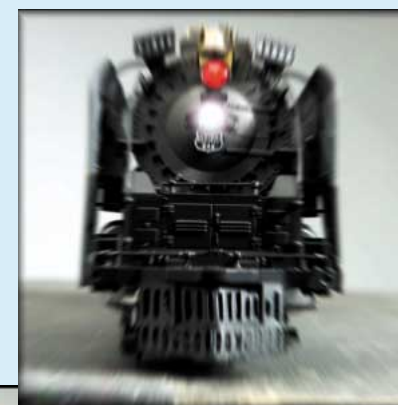
1 Lund started by photographing a miniature model train in his studio. After importing the digital photo into Photoshop, he duplicated the file and applied the Zoom Blur filter to create a version of the train that conveyed a sense of speed. Then in Live Picture he painted parts of the blurred version on top of the original image, so he could depict the illusion of motion, and keep some of the train's details sharp.


2 For the smoke and steam, Lund used stock photos of an oil refinery and processing plant. He painted parts of the photos into the image in Live Picture, using a large brush with very soft edges to keep the softness of the smoke and steam intact. Then he added a few more sharpen and blur effects in Live Picture to complete the background.

3 Lund shot the image of the man with the bowler hat and umbrella in his studio with a digital camera. He brought the image into Photoshop, and masked it from the background using the pen tool. Then Lund imported the image and its alpha-channel mask into the Live Picture file containing the train, smoke, and steam.
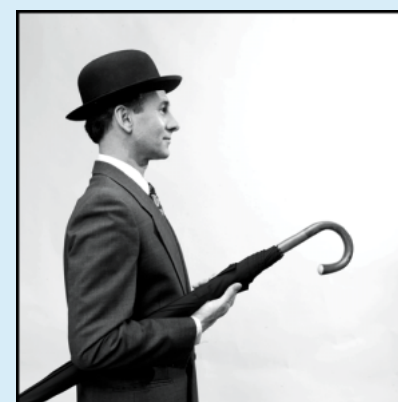
4 Next, Lund built the blinkers on the man's face by photographing a belt and a wallet separately. He photographed the belt wrapped around the model's face so it would have the right shape when added to the collage.
In Live Picture, he painted strips of dark colour beneath the belt sections to create subtle shadowing on the man's face. He then added an extra layer of colour on top of the wallet to give it a more wrinkled look.
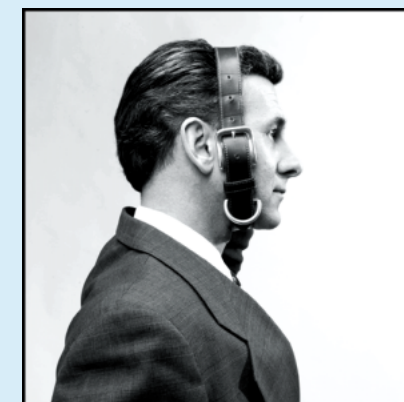
What's up .doc?

Is .pot confusing you?
Discover the secrets
of the Windows world.
By Joseph Schorr

There are two computers on my desk – one Macintosh and one PC – and lately, they've been getting along quite well. Part of the reason is that exchanging files got easier with OS 8.5's File Exchange 3.0 control panel. File Exchange has two basic functions: opening a PC file, based on the extension used in the file's name – such as **.txt** or **.doc** – and determining which program can open a document when the application that created it can't be found.

However, both parts of File Exchange can be used to do much more than open and convert files. Here's how to tap into File Exchange's file-handling smarts.

Streamline the creation of PDFs
You may think of File Exchange as a tool for crossing from PC to Mac, or vice versa, but its ability to link documents to specific applications can pay off in other ways.

One useful trick is to turn PostScript files into PDFs simply by double-clicking on them. To configure File Exchange for this trick, follow these steps: In the File Translation panel of File Exchange, click on the Add button to open the Add Translation Preference dialogue box. Select a PostScript file in the dialogue box, and then click on Continue. From the list of applications available to open the file, choose Acrobat Distiller, and click on OK. You may have to turn off the Show Recommended Choices Only check box to make Distiller appear as a choice in the window. You'll end up with
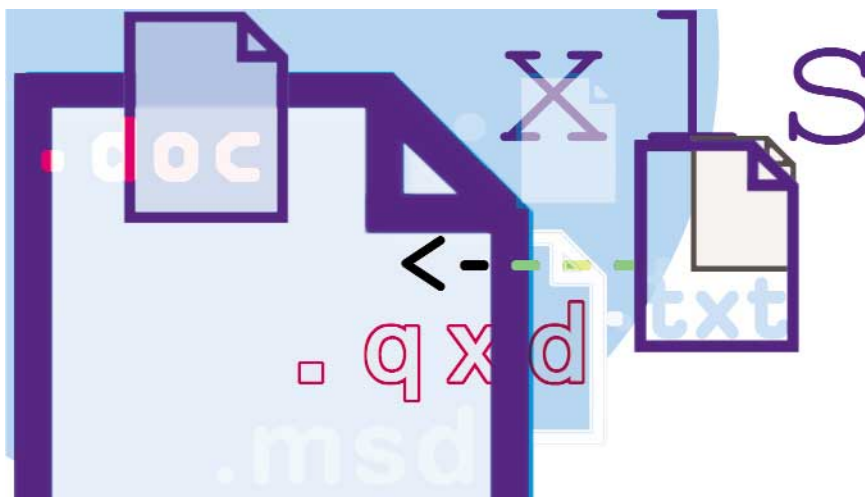
a translation-preference listing like the one shown in "Click to distil". Now when you double-click on a PostScript file, your Mac will launch Distiller and process the file.

With the help of the PC Exchange window in File Exchange, you can even control which program will open a given file – simply by changing the file's name. That's because PC Exchange chooses the program it will use to open up a PC file, based on the DOS-style extension tacked on the end of the file's name: double-click on a .doc file, and Microsoft Word is launched; double-click on a **.xls** file, and you get Excel. Change a file's name to include a different extension, and PC

Exchange will launch it in a different application.

Imagine you have three text files imported from a PC. All three files bear the **.txt** extension, but one of them is a document created in a word processor, one is a tab-delimited text file exported from a database, and the third is financial data exported from a spreadsheet.

By default, double-clicking will open all three as SimpleText files – readable but not very useful. But, with a few keystrokes, you can have each file open in a more appropriate application. Add a **.fm3** to the name of the second file, for example, and

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The PC extensions glossary

Just about everyone knows that a **.doc** file is a Microsoft Word document. But what exactly is a **.pot** file or a **.ram** document? If you mix with the Windows world with some frequency, you'll probably encounter such files every day. If you want to know what they are, read on.

In such cases, you can use File Exchange as a mini-glossary that serves as a guide to the world of PC extension names. By default, the control panel lists more than 200 different extensions – along with the names of the applications needed to read them. To find out which application belongs to a particular extension, just click on File

Exchange's PC Exchange tab then type the first letter or two of the extension to jump straight down to the appropriate entry in the list. Moments later, you'll find out that a .pot file is a PowerPoint template and that those .ram files your friends sent you are RealPlayer documents.

You can do reverse look-ups, too. Need to know what the three-letter PC extension is for a Microsoft Excel template? Click on the Application header in the PC Exchange list, and type the first few letters of the word Microsoft to see all the extension entries for Excel – including **.xlt** for Excel templates.

RACHEL OXLEY

ove your iMac or blue-&-white G3, but hate its mouse? Frank Sauer found a simple way to improve its ergonomics. Buy a tube of cement for plastic models. Put four or five tiny beads of glue on the mouse's equator at the coloured-plastic parts, using a toothpick or a straightened paper clip to control bead size. Wait about two hours for the glue to dry – you now have tactile reassurance the mouse is pointing in the right direction. The principle is the same as the small guide beads on the surface of the F and J keys on your keyboard.

If you don't have one of the newer round mice with the dimpled button, try what Troy Danielsen recommends: place a single touch-reference dot of ordinary white glue on the mouse button. When dry, the glue becomes translucent. Alternatively, buy a new mouse.

Transfer files to your iMac

Q I'm considering buying an iMac, but how will I transfer all the info from my Performa 6200 – that only has serial, ADB, and SCSI ports – to an iMac – that has only USB?
Sean Harris

A The simplest solution is to buy a Zip drive for each computer, download your files to a Zip disk, and then transfer them. The cheapest solution is to transfer files via the

Internet. For example, you can get 25MB of space just for this purpose at **www.freemacspace.com**. It's better than a modem connection to the Internet – consider the hours you'll spend uploading each 25MB from your old Mac and then downloading that 25MB to the iMac.

The most expeditious solution is to connect the two computers via ethernet – as described in December 1998's Quick Tips – and use the Mac OS file-sharing feature to transfer files. Since your old Mac apparently does not have the optional ethernet port, you must add one. Or, you could attach a LocalTalk connector to the 6200's serial port, and bridge LocalTalk to ethernet with a device such as Asanté's AsantéTalk or Farallon's EtherMac iPrint Adaptor LT.

Connect through AppleWorks

Q My Performa 6300CD's internal Global Village TelePort Platinum V modem worked fine until I cleaned up my hard drive. I did a clean installation of Mac OS 8.5.1, AppleWorks 5.0.3, America Online, the latest Global Village software, and so on, and put the old modem script named Platinum V Modem Definition in the Modem Scripts folder in the Extensions folder, where it belongs. Now, I can connect to AOL, use a little app called Set Clock, and send and receive faxes, but I can't connect via an AppleWorks communications document. The

modem dials correctly, but can't make a final connection; after the usual squawking sound, it emits a continuous high-pitched tone. I'm stumped.
Jim Schwalm

A AppleWorks (ClarisWorks) does not use items in the Modem Scripts folder. It uses another item in the Extensions folder called the Apple Modem Tool, that is initially configured for a generic Hayes-compatible modem. You can change the configuration using AppleWorks and your old Platinum V Modem Definition file or a newer modem-definition file – look in Global Village Software: Scripts: GV Modem Defs. for AMT 1.5.

Open your AppleWorks communications document and choose Connection from the Settings menu. In the Connection Setting dialogue box that appears, make sure that you have the Method pop-up menu set to Apple Modem Tool, and then choose Modify This Menu from the Modem pop-up menu. In the next dialogue box, click the Import button, and then in the following dialogue box, select your modem-definition file. Click Open and then Done to get back to the main Connection Setting dialogue box, where the Modem pop-up menu now lists the additional modem definitions. Choose the one that's right for your modem – Global Village tech support should be able to help

you determine which one – select the port that you have your modem connected to, and click OK.

Simulate missing keys

tip Do you miss the end and forward-delete keys on your iMac, blue G3, or older PowerBook keyboard? Here's how to simulate them, using Chris Cummer's $5 shareware, ASCII Shall Receive, in conjunction with any commercial or shareware program that lets you assign typed text to a keystroke or function key, such as Connectix's £36 Speed Doubler 8 (Computers Unlimited, 0181 358 5855). Open ASCII Shall Receive, and choose ASCII from the pop-up menu.

Then List All from the File menu. Scroll to ASCII character 2 – this is the character for the end key – select this line and control-drag it to the desktop to create a clipping file containing just the character. Open the clipping file and choose Copy from the Edit menu. Open SpeedDoubler 8, select the box that receives the typed text, and choose Paste from the Edit menu. Then specify the keystroke you want to simulate the end key – I used control–page down – and click OK.

Repeat this process for forward-delete by copying ASCII character 127, pasting it into SpeedDoubler 8, and assigning a different keystroke. I assigned F12 to trigger forward-delete.

fix Word's format update

tip Microsoft Word 98 has an annoying bug that crops up in documents using an attached template other than Normal. If you selected the Automatically Update Document Styles option when you attached the template, via the Templates And Add-ins dialogue box, you may find that after you use the format painter, some "unpainted" paragraphs lose their assigned styles. If this happens, you can restore the style formatting to all affected paragraphs by resetting the option. To do this, choose Templates And Add-ins from the Tools menu. In the dialogue box, turn off the Automatically Update Document Styles option and click OK (see "Repair Word's format bug"). Repeat the same steps, this time turning the option back on, and click OK. This should restore the original style.
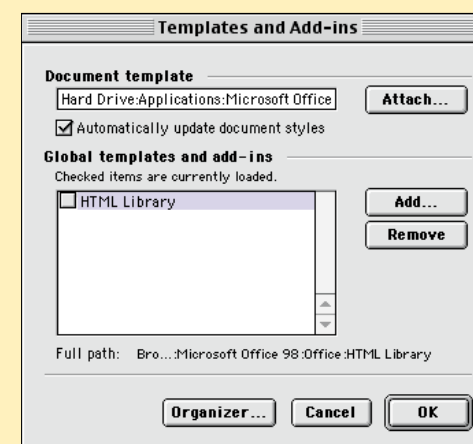
Repair Word's format bug
If your using the format painter in an attached template other than Normal in Microsoft Word 98, you can restore formatting lost in "unpainted" paragraphs by fiddling with the Automatically Update Document Styles option, shown here.
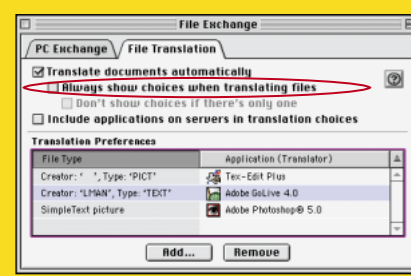

Program of preference:

Teach File Exchange which program should open which document, by creating new translation preferences
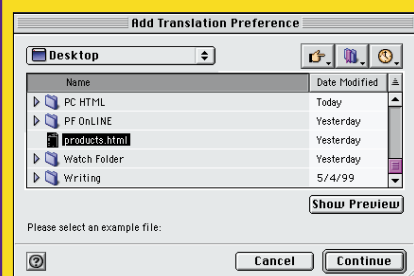
To set up a new preference, open File Exchange and click on the Add button (not shown). Then, target the file type you want to open – in this case, PC HTML files.
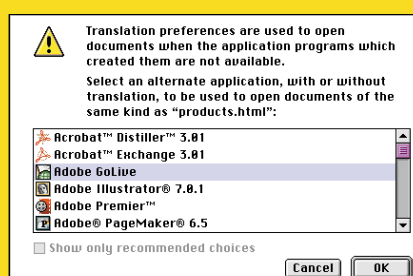
Next, click on Continue and pick the program you want to use to open the file.

The new preference will automatically open the files in the program you chose, without prompting, as long as the second check box – Always Show Choices When Translating Files – is left unchecked.
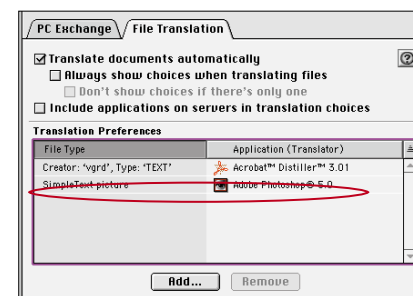
Click to distil
This translation preference in File Exchange causes PostScript files to open in Acrobat Distiller, allowing you to turn them into PDF files by double-clicking in them.

double-clicking on it will launch FileMaker Pro, putting the data into a new database. Change the end of the third file's name to **.xls**, and the data will open in Excel.

Alternatively, you can choose which program you want to use to open a specific file by turning off the second check box in the PC Exchange window – the one that says Open Un-mapped Files On Any Disk Using Mappings Below. With that option

turned off. Now when you double-click on a Windows file, you'll see all the available applications that can open the file.

The previous secret is useful if you have a handful of individual files that need converting, but what if you have lots of files you need to open with a specific program? Instead of adding the correct extension to each file's name, you can create a global-translation preference in File Exchange, that tells your Mac to open the files in the application you want.

For example, you could configure File Exchange so that multiple HTML files created on a PC would open directly in a Web authoring program. To do this, go to File Exchange's File Translation panel and click on Add. Select one of the PC HTML files – you can just drag one from the Finder straight into the Add Translation Preference window to select it – and click on Continue. From the list of applications available to open the file, choose GoLive, and click on OK. The translation preference will now cause the PC files to open in GoLive (see "Program of preference").

After you're done editing all those

pages, you can change the translation preference again, deleting the GoLive preference, and replacing it with a mapping that links the HTML files to Internet Explorer. Now, clicking on the same HTML files will make them open not in GoLive' but in Internet Explorer.

Even with these tips, you're still likely to encounter the odd file that takes a little more effort to open, but with File Exchange properly configured, most of the journeys your files take from Windows to the Mac OS should involve little more than a simple double-click. **MW**
Joseph Schorr

Peter Worlock

Apple's wireless ethernet technology is
great – let's get rid of cables all together

Loot in AirPort

Now that some of the hype has calmed down, perhaps we can get around to discussing the really significant development from New York's Macworld Expo, which was not the iBook but Apple's Airport wireless networking technology. Airport looks like a genuine winning technology for Apple, if the company can get it out the door and into customers' hands quickly enough.

Apple is riding the curve of an industry wave with Airport – while it may have come as a pleasant surprise to many in the Mac market, the underlying technology is – I believe – poised to become one of the biggest trends in the industry.

As is often the case with new Mac stuff, Apple wants to promote AirPort as a Mac-only benefit, while simultaneously seeking to reassure everyone that it is also an open standard. Unlike a lot of other Mac stuff, though, with AirPort, Apple really can have its cake and eat it, too.

AirPort is a stylish implementation of something known horrifyingly as IEEE 802.11 HR DS, but behind that deadly bit of jargon lies a concept of beautiful simplicity: wireless ethernet. And some of the biggest names in the industry are climbing aboard.

AirPort, Apple's own-brand variation, was created in conjunction with Lucent Technologies, one of the world leaders in communications and networking. Lucent is also a founder member of a new organization called the WECA – the Wireless Ethernet Compatibility Alliance – together with other giants including 3Com, Nokia and Intersil (formerly Harris Semiconductor).

The WECA is establishing an independent, industry-supported testing facility to ensure that all products conforming to the 802.11 standard are compatible. In other words, that your AirPort card from Apple will talk to a 3Com card in a Dell laptop, and that both will talk to wireless servers and routers from any other manufacturer.

(Incidentally, if you were wondering about the other bits of that standard designation, IEEE 802.11 HR DS, here's the explanation – and don't say this column isn't educational. The HR stands for High Rate; there's another, already fairly common, variation of the wireless standard that works at 2Mbps compared with the 11Mbps of High Rate; the DS stands for Direct Sequence, as opposed to Spread Sequence.

It really doesn't matter what they mean: it's just a different way of bouncing the wireless signal around.)

What it all means in real terms is very, very exciting. Imagine checking into a hotel knowing that, instead of fooling around with dozens of different telephone adaptors for your modem, you will immediately, and automatically, get wireless ethernet links for collecting your email, connecting to the Internet, or logging into the office server. Imagine the same facilities at the airport while waiting for your plane. The infrastructure for some of those things is already in place. Several US airports have installed wireless networking technology, as have a number of the leading hotel chains in America; Europe will inevitably follow.

For those of us who don't do a lot of jetsetting, the implications are no less pleasant: ethernet networks at home, without drilling walls and stringing cable.

I work from home, with two phone lines already, one of which is converted to BT's Home Highway version of ISDN, the other running BT's ADSL high-speed data trial. There are four computers, including laptops, and two printers and, believe me: I want them all networked as much as I do not want more cables. Wireless ethernet can't happen quickly enough.

Even in less technomaniac households the need is there, and growing. With a family PC and one or more adults bringing laptops from work, the era of the home network has arrived.

Apple needs to get AirPort out of the iBook and into the business PowerBooks and the consumer iMacs. This is a technology for business users on the move, and for the home. It isn't fast enough for mainstream business, especially in the creative industries, where Fast Ethernet is the norm, and it has major limitations in education, too (sharing an ISDN line or even a 56Kbps modem between two machines at home is one thing; sharing between ten or 20 pupils in a classroom is an exercise in frustration).

Apple's early adoption of wireless ethernet is very smart. I really, really want AirPort – but you couldn't get me to buy an iBook if you put a gun to my head. Following the news that AirPort is Power Mac G4 bound (see page 16), we must hope for the arrival of wireless PowerBooks and iMacs. Come on, Apple; fly first class, and take off with AirPort. **MW**