

A U S T R A L A S I A N

W H E E L S



for the mind

- **Calling all student developers**

The AUC's annual sponsorship of 30 academics to Apple's WorldWide Developers' Conference has always been well-received, but this year 30 students also get to join the fun in San Jose

- **Right side, left side**

A University of Queensland researcher has mapped the relationship between brain function and the perceptual shifts caused when we look at ambiguous images

- **Get in touch with your inner director**

Pull your tuxedo out of mothballs and polish up your Oscar acceptance speech – Final Cut Pro brings high-end video editing to Mac desktops

- **Trust nobody, not even yourself**

Successfully using photographs to create false memories has led two researchers at New Zealand's Victoria University of Wellington to question the way we remember our lives

Architecture gets Wild



What do you get when you combine 200 architecture students, a 24-hour ergonomically designed Mac lab filled with cutting-edge technology, and a \$20,000 prize pool? The University of Tasmania did, and has swept an international design competition three years running

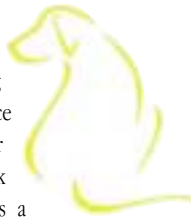
PRODUCT Round

UP



THE PENGUIN COMES TO POWERPC

The legendary stability and flexibility of the Linux operating system has sent shock waves throughout the PC industry, giving new legitimacy to free software and inspiring other open-source projects including Apple's own Darwin. And while OS X Server has received a warm welcome in academic circles, many network administrators are also looking into the use of Linux as a complement to, or replacement for, their existing MacOS or OS X Server.



LinuxPPC 2000, for one, is an update to the popular LinuxPPC that includes a bootable CD-ROM, graphical disk partitioning tool, Mac-On-Linux software to run MacOS inside Linux, Red Hat 6.1 compatibility and new versions of system tools including the Gnome desktop, as well as support for new G4-based systems.

Interested Linux users should also look at PowerPC-based distributions such as Terra Soft Solutions' Yellow Dog Linux Champion Server, coming consumer-focused Yellow Dog Linux Gone Home; and high-end Black Lab Linux, which recently gained native support for the G4's AltiVec technology to improve performance in workstation and parallel computing environments. And Connectix, makers of the popular Virtual PC Windows emulator for MacOS, have just released Virtual PC with Red Hat Linux, which uses Virtual PC's Intel processor emulation to run Red Hat Linux, the most well-recognised distribution for Intel systems.



The free Mac-On-Linux tool lets MacOS users explore the power of Linux whilst running their existing applications

Linux distributions are available for free download from their respective makers' Web sites: www.linuxppc.com/products/2000, www.yellowdoglinux.com, and www.blacklablinux.com. If you don't want to download hundreds of megabytes, a better option is to buy the CDs from www.everythinglinux.com.au, which offers LinuxPPC 2000 and Yellow Dog for \$15 each. Full retail packages including additional software and source code are also available for additional cost. Connectix Virtual PC with Red Hat Linux costs \$219 from Firmware Design on (02) 4721 7211.

CD MASTERING ON THE GO

Rapid drops in the price of rewritable CD-ROM drives have rapidly brought mass storage into the hands of average consumers. For Mac users, the USB interface built into Iomega's ZipCD makes it an ideal way to easily give any desktop or portable computer the ability to produce audio, multimedia, data and backup CD-ROMs that can be read on virtually any computer made today.

CD-RW disks, which currently cost around \$20 each, store 650MB of data and can be rewritten up to 1000 times. The ZipCD writes and rewrites data at 4x speeds, and functions as a standard 6x CD-ROM drive for reading recorded disks. Its USB interface makes connection and setup a cinch whether the drive is hooked up to Windows or Mac systems, and the bundled Adaptec Easy CD Creator and TOAST software facilitates the creation of a wide range of different CD-ROM formats.

For more information, contact Iomega Australia on (02) 9925 7700 or visit www.iomega.com/zipcd/products/externalcdrw.html.



FAST, LIMITLESS STORAGE

The high speed of the FireWire peripheral interface has finally allowed Macintosh users to add external, portable storage without compromising data transfer speeds. LaCie is among the first companies to take advantage of this fact, offering a 20-gigabyte external hard drive that can be easily plugged into any FireWire-enabled computer. The \$974 drive will be particularly useful for organisations finding their Mac-based Web servers are quickly filling up.



Mobile users will want to look into LaCie's new PocketDrive, a palm-sized hard drive that comes in \$1199 six-gigabyte or \$1949 eighteen-gigabyte flavours and can be connected to any desktop or notebook PC using built-in USB and FireWire ports.

LaCie products are available through Apple resellers or by contacting LaCie Australia on (02) 9669 6900 or www.lacie.com.

MAKE YOURSELF HEARD

One-finger typists rejoice: research giant IBM, a leader in continuous speech recognition technology, has finally launched ViaVoice Millennium Edition Release 1.0 for Macintosh, the first speech recognition technology available on the Mac.

ViaVoice offers continuous speech recognition, which transcribes text in real time as users speak in their natural voices at nominal speeds of 60 wpm or more. Its 260,000 word dictionary covers most general-usage situations, and the ViaVoice technology monitors and responds to your speaking patterns to build individualised speaker profiles that increase recognition accuracy in the long run. iMacs, PowerBooks and Power Mac G3s and G4s are supported.

Australian pricing was not available at press time, but ViaVoice can be ordered online from the US for \$US84.95 (\$A137). For more information, see www.software.ibm.com/speech/mac or contact IBM on 132 426.

CROSS YOUR PALM WITH COLOUR

3Com's PalmPilot PDAs have become an institution of their own, virtually creating the product category and continuing to lead it with some 75% of the market. But it is only this year that Palm, the company 3Com recently spun off to dedicate itself to the development of PalmPilot solutions, finally took its first tentative step into colour.

Granted, these devices are so useful in their monochrome format that many people will prefer them that way if only for their longer battery life. But for those of you that like a bit of colour in your life, the Palm IIIc combines the Palm III's broad software support with an active-matrix TFT screen that will support a range of innovative applications for the future. Its rechargeable battery keeps your costs down, and 8M of memory provides ample space for additional applications, data and built-in functions such as calendaring, contact management, e-mail and the like.

Users of iMacs, iBooks, PowerBooks and G3/G4 systems will also need to purchase the \$99.95 Palm Connect USB MacPac kit, which interfaces between the Palm's serial port and the USB port on your system to provide plug-and-play connection to any Palm device. Older Macs with serial ports need the \$49.95 Palm Connect Serial kit, which includes Mac software. And if you prefer typing your data instead of writing it onto the screen, the \$199.95 Palm Portable Keyboard is a full-sized keyboard that collapses to about the same size as the Palm itself.

Contact Palm, Inc. on 1800 350 535 or visit www.palm.com/products/palmiii/.



editorial

FROM THE EDITOR'S DESKTOP



Welcome to the first edition of *Wheels for the Mind* for the year 2000. In this edition our articles editor, David Braue, goes in search of different ways Apple Macintosh equipment is being used in teaching laboratories around the country. He features six different uses of the Apple platform which once again demonstrate the creativity that is alive and well in our growing family of AUC sites. Our technology feature article for this edition uncovers the benefits of using Final Cut Pro for video production, and features a great example of how Murdoch University is using it to train business students in the mores of producing professional graphics.

In our regular development stories, you will learn about how our friends in New Zealand are discovering that human memories are not necessarily a tape-recorded copy of the things that have happened to us. The Macintosh is being used to challenge

memory integrity with surprising success. In a special story we also hear about how an old favourite, Hypercard, is being taught to language teachers in New Zealand, to help them develop interactive Computer Aided Learning (CAL) courses.

Finally, I would like to draw readers' attention to the *Wheels for the Mind* subscription which is now available free to AUC members. So if you are a student, an academic or a general staff member of any AUC member university then go to the AUC web site at <http://auc.uow.edu.au/> and subscribe to receive your free personal copy of *Wheels for the Mind*.

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Editor
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AUC MEMBER UNIVERSITIES

AUSTRALIA

Australian National University
Central Queensland University
Charles Sturt University
Curtin University
Deakin University
Edith Cowan University
Flinders University of SA
Griffith University
James Cook University
La Trobe University

Macquarie University
Monash University
Murdoch University
Southern Cross University
Swinburne University of Technology
University of Adelaide
University of Melbourne
University of Newcastle
University of New England
University of New South Wales

University of Queensland
University of South Australia
University of Southern Queensland
University of Sydney
University of Tasmania
University of Technology, Sydney
University of Western Australia
University of Western Sydney
University of Wollongong
Victoria University of Technology

AFFILIATED UNIVERSITIES

Australian Defence Force Academy
University of Canberra

NEW ZEALAND

University of Auckland
University of Canterbury
Massey University
University of Otago
Victoria University of Wellington
Waikato University



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Cover photograph: Erin Colgrave and Alex Phegan, of the University of Tasmania's School of Architecture, took first prize in an international design competition with their vision of Midnight Oil's song 'Blue Sky Mine'.

What's **NEW** in the AUC

\$197,000 WWDC fund welcomes student developers

For over ten years, the AUC has sponsored key development staff and researchers from member universities so they can attend Apple's annual WorldWide Developers' Conference (WWDC), held every year at the San Jose Convention Centre just south of San Francisco. But this year, the AUC has launched an aggressive new campaign aimed at increasing student participation in the program by significantly expanding its WWDC scholarship funding and allowing students of AUC members universities to participate for the first time.

This year, Apple Computer and the AUC have joined forces in order to send one staff member and one student from each AUC member university – 60 people in all – to the WWDC. Apple is funding the cost of admission to the conference, while the AUC will cover airfares and accommodation for the 60 delegates at a total cost of some \$197,000 – which is nearly half the program's entire annual funding.

Such deep commitment to the students of AUC member universities reflects their importance to continuing innovation on the Macintosh platform, says AUC programs manager Andrew Jeffrey. "Apple sees students as important to their future in developing Macintosh software and solutions," he explains. "But without getting the AUC community involved in campuses, the AUC feels they could generate a new wave of developers who

may never have experienced the Macintosh or maybe never considered the Mac as a viable platform because they've always been faced with development in Windows."

"We've encouraged the AUDF co-ordinators in each AUC university to liaise with the students in their computing science, informatics, and IT-related degree courses, and to liaise with deans and lecturers, to nominate the students that will get the most benefit out of the conference."

Around 2000 developers attended the 1999 WWDC. But with interest in Apple systems and technology continuing to grow, this year's WWDC – which runs from May 15 to 19 – is expected to attract nearly 4000 developers from the United States, Canada, Japan, Australia, New Zealand, Asia and Europe.

Attendees will receive the latest, in-depth information on innovative Apple technologies including Mac OS X, the Aqua GUI, Carbon, Cocoa, Quartz, and much, much more. Major topics being covered at this year's conference include – Mac OS X, digital media, FireWire, networking and security.

"There is a big community atmosphere at the conference," says Jeffrey, "and [students] can talk to other people who design and develop this stuff face-to-face. By getting in touch with the people that can help you out, you can get pointed in the right direction."



The annual keynote from Apple CEO Steve Jobs is a perennial favourite with attendees at the WorldWide Developers Conference.



Apple headquarters in Cupertino, California.

AUC reinvents itself on the Web

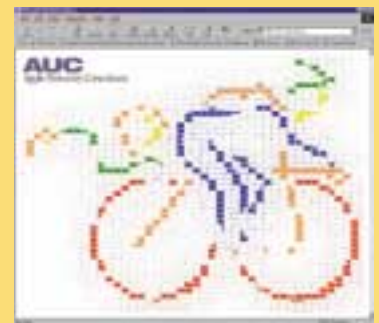
AUC members will have access to a powerful new online resource when the AUC's completely redesigned Web site – located at <http://auc.uow.edu.au> – goes live in early May.

Designed to serve as a central information point where they can learn everything they need to know about the AUC's activities, the site will feature a broad range of content designed to help members reap the rewards of their affiliation with the AUC. This will include, for example, detailed information about the AUC's activities including minutes of administrative meetings, contact information for all AUC members, and news about emerging events and issues within the AUC.

An AUC Membership Guide – soon to be published both online and offline – will clearly outline the workings of the AUDF grant process and funding and other benefits available to members, including instructions and pro forma templates that illustrate how members can best frame their own AUDF grant proposals. The site will also feature schedules of upcoming training sessions, which are being run regularly to educate members about Java, OS X, and other increasingly important technologies.

Current and past editions of *Wheels for the Mind* will continue to be available for reading from the Web site. For the convenience of AUC members, free subscriptions are also now available through the Web site. Subscribing to *Wheels* on line will ensure that your latest edition arrives on time, and also provides you with access to the AUC electronic mailing list.

"The Web site will be the main focus and contact point for all AUC activities," says AUC programs manager Andrew Jeffrey. "My aim is to make it as relevant as possible not only to current AUC members, but also to make it very relevant to new AUC members so they can find information quickly and accurately and get the most out of their membership."





Record numbers flock to 2000 AUC Conference

If you're among the people getting a first glance at this issue of *Wheels* at the 2000 AUC Academic and Developers Conference (ADC), you'll already be well aware of the wealth of information and sessions available at the conference. If not, you should plan to be at the next ADC, which will be held late next year and promises to be bigger and better than ever.

Not that this year's conference isn't already offering enough to keep even the most keen Mac enthusiast busy. For this year's four-day conference – which was this year held at the University of Wollongong from April 25 to 28 – some 300 academics, IT managers, administrators and developers from Australia, New Zealand and across the Asia-Pacific have converged to exchange information, ideas, philosophies and practical advice on technology innovation, integration and implementation.

Held every two years, the conference has previously been held in Canberra, Brisbane, Christchurch and Perth. This year, the conference's theme is 'New Millennium, New Technology, New Worlds of Learning', which includes three major presentation streams: DreamWorld, which explores the future of IT; RealWorld, which discusses real-world experiences and results; and UnderWorld, dedicated to the developers that produce the great software we depend upon every day.

The conference regularly attracts key figures from the AUC, Apple and related companies actively involved in development of Macintosh software. This year's keynote speakers include Professor Owen Peter Coaldrake, Deputy Vice-Chancellor at Queensland University of Technology, speaking on the future of Australian universities; Ron Peters, from Apple in the USA, discussing the future of Apple's QuickTime interactive media technology; Peter Lewis and Andrew Tomazos of Stairways Software with a keynote speech on software development; and a number of other speakers straight from Apple's WorldWide Developer Relations team in the USA.

As well as the distinguished panel of keynote speakers, the conference will also feature 35 individual presentations from 15 AUC member universities as well as one from Michael Vallance of Temasek Polytechnic in Singapore, who will be discussing his experience with Temasek's International Writing Exchange.

Some other of the fascinating presentations at the conference – including many highlighting projects funded wholly or in part by

the Apple
University Development
Fund – include:

Phillip Berrie, Australian Defence Force Academy: Just-in-time markup for electronic editions

Ric Lowe, Curtin University of Technology: Successful instructional animation: more than meets the eye

Mark McMahon, Edith Cowan University: Building self-supporting websites to accommodate large numbers of students

Cameron Barnes, University of New England: Building immersive environments using Quicktime VR: Lessons from the real world and virtual realities

Alan Cody, University of Queensland: Realistic dreams: practical application of innovative technology in large computing laboratories

Phillip McKerrow, University of Wollongong: Robotics research and education with LabVIEW

Locations and speakers at the next conference, scheduled for the end of 2001, have yet to be determined. But check back regularly with the AUC Web site, at <http://auc.uow.edu.au>, to keep up with the latest developments. And if you would like to contribute some suggestions or request particular subjects be covered, feel free to get in touch with Andrew Jeffrey, AUC programs manager, at ajeffrey@asia.apple.com.

One change on the books is the expansion of the conference outside of the circle of AUC members, which will bring fresh insights and experiences from the whole spectrum of tertiary academic experience.

"The ADC is not just aimed at those in higher education, but also those teaching in any tertiary institution," says Jeffrey. "We've got the majority of universities in Australia covered, but there are other private universities, postgraduate institutions, educational training institutes and the like which are out there on their own. We'd like to make sure they're covered as well."

"We appreciate the variety and unique perspectives that other people can bring, and next year we're covering the whole of the tertiary educational institutions – not just AUC members – so the ADC becomes the premier tertiary education conference in Australia and New Zealand."



Newly appointed AUC programs manager Andrew Jeffrey

AUC's new programs manager

After two years as AUC programs manager, Tony Maguire has taken a position within Apple Australia as the K-12 Education Manager for Queensland and the Northern Territory. Tony played a crucial role within the AUC, driving many of the programs the AUC operates and assisting the AUC Executive during meetings. We wish Tony all the best for his future career.

Appointed in February, the new AUC programs manager is Mr Andrew Jeffrey, who previously worked as Manager of Business and Finance within Information Technology Services at the University of Wollongong – where he managed the AUC and Apple relationships within Apple. For the past two years, Jeffrey was an elected member of the AUC Executive, and he has been actively involved in the AUC for over six years.

With the AUC now counting over thirty universities among its membership, the programs manager role is seen by the Executive as crucial in assisting members to get the most from the programs that it operates.

New Members Bolster AUC Numbers

A large number of new members have joined the AUC over the last year, bringing the organisation ever closer to its goal of omnipresence within Australian and New Zealand universities. There are now 30 university members within the AUC in Australia, representing 75 percent of Australia's 40 major universities.

In many cases, universities that may have left the AUC in years past are rejoining – ostensibly as a result of the major changes we have been instituting in the AUC program over the past few years. Most notably, AUC membership now affords far more flexibility in the way in which Apple products are represented and made available on campus.

“Raising awareness of emerging technologies on campus is a key priority of each AUC centre,” says Stephen Young, chairman of the AUC. “This is achieved through newsletters, training, seminars, technology demonstrations and especially through support for software and courseware developers. Each member has a special relationship with an Apple sales and support centre on or near campus to meet the computing needs of the institution, its staff and students.”

AUC members' investments in the program, and commitment to expanding awareness of it across their campuses, is being rewarded in turn through the increasing allocation of funds to AUC initiatives such as the Apple University Development Fund (AUDF), which has funded dozens of innovative and practical projects across the country. Last year, more than \$300,000 was

available to universities through the AUDF, including Major Grants of \$25,000 and smaller Pilot Grants of up to \$10,000 each.

AUC members also gain access to the valuable scholarships provided each year to allow representatives of each member university to travel to Apple's WorldWide Developers' Conference (WWDC) in San Jose. As detailed on page 4, funding for this program has this year been expanded to \$197,000, in order to increase the number of attendees from Australian universities from 30 to 60. More notably still, the 30-person increase will consist of nominated students from AUC member universities, who are being given access to the funding in order to foster developer interest in the Macintosh platform from their early years.

“Macintosh technology has always encouraged innovation, and that's one of the reasons many academics choose it for their work,” says AUC programs manager Andrew Jeffrey. “With thirty members now in the AUC, there are a lot more opportunity for universities to share and cross-pollinate the opportunities they've been working on. The Apple University Consortium is the best way universities can provide support and maximise the new technology innovations that are possible using the Apple platform.”

The AUC has been running since 1984, with founding members including the University of Melbourne, the Australian National University, and the University of Wollongong. Other foundation members included the University of Western Australia, the University of Adelaide, the University of Tasmania and the University of Sydney.

The AUC's newest members include:



Charles Sturt University,
Bathurst www.csu.edu.au



Griffith University, Brisbane,
www.griffith.edu.au



La Trobe University, Melbourne
www.latrobe.edu.au



Southern Cross University, Lismore
www.scu.edu.au



University of New South Wales,
Sydney www.unsw.edu.au



Deakin University,
Melbourne www.deakin.edu.au



James Cook University, Townsville
www.jcu.edu.au



Monash University, Melbourne
www.monash.edu.au



Swinburne University of Technology,
Melbourne www.swin.edu.au



Victoria University of Technology,
Melbourne www.vut.edu.au



Murdoch University, Perth
www.murdoch.edu.au



University of Newcastle, Newcastle
www.newcastle.edu.au

U of Q back in the AUC



U of Q's Walsh

Recent changes to the AUC's structure have seen membership numbers skyrocket due to the introduction of more flexible membership requirements. For the University of Queensland, the changes have been appealing enough that it rejoined the AUC last September, after earlier closing its technical shop and leaving the AUC in 1997.

Under the new membership scheme, AUC members can choose from a number of ways to provide on-campus Apple sales and support, including introduction of third-party agents. This eliminates the need for individual universities to establish and maintain their own on-campus stores, which was becoming increasingly difficult to justify for many universities. But thanks to the efforts of a number of determined Macintosh supporters, the U of Q is once again positioned to reap the benefits of AUC membership.

“I joined U of Q about four years ago, and it wasn't until I got here that I started to see what benefits we could get from the AUC,” says Patrick Walsh, acting manager of client systems within the University Information Technology Services. “I see it as a chance to talk to people with a similar mindset and similar values, and people who enjoy computing.” As well as the sense of community the AUC helps to create, Walsh sees particular value

in the regular training courses the AUC organises, such as the introduction to Java programming on the Macintosh held late last year. He also acknowledges the tremendous support that Apple shows the Macintosh educational development community through its regular AUDF Grants Program. “I don't know of too many other vendors that put so much into their user community,” says Walsh. “You don't normally see such direct, continuing support from any vendor.”

AUDF

Grants Program

The AUDF: Lessons Learned, Grants Received

By Stephen Atherton, Higher Education Account Manager, Apple

One of the glowing examples of the benefit of the AUC must be the Apple University Development Fund (AUDF). I have been lucky to be on both sides of the fence, in that I was involved in a successful AUDF application – albeit at a superficial level – whilst on staff at the University of Queensland. The positive contribution of this grant to the work of a fledgling project using then-new QuickTime VR technology was incalculable.

Although not as grand as an ARC or NHMRC grant, the AUDF fills an important void that allows single small development projects to get off the ground. Its goal is to focus very much on product development instead of pure research, which makes it somewhat unique in the world of academia.

Many recent AUDF projects have gone on to become significant products and developments in Australian tertiary education. They are more often than not “out there” at the bleeding edge of development, utilising both new and old technologies in ways that have often never been done before. The VR project I was involved with was the first of its type in Australia, and is now one of the many innovative teaching tools used by Bev Oelrich and Dr Graham Huxham within UQ’s Faculty of Biological and Chemical Sciences. In the meantime, Quicktime VR has also developed to become a mainstream teaching tool.

Every year, new recipients continue to push the bleeding edge even further. In 1997, recipients include Dr Jonathan Baxter (Australian National University), Dr Andrew Lambert (Australian Defence Force Academy), Dr Tony Fetherston (Edith Cowan University), Mr Joe Luca (ECU), Mr Brendan Fitzgerald (ECU), Dr Pete Smith (Flinders), Associate Professor Stewart Nicol (Tasmania), Dr Roay Tasker (Western Sydney), and Dr Sharon Robinson (Wollongong).

In 1998, MacOS X and WebObjects began emerging and



were promptly rolled into the AUDF camp. Dr Brian Davies, Dr Ashley Aitken and Dr Marie-Thérèse Barbaux-Couper used these technologies as the basis of projects ranging from an exploration of chaos theory to a dynamic database engine. Other recipients were Dr Ken Knibb (ECU), Ms Melanie Knight-Smith (ECU), Dr Robert Kemm (Melbourne), Mr Brian Grono (University of Technology Sydney), Dr Kurt Brereton (Wollongong), Dr H Dharma Dharmappa (Wollongong) and Ms Elizabeth Thomson (Wollongong).

So why revisit past AUDF grants? Well, firstly we can see that there is really no one institution on the receiving end, although Wollongong and Edith Cowan have had their fair share – but this can be attributed to the fact that they typically submit more applications. Similarly, no one discipline predominates within the lucky camp; art historians are just as likely to make successful applications as are computer scientists.

With this history in perspective, and some experience as an AUDF selection panel member, allow me to give an ‘Apple’s eye’ view of the selection procedure. First and foremost, the AUDF is not a research grant. Perhaps, if one was to be cynical (and I too often am), one might see this as a reason why the strongly research oriented institutions have a less glowing track record than their younger counterparts.

It is clear from reading application after application that some folks have essentially rehashed ARC grant proposals. No, no, no! The AUDF is all about defined deliverables. It is not a question of ‘publish or perish’, but more one of ‘develop and flourish’. It’s about developing teaching, learning, administrative or research tools using Apple technologies. A grant proposal with a clearly defined outcome will be favourably received by the selection panel. We don’t require an embryonic thesis, but rather want to see a concise project description with a clearly defined timeline.

This is an Apple University Consortium, so technologies used must be Apple-based. A teaching database developed in Microsoft Access or using Real Networks’ RealVideo server, for example, is unlikely to go over well. Involvement of our key technologies – such as QuickTime (which now includes streaming), WebObjects and MacOS X – is important.

Projects that are lower-level developments are more likely to do well than glossy multimedia projects. In other words, a teaching CD-ROM using Macromedia Director (for whatever topic is the centre of your academic universe) is less likely to succeed than a software development project with far-ranging implications.

Above all, the AUDF is about sharing. Projects that are scalable or transferable have a higher likelihood of a positive outcome; since they fit in well with the Consortium’s aim of sharing ideas and outcomes, it’s clear that grants which live up to this noble goal are more likely to succeed.

With the obvious talent and creativity of previous grants, we can look forward to helping build a valuable source of software tools in the AUC and public domain. Keep your eyes open for this year’s round of applications by getting in touch with your university’s AUDF representative – whose name and contact details can be found at <http://auc.uow.edu.au>.

AUDF update: Online virtual galleries coming

By David Braue

Most of us have visited museums and art galleries at some point in our lives, but few would probably have had the experience of viewing sculptures, paintings and other artwork up close on the Web. Hoping to combine the interactivity of a real-world gallery with the long-distance reach of the Web and the portability of CD-ROMs, developers at the University of Wollongong have commenced pilot-testing a prototype of Virtual Art Gallery (VAG), a flexible new multimedia system that will allow real-world and virtual galleries to display photographs, paintings, sculptures and new media creations in full interactive 3D.

The project began over a year ago, funded by a 1998 AUDF grant that went towards the cost of purchasing scanning equipment, graphics software and a Macintosh system on which to develop the software. It is the brainchild of Dr Kurt Brereton – a senior lecturer and head of graphic design and new media in the University of Wollongong's Faculty of Creative Arts – and has been an ongoing research effort for both Brereton and his students.

Ultimately, VAG will use QuickTime, MetaStream, VRML and other interactive 3D technologies to develop a navigable virtual gallery in which individual works of art are displayed hanging on virtual walls. Galleries will be able to mirror their own layout using the software, and even use a variety of templates to add stylised environmental features that give the gallery an impressionist, modern, sculpture garden or other type of feel.

Unlike a real-world gallery, objects displayed in VAG online galleries will be fully interactive. Sculptures or relief paintings, for example, can be rotated in any direction in full three dimensional space using the virtual reality capabilities of QuickTime, and gallery resources can be hyperlinked as necessary to descriptive information or related online resources. The technology could also be put onto CD-ROM to allow museums to sell interactive souvenirs containing a special exhibit, for example, that can be navigated as if the user were walking through the real building.

"The main part of the software is to develop virtual art that can only exist in that virtual environment," Brereton explains, "but we obviously have to provide more conventional galleries that people can use on the Web, on CD-ROMs and in kiosk environments. To do this, most people would have to put together something using a variety of applications, then pay someone to put it all together. With this application, they'll be able to have ready-made templates so they can drop in their images and text and it will be done for them."

An artist, filmmaker and writer, Brereton is no stranger to the gallery world. He previously ran an art gallery in the UK, and as such is well-acquainted with

the difficulties of increasing accessibility to the works on display. By providing a multi-platform environment for presenting artistic works, Brereton believes the application he's developing will strike a strong chord with real-world galleries wanting to digitise their collections for archival purposes.

Interviews conducted so far with gallery managers and curators have demonstrated strong interest in technology such as VAG. Some 95% of the galleries Brereton has spoken to have indicated they would be very interested in buying software specifically designed for delivering a virtual art gallery, and all expressed the desire to beta-test the software as it progressed.

"I think increasingly that actual galleries will have a virtual gallery component," says Brereton, "and there will be a lot of galleries that only exist virtually. We've finished a survey of existing sites and speaking to different galleries as to what would work, and we've found that the quality of existing material is very poor in terms of visual literacy or imaginative scope. There's a real opening here for a software program that's easy to use and is much more interactive than currently exists."

After a year of market research and early development, the VAG concept was recently demonstrated in a mock-up form that confirmed the project's viability and paved the way for future enhancements. Although Brereton has enlisted many of his students to learn while coding particular parts of the application, he is

now working to secure funding for a programmer who can help take the concept from good idea to commercial reality.

"Hopefully this will encourage people to produce a lot more of their work and showcase it," says Brereton, "rather than just putting up pictures with a caption. And whether it's the university art collection, or just someone who wants to use a virtual gallery as part of their Web site, it's very useful. By putting up something that you can interact with, you go into it as the front door of a whole other world."

Contact kurt_brereton@uow.edu.au



Virtual Art Gallery will allow users to manipulate three-dimensional artwork as if they were walking around it in a real gallery

Creature comforts make creative architects

Students' increasing reliance on computers across virtually every discipline has made university computer labs an essential asset on every campus, but few faculties have put as much thought into the design of their facilities as the University of Tasmania's School of Architecture – where a Macintosh lab designed for comfort has provided the setting for world-beating design creativity.

The school's Computer Graphics Studio (CGS), which is exclusively available to the 200-odd students undergoing the five-year Architecture course, features 46 iMac, G3 and G4 desktops running a broad variety of sophisticated computer aided design (CAD) applications including Graphisoft ArchiCAD and Diehl Graphisoft's Vectorworks.

Also available are more specialised applications such as Script Software's Touch-3D, for representing three-dimensional shapes on flat surfaces, and a variety of in-house developed plug-ins for VectorWorks that allow students to run complex thermal, lighting and acoustic analysis on the designs they create. Once designs are complete, students print plans on any of several large-format printers and can even output specific model parts to a specialised automatic router that manufactures parts to high tolerances using the direct output from the CAD packages.

While the students have the uncommon privilege of getting 24-hour access to some of the most advanced architectural tools available today, senior lecturer in architecture John Hall is just as proud of the design of the lab itself.

Ergonomically situated workstations are arranged in clusters to allow group collaboration as well as some more isolated stations for independent work, with amenities such as carefully-aimed downlighting – to prevent eye strain at nighttime – and low dividing walls that enable students to watch lecturers' presentations whilst working at their workstations. Even the bright, multi-coloured carpet has been chosen to provide a rest for weary eyes.

"We've taken a lot of trouble with the layout and design of the lab," says Hall. "It's ergonomically appropriate instead of the surried ranks of computers on formica desks that you have in most labs. Because they've got 24-hour access, there is an awful lot of peer teaching going on. Students are encouraged to bring in their CDs; they spend a lot of time there, and in a sense it's become the social heart of the school."

The comfortable surrounds seem to be having the desired effect of facilitating collaboration and spurring creativity, if the school's uncanny success in the annual Graphisoft Prize – an international design competition that has been running since 1993 – is any indication. Competitors use ArchiCAD to create detailed models of fantasy landscapes or other settings taken straight out of literature, film, poetry, mythology, music and fine art.

University of Tasmania architecture students have consistently done well in the competition, with students Jad Silvester and Todd Henderson taking second prize in 1997, the first year the school entered, for their visualisation of the Church of Reason from A. Pirsig's *Zen and the Art of Motorcycle Maintenance*. But that was just a preview of things to come: in both 1998 and 1999, the eager students took out first and third prizes in the Student category – as well as an honourable mention in both years.

Cash prizes of up to \$5000 certainly don't hurt students' motivation, but Hall says the competition is more importantly the culmination of the total design discipline that the well-stocked lab helps inculcate in the students. "Students are exposed to this whole process of thinking about the design, modeling the design in the virtual world and having to make it in the real world," he explains. "They can remake and remodel things, and this encourages this iterative approach to design. We basically switch the machines on in February and they more or less run all year, day and night."

The winning Graphisoft Prize entries can be viewed at www.gsprize.com/highlights.html.



Andrew Maynard and Stephen Mees won first prize in the 1997 Graphisoft Prize competition with their vision of the Ballroom of the Devil from Bulgakov's novel *Master and Margarita*.



This vision of the Blue Sky Mine, from Midnight Oil's song of the same name, scored first prize in 1999 for Erin Colgrave and Alex Phegan.



Yuh Hun Ng's vision of *The Cheap Hotel* from William Gibson's *Neuromancer* took third prize in the 1999 Graphisoft Prize competition.

UNI ARTISTS BIG ON DIGITAL

It's well known that Macintosh systems are ideal for making graphics, video and other forms of multimedia – but perhaps no educational group knows the true extent of those claims better than the artists in colleges such as the Faculty of the College of Fine Arts at the University of New South Wales.

A long-time user of cutting-edge multimedia technology, UNSW is expanding its already prodigious collection of design and manufacturing equipment with a new Digital Media Laboratory dedicated to the creation and manipulation of professional-quality digital video. The new lab will be decked out with a dozen 400MHz G4-based Macintosh systems running Final Cut Pro digital video editing software (see page 12), which will be used to process video captured on a handful of FireWire-enabled digital video cameras that will be made available to Fine Arts students.

Video is nothing new at the faculty, which already gives students access to a host of Betamax analogue editing equipment and seven Macintosh-based high-end Media 100 video editing suites, which also provide such capabilities as MIDI sequencing, audio editing tools, and the ability to lay it all down using CD burners.

The new G4s and other equipment will support UNSW's new Bachelor of Digital Media degree course, which will help focus digitally-minded artists on the potential of the new media and help prepare them for careers in exploding fields such as Web content creation, digital television and moviemaking, and the like.

Digital technology has also become a way of life for students in the faculty's existing degree courses, where students routinely use nearly 80 Macintosh systems running applications such as MicroStation CAD (computer aided design) software – backed by the usual array of graphics tools including Adobe Photoshop and Illustrator, Quark Express and Macromedia Director – to develop their ideas for jewelry, textiles, ceramics and other creations.

A dedicated scanning laboratory includes such flourishes as a professional-quality drum scanner and three-dimensional object scanner, which is used by many students to create digital objects that are later enhanced using tools such as Discreet 3D Studio Max and NewTek LightWave 3D. Students also have access to a variety of digital cameras, and are instructed how to use lighting and other factors to improve image quality.

Once they've developed their ideas, students have access to a bevy of tools that allow them to output designs in virtually any way they desire. For example, a digital output bureau produces large-format printouts, outputs full-resolution digital images to 35mm offer photographic film, and will eventually offer DVD burning capabilities. Students creating jewelry and textiles can even output their CAD designs to CAM (computer aided manufacturing) machines such as a precision metal cutter and automated loom.

"Here, we treat design as the discipline itself – as opposed to the idea of a type of design such as industrial or interior," says Sharon Brogan, computer systems co-ordinator within the faculty. "Computers are core to the program, and they're the tools used to achieve the design ideas of the students. It's necessary that design students understand CAD so when they go out and deal with [clients] they're able to clearly convey their ideas in that language. A very strong aspect of fine art is digital media, and the use of computers here being part of the process – as opposed to the only part of the process – is encouraged. All of that is done in Mac labs."

Now you see it...

A computer lab full of 50 iMacs, paired with six MacLab analogue sampling devices, has helped University of Queensland professor of physiology Dr Jack Pettigrew develop a better understanding of the way some 300 students' brains control their cognitive interpretations of visually ambiguous images placed in front of them.

During their lab practicals, Pettigrew's students work in groups with specially designed software that presents a visually ambiguous image to them (some examples are presented on the opposing page). In turn, the students use the MacLab equipment to record how often their brains switch between one perception of the image and the other. Pettigrew also tries many students using liquid crystal goggles that present different stimuli – such as horizontal lines in one eye and vertical lines in the other – to force the brain to switch between the two eyes.

The experiments are based on the concept that the right and left hemispheres of the brain are responsible for quite different functions – the left being the practical, optimistic side while the right is the brooding, creative side. Understanding the implications of this difference drives much of the work Pettigrew and his associates conduct – both in the classroom and during his regular treatment of patients in the Vision, Touch and Hearing Research Centre within the U of Q's Department of Physiology and Pharmacology.

Using computers to measure the average rate at which students' brains switch between cognitive views of the images reveals some very interesting trends, says Pettigrew. For example, a single student will average the same switching speed even when tested at very different times, while identical twins show identical results even when tested separately. Such results suggest that the speed at which individuals switch hemispheres is a hardwired characteristic that is related to their overall personalities.

"You're just presenting two conflicting alternatives continuously," Pettigrew explains. "If [hemispheres are] well-balanced, the brain adopts one for a while and then adopts the other. Most people switch every one or two seconds, but some people switch quite slowly. That slower switching is correlated with other features in the brain. For example, I've shown that if you switch very slowly, you're manic-depressive; slow switching leads to a different kind of thinking because the two halves of the brain can diverge much further before the other one tells it to stop."

"Rapid switchers tend to be more stable emotionally but tend to be a bit boring," he continues. "If you spend more time in one hemisphere, you can travel further to unusual places in your mind before you succumb to the devil's advocate on the other side. The prac was to look at that issue, and to correlate that trait in each of the class members with other traits."

In another experiment, some 50 of the students volunteered to have ice water put into their right ear, which essentially forces the left hemisphere into dominance that can last up to a half hour. In this state, students have difficulty switching between hemispheres – and, therefore, in registering both perceptual variations. Amazingly, Pettigrew says, locking the brain on the left hemisphere can create a sense of elation that drives students to laugh despite the pain of the ice water in their ears.

Throughout his experiments, Pettigrew says the use of Macintosh systems made the collection of research data a breeze. "One needs to know a lot about the population, and having everyone doing it in parallel is much more efficient than I can do in my own [physiology] lab," he explains. "The transparent operation of MacOS makes it so easy, and it's obvious how the system works. The kids come in and most just get straight down to work."

Dr Pettigrew's research is documented in Current Biology 10:383-392, 6 April 2000.

Image courtesy of Current Biology

Primary-source data for all

While the World Wide Web is more accessible than it has ever been, a surprisingly large number of first-year students remain unaware of the ease with which Web content can now be created and published – and, even more incredibly, are ignorant of the unfathomable depth of resources now available online.

Having taught hundreds of third-year biochemistry students to use FTP, Telnet and other esoteric Internet services since the early 1990s, Robert Blakeley – an honorary reader in the Department of Biochemistry within the University of Queensland's Faculty of Biological and Chemical Sciences – is now working to make first-year students aware of the Web's value through a regular series of hands-on Web publishing and research practicals.



U of Q's Robert Blakeley

Since last year, more than 1100 first-year biological science students have gone through the pracs Blakeley has organised, which have become so important that they occupy one-third of the introductory course's laboratory time throughout the semester. Rotating the students through the U of Q's 48-iMac Interactive Learning Centre (ILC), Blakeley takes a completely immersive approach to the Web and has them using Netscape Composer to publish their own Web pages within the first two-hour practical.

That session is just the first in a series of informatics courses that open students' eyes to the massive amounts of scientific research that are freely available on the Net – for those who know where to look. "Because of the Human Genome Project [in which researchers are mapping every known human gene] and others, there are incredible amounts of data online," explains Blakeley.

"It's an incredible thing, because everyone takes real pride in putting up something that's useful and making it readily available; and this data isn't available unless it's available on the Web. I try to get students off the ground using absolutely world-class resources; they're doing exactly the same things used in pharmaceutical and research laboratories. It really opens up the latest results to students."

Student responses to the course have run the full gamut of possibilities, ranging from keen fascination to frustrated disinterest. But by reinforcing the Net's value through regular data-finding and annotation exercises – as well as forcing them to hone their own Web publishing skills by putting their projects online – Blakeley hopes the courses will give students a lasting understanding of how to exploit the Net as a scientific tool of almost endless potential.

"A lot of kids do biological sciences because they're not good at maths, physics and computing," he says. "But there's more and more computers in everything you do. I'm trying to teach them the techniques that will help them survive."



1. Cartoonist W.E. Hill's famous ambiguous image first appeared in 1915
2. Native American facing the sun or Eskimo looking out into the dark?
3. Seeing this 3D checkered cube as an inside view of a room requires a switch between perceptual brain hemispheres
4. Is this book opening towards you or away from you?



Professor Jack Pettigrew conducts a binocular rivalry test on Centre staff member Elizabeth Wickham

FINAL CUT PRO

releases the hidden Spielberg in us all

By Peter Blasina

It's finally happened! A video editor's dream non-linear editing, compositing and effects package has arrived. A buy-off-the-shelf computer with FireWire (i.LINK) integrated on the motherboard, a software package that is both intuitive and completely professional in performance and features does seem like the most wonderful of video fantasies. Add to this the fact that both products come from the same company and there's a virtual guarantee of stability and seamless desktop harmony.

Final Cut Pro 1.0 contains all of the editing functionality of a high-end, non-linear editing system, integrated with about 70% to 80% of the compositing functionality of programs like Adobe's After Effects.

It's fair to say that like Premiere, Final Cut Pro's compositing facility lacks features required for really high-end special effects and production work; users wanting that kind of functionality need to move into the Avid or Media100 environment. That said, the software is robust enough for many semipro and professional needs.

Easy-to-use interface

The first thing most editors look for in any system is ease of use and an ability to navigate and learn the software intuitively. Editors are generally an impatient bunch; they literally want to sit down at the keyboard and start cutting, without a manual. Of course, even the best editor will eventually have to refer to the manual for advanced features. In terms of the "sit-down-and-start-editing" test, Final Cut Pro passed with flying colours!

Apple have provided FCP with the similar high-tech look and feel found in its new QuickTime 4.0 and Movie Player interfaces. FCP's interface offers separate windows for media management, timeline, source and destination monitors, each with transport controls that allow control of an input DV camcorder or VCR. A simple toolbar sits in the lower right-hand part of the screen.

Many of Final Cut Pro's windows will provide video editors with a familiar feel. A *Bin* window holds media that is imported or captured, while the *Timeline* displays the sequence of edits and transitions. For more complex productions, a *Browser* window helps manage media and a *Find* command allows media/file searches on numerous criteria. And a single Final Cut Pro project can contain multiple timelines – now there's something you won't find in Premiere.

Final Cut Pro's *Canvas* window displays edited material and lets you set edit-in and edit-out points. It also allows clips to be easily edited or just trimmed. When a clip is dragged to the *Canvas* window, Final Cut Pro superimposes a set of editing options on the window. Simply pointing the cursor at the desired option and releasing the mouse button effects the edit. Both this method of editing and most of the edit tools are not found in Premiere.

Edit your heart out

Controlling DV camcorders and VCRs and bringing footage into Final Cut Pro couldn't be easier. The program excels in its controls and it worked without a glitch when Panasonic, Sony and Canon



Side-by-side editing provides an integrated control panel for visualising transitions, audio overlays and movie components



Final Cut Pro makes it easy to organise multimedia content for inclusion in final works

DV equipment was accessed via i.LINK. The DV interface worked without a problem from the very first connection.

Final Cut Pro's logging window provides a preview monitor, logging fields and transport controls. In addition to the usual *Reel*, *Name* and *Scene* fields, the logging interface lets you set and label markers in the digitised video. After selecting and labelling the scene you want to digitise, Final Cut Pro captures the video and displays it in a standard QuickTime window. Because logging can be kept separate from digitising, you can batch-capture (unattended) after you've logged your tape or even recapture footage at a later time.

Like most high-end editing software systems, the list of editing features in Final Cut Pro is comprehensive and powerful. There's three-point editing, slip editing, rolling and ripple edits, match frame etc. Edit-in and edit-out points are easily set with either mouse or keyboard, and the combination of setting in and out points with the keyboard and dragging edits with the mouse is surprisingly speedy. For users more familiar with higher-end systems or a dedicated editing console, the program provides full keyboard control of all editing functions.

Like Avid's Media Composer, Final Cut projects can be divided into *Sequences*, which similar to *Compositions* in After Effects. Each *Sequence* is a full editing environment, and Sequences can be nested inside each other assist in project organisation.

Final Cut Pro supports up to 99 video and 99 audio channels. Despite this complex depth of potential compositing tools, the program's Timeline stays remarkably tidy thanks to being able to

use nested Sequences and because separate channels are not required for transitions. Transition effects are applied directly to the border between two scenes, and they appear as another piece of media on the timeline. Most editors will see this as a great improvement over Premiere's screen-hungry transitions track.

Fast production, great effects

As with other real-time edit packages, crash edits can be previewed in FCP without rendering. The program simply plays back appropriate footage from the original files. Edits that require rendering (such as transitions, filters, keying, opacity changes, or motion effects) require time to be processed.

Final Cut's rendering speed on the 450MHz G3 was impressive. Simple one-second transitions took around 8 seconds to render. More complex transitions and titles or filters took proportionately longer, but well within acceptable standards. The new G4 is likely to greatly boost render times, making some transitions and effects virtually real time.

Display of audio track wave forms is also faster. Movie previews can play in larger windows at full frame rate, and FCP has no 2GB file-size limit (approximately 9 minutes of mini-DV or DVCAM tape) on capture; FCP automatically spans such files. Also, production time is decreased because FCP 'remembers' which parts of the timeline already were rendered for preview better than Premiere – which means users spend less time waiting for re-rendering after changing only certain parts of clips or effects.

We also spent some time with Final Cut's FXBuilder, a built-in scripting environment that lets users write custom filters, transitions and generators. In addition to a full complement of conditional and branching statements, FXBuilder includes data types for everything from colour specifications to 3D coordinates. But FXBuilder is far more than just a 'custom' convolution filter or stock, modifiable procedure. With a lot of thought, planning and some programming savvy, sophisticated image manipulations, 3D transitions or automatic text generators can be built directly inside Final Cut.

FXBuilder effects can be applied just like any other effect or transition. In addition, they can be distributed in a protected form that prevents access to your original source code. This type of scripting may be beyond most Final Cut users, but its inclusion should quickly spawn a plethora of new effects and filters and provide a good mechanism for users with programming experience to create new effects, string a series of existing effects together or automate a complicated series of effects and transitions.

Most editors will find Final Cut's compositing tools more than enough for everything from static or scrolling titles to chromakeying and simple special effects. To apply motion to footage, simply select it in the timeline, it instantly appears in the preview monitor. The clip's Motion tab provides access to simple motion controls, opacity, and rotation. Each channel is keyframeable, and motion, scale or crop can be interactively applied by dragging the image about the canvas.

Without adding an analogue CODEC (such as the miroMOTION DC30 Plus) FCP can only output directly via the Mac i.LINK (Firewire port), therefore providing the option to copy the edited footage back to a DV camcorder or VCR. From the DV camcorder or VCR, footage can be played out or dubbed to a regular VCR. As well, Final Cut Pro also has the facility to output QuickTime movies. A full complement of EDL formats is supported, too.

What Apple has done is to simply deliver on a long time 'promise'. The integrated package is both elegant and practical, and serves as a benchmark for other products to attain. Whether you are inclined towards the PC or Mac platform, there is no question that you need to consider Final Cut Pro. It is powerful, creative and brimming over with functionality.

This review originally appeared in the November 1999 edition of Video and Camera Magazine. It is reproduced here in shortened form with the author's permission.

FCP aiding Murdoch's new media gurus

By David Brave

Final Cut Pro's powerful video editing and transformation capabilities look set to earn it a place alongside established high-end and professional systems that have been used for years in an innovative program that is training Murdoch University business students in the mores of multimedia production.

The Perth university's Marketing and Multimedia Program is designed to give executives a solid background in areas such as 2D and 3D animation, graphics and video production, and CD-ROM and soon DVD-ROM authoring – which will put Murdoch at the forefront of DVD authoring in Australia. Around 100 undergraduate business students are enrolled in the program at a time, with 16 of the most promising students able to pursue the program to its highest levels and access specialised, professional-quality graphics equipment.

After evaluating FCP, program chair Dr Duane Varan says the tool is likely to be used on ten G4 systems that make up part of the \$500,000 worth of specialised equipment in the program's multimedia production laboratory. This includes five Media 100 broadcast-quality video production systems, a powerful Silicon Graphics O2 workstation for high-end animation, and a fully interactive DVD authoring station.

"The people who call the shots really need to be in a position where they understand technology well," he explains. "My interest in Final Cut is basically so that all of our workstations have video editing capabilities. It's giving a lot of stuff that's available in higher-end packages and doing that at a very reasonable price."

"One of the things that impresses me is the depth of features available at that level – for example, we work with alpha channels [used to store masks that improve the quality of digital video overlays] and FCP preserves the alpha channel so the work you do in that remains. I wouldn't put Final Cut and Adobe Premiere in the same league; FCP is head and shoulders above Premiere. It's great value for money, and at that level I'm really impressed."

Left: Murdoch's \$500,000 digital production lab



Dr Duane Varan

AUC in the Pacific



Doctored photos challenge memory integrity

By David Braue

During the 1990s, much was made of the so-called 'false memory' syndrome, which saw many therapists leading their patients to the often-false conclusion that they had been sexually abused in childhood. This controversial phenomenon gave rise to a new wave of research as psychologists tried to learn more about the mechanisms by which we form, store and retrieve the memories that contain our past.

In most of those cases, the suggestion of abuse or other questionable past experience was made verbally; patients often took those cues and embellished their own stories around the central, false intimation that had been offered them. Researchers replicated the practice time and again by offering details of a location from the subject's childhood – for example, a shopping mall – and asking them about the time they got lost at the mall.

Other experiments asked subjects to describe more traumatic yet equally fictitious situations, such as the time they were seriously wounded by an animal. In every instance, a percentage of subjects were able to create lucid descriptions of an event that never actually took place.

But several years ago, Dr Maryanne Garry, a senior lecturer in the School of Psychology at the Victoria University of Wellington, began wondering whether such memories couldn't be prompted by presenting falsified photographs purporting to show a childhood experience that never actually happened.

In theory, the project would be simple: doctor a photograph to incorporate a childhood picture of the subject, show them the picture and see whether they identify the picture as false – or whether they accept its veracity and make up a story around it. But back in 1994, still-developing PC technology made the actual doctoring process painstaking and tedious, and the researchers eventually shelved the plans. "The machines were nothing compared to what they are now," says Garry, "and it would take hours for us to try to make one little change."

Last year, however, she began revisiting the project with PhD student Kimberley Wade, and with the inspired assistance of Professors Don Read and Steve Lindsay of the Department of Psychology within the University of Victoria in British Columbia, Canada. Technology had progressed at a furious pace in the interval, and by the time Wade sat down for a course in photo doctoring it was a simple matter to make drastic yet convincing changes to digital photographs.

"Initially, people thought you couldn't possibly come to



VUW's Dr Maryanne Garry



PhD candidate Kimberley Wade

remember things that never happened to you," Garry explains. "You can expect that your little brother's memory of long ago might be wrong, but you look at a photo and you don't expect it to lie – even now that many people know it's easy to make false photographs on a computer. It's a whole different world [of technology] now."

The stage was finally set for the long-awaited project to begin. Last April, Wade began soliciting subjects for her study and conducting interviews with their families. Three old photographs from the subject's childhood were borrowed, scanned and reproduced, while Wade used a Macintosh and Adobe Photoshop to digitally insert an image of the subject as a child into a fourth photograph – which had actually been taken last year at the annual Wairarapa Hot Air Balloon Festival just outside of Wellington.

After so far asking a total of ten subjects to describe the time they went in a hot air balloon, four were able to provide details about the trip even though it never happened. Interviewed again two weeks later, the subjects embellished the stories even more. Clearly, Garry and Wade concluded, photographs can be a major tool in instilling false memories in susceptible subjects.

"We've been accumulating evidence for years that shows memory isn't like a tape recorder as many people think it is," says Garry. "The idea that memories are these things that never change is just wrong; the fact is that you can remember things that never

happened to you. One of the things we really know little about is how people use photographs to remember things. But just showing them photos apparently serves as a bootstrapping device where they get a leg up in developing this memory. They use the stuff in the photo as a seed and add to it."

The research is continuing as Wade works to expand her data set. However, thanks to her success with the Mac-based photo doctoring solution, her research goal is no longer to find out whether such memories can be induced. Instead, Wade and Garry are exploring more detailed questions such as whether putting pressure on people to remember a false photo can convince them to come up with details even though they may not remember the event.

"What's amazing is when you debrief them at the end and tell them one of the photos was fake," says Garry, "they instantly know it was the hot air balloon picture – but they can still see the experience in their heads."

For more information, email maryanne.garry@vuw.ac.nz



The process of deception

Researchers at the Victoria University of Wellington used Photoshop on a Macintosh to scan in a picture of last year's Wairarapa Hot Air Balloon Festival (upper left). They then removed telltale signs of the picture's modernity, in this case the mobile phone number and man with a video camera (upper right). A picture from the subject's childhood was provided by the colluding family member (lower left), and part of that image is scaled and shaded so as to blend into the final image that is presented to the subject (bottom right). Black & white was used to simplify the editing process; subjects were told that researchers had photocopied the original pictures.

KANJI DRIVES NZ'S CAL CULTURE



Massey's Paul Knight

Computer Aided Learning (CAL) has long been known to provide a rich source of information for students in knowledge-based courses such as science and languages – but the process of developing this content can be time-consuming and is still out of the reach of many lecturers that might normally make excellent use of it.

Motivated by his tremendous success in using CAL tools to computerise the teaching of Kanji within Massey University's School of Language Studies, postgraduate convenor Paul Knight is now expanding the technology's scope by using the Macintosh platform to teach the rest of the university's language teachers how HyperCard

stacks can become a valuable interactive resource for their students.

Knight's use of HyperCard dates back nearly a decade, when he used the multimedia tool as an integral part of his new Diploma in Teaching Japanese as a Foreign Language course. A few years ago, training other Japanese teachers in the technology kicked off a development effort that has seen all three years' worth of Kanji course materials reworked into HyperCard stacks.

After obtaining money from an internal Massey development fund, Knight this year purchased a G4 desktop, digital video camera, scanner and software including Adobe Photoshop. Building on these tools, he ran an initial five-day series of lectures for a half-dozen of Massey's 18 language lecturers – who collectively offer French, Spanish, German, Chinese, Japanese and general Linguistics courses.

"Part of the reason I got this grant was that we're facing staff cuts all the time, and have to find more and more efficient ways to teach things that don't involve human beings," says Knight. "This is to try and improve the training of language teaching staff inside the university. I did it two years ago with our Japanese staff, and we now have a completely computerised system that lets Japanese

students cover their first three years – including grammar, Kanji characters, vocabulary and comprehension – using HyperCard software in our multimedia labs."

Strong interest has grown the lectures into a fortnightly event that's expected to run at least for the rest of the year, with individual sessions covering topics ranging from basic drawing to video editing. Knight is also eager to explore ways in which LiveCard, a new tool for publishing HyperCard stacks on the web, can extend the reach of the language courses to the two-thirds of students not actually located at campus.

Massey isn't the only New Zealand university taking advantage of HyperCard's interactivity to teach Kanji, a method of representing Japanese characters that uses a composite approach taken straight from Chinese. Dr Grant Waller, a senior lecturer at the Auckland University of Technology, this month launched an interactive HyperCard system called QT Kanji that teaches and drills students on the 1006 basic Kanji characters (known as Kyouiko Kanji) as well as some 3500 'compounds', which combine two or more characters into a completely new word or concept.

The software also includes short videos of a calligrapher drawing each of the 1006 basic characters, which were provided by Saeko Komori from Chuubu University in Nagoya, Japan. And unlike most HyperCard stacks, QT Kanji uses a modular design that allows course convenors to tailor its content using simple scripts – a capability that Waller believes will further increase the appeal of CAL in academic environments.

"Commercial Kanji packages don't allow the host institution to adapt the order in which the Kanji is introduced into their curriculum," says Waller. "But if your CAL package is not following the same word and character introduction order as your classes, students lose interest because they can't see how it matches the rest of the curriculum."





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