MONASH News

Research, news and opinion from Monash University

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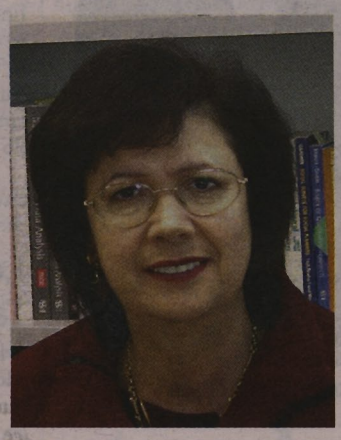
Expats come home – we need you

Australia is losing vital 'human capital' because thousands of young professionals who go overseas to work are not returning, a Monash academic asserts.

Professor Phyllis Tharenou, of the Department of Management in the Faculty of Business and Economics, said Australia is experiencing the largest ever emigration of people aged between 21 and 34. It is estimated that one million Australians are currently working overseas, and 350,000 of them are from Victoria.



"Most people want to come back, but their companies do not have repatriation policies to allow this."

— Professor Tharenou

"This exodus means we are not returning the knowledge to Australia where it is needed to develop our own industries. This will harm our economy because it will deprive us of vital talent for our country's future prosperity," she said.

Professor Tharenou has completed a study, funded by an Australian Research Council (ARC) Discovery Grant, to find out why Australia's young professionals relocate abroad to work.

"In surveys of young people while they were university students and after they graduated into first jobs, I identified the plus points of working abroad as cross-cultural experience, travel opportunities, prospects for career development and increased pay," she said. "I also uncovered deterrents, including loss of family, personal and social ties, political instability, lower-living standards and culture shock,"

The research showed that young employees who developed an interest in working abroad had little family influence on their decision, no partner, high expectations of positive outcomes from going, worked in organisations with a high international focus, and had a high level of self-confidence about working abroad including in developing countries.

Professor Tharenou will use the study results to suggest ways the public and private sectors can persuade overseas employees to come home.

"I have found that a major reason ambitious young people don't return is because they do not believe it will benefit their careers to do so," she said.

"My study has already found that most people want to come back, but their companies do not have repatriation policies to allow this.

"When an international firm has a young employee they know is highly disposed to an international career, they could target that person and offer them a two-to-three year stint-abroad, but then bring them back.

"Those workers should know that, at the end of that term, they will return to a comparable or better position in Australia. I suspect a lot stay away because their prospects upon returning home to the same company are somewhat soft and ill-defined."

Professor Tharenou has now received another ARC Discovery Grant to look at how Australian companies source staff for international work. Part of this study involves finding ways to get the expatriate workers to return.

Professor Tharenou said the Victorian government recognised the brain drain problem. In July, it launched an online database and resource, the Victorian Expatriate Network.

"It is great that the Victorian government has set up this database for and about expatriates. It is a very effective way of staying in touch with them, and keeping them in touch with each other," she said.

– Robyn Anns

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Topping a big year at Monash

Another $10.3 million in NHMRC grants takes the total to more than $32 million for 2003.

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Facing the future: Monash South Africa graduates (clockwise from top left) Mr Richard Zanner (BBusSys), Mr Douglas Minnaar (BComp), Mr Bradley Harrison (BComp), Mr Kai Grunwald (BBusSys), Ms Tracey-Leigh Wraight (BA), Ms Simanga Humphrey (BA), Ms Susan Pretto (BA), Ms Michelle Letzler (BA), and Ms Louise Emanuel (BBusCom).

Monash South Africa students make history

Three years ago in South Africa, a group of students took a chance and joined the country's newest tertiary institution, Monash South Africa (MSA).

Although they knew little about Monash University, the students were attracted by its international perspective and state-of-the-art facilities.

On 27 November, 20 of these students became the first to graduate from the campus in Johannesburg.

The graduation ceremony was attended by family and friends as well as academics and dignitaries including Monash chancellor Mr Jerry Ellis, Monash vice-chancellor Professor Richard Larkins, Monash South Africa pro vice-chancellor Professor John Anderson, and Australian High Commissioner to South Africa Mr Ian Wilcock.

Graduate Mr Kai Grunwald, who was awarded the Monash South Africa Award for Excellence Scholarship for achieving the highest marks in his level throughout his time at MSA, said it was a proud moment for all the students.

"There are some very talented people graduating here today. Take heed of these names – you will be hearing from them again," he said.

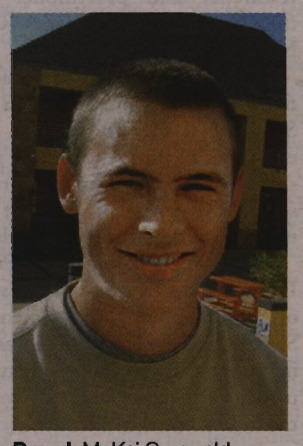
Mr Grunwald completed a Bachelor of Business Systems and has joined a new company in Roodepoort, Johannesburg.

"Among Monash's best assets are its lecturers," Mr Grunwald said. "They have not only taught us about our subject areas but also provided us with lessons in life. We view these lecturers with tremendous gratitude."

Mr Grunwald said he plans to continue his studies through off-campus learning with Monash in Australia.

Mr Ellis paid tribute to the staff at MSA and congratulated the students.

"This event marks a most important milestone in the life of the university and, of course, the lives of the graduates," he said. "You should feel proud to be graduating from a university that is truly a world-class tertiary institution. As the first graduates here, you have been key to establishing the university in South Africa."



Proud: Mr Kai Grunwald.

Professor Larkins said Monash was pleased to be able to play some part in regional development.

"Monash believes it can contribute to South Africa and Africa in a range of areas including economic development, engineering, IT, environment and health," he said. "We also hope that one of the values our graduates take away with them is a commitment to give something back to this community."

Professor Anderson told the graduates their degrees were internationally recognised and would be passports to the future. "Many of you will travel around the world, but it is my hope that you will then come back to Africa and make your mark here," he said.

Established in 2001 in Roodepoort in Gauteng province, Monash South Africa currently has 350 students in its faculties of arts, business and economics, and IT.

-- Diane Squires

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Appointment boosts meteorology leadership

Mathematical sciences

Monash University has appointed distinguished meteorologist Professor Michael Reeder to the chair of meteorology in the School of Mathematical Sciences.

Over the past decade, the university has jointly funded the chair position with the Bureau of Meteorology to promote a centre of excellence in education and research in meteorology.

Professor Reeder has broad research interests in meteorology that include extra-tropical cyclones, hurricanes, the atmospheric waves (known as gravity waves) that influence cloud formation and climate, tropical cloud formation and bushfires. He obtained his PhD at Monash on the dynamics of cold fronts in 1985 and has collaborated with bureau scientists on a range of projects.

Professor Reeder: Monash has long played a role in meteorology.

Unlike universities overseas, no Australian university has a school of meteorology or atmospheric science, but Monash has strengths in these areas and worked with the bureau to establish a dedicated chair in meteorology in the early 1990s.

"Monash has had a long tradition in meteorology and has played an important role in this field in Australia and internationally," Professor Reeder said. "The chair recognises that contribution and strengthens Monash's position as the place to do university-based meteorological research in Australia while reinforcing the university's already good ties with the bureau."

In 1985, Monash and the bureau signed an affiliation agreement that enabled postgraduate students to work at the bureau towards higher degrees. Dozens of Monash students have made significant contributions to Bureau of Meteorology projects, ranging from climate modelling to international field experiments.

"Meteorology has a huge effect on how people live their lives as well as on the nation's economy," Dr Reeder said. "I'm particularly interested in how we forecast weather. It's a real mathematical problem."

The chair is central to Monash and Bureau of Meteorology strategies that aim to develop a comprehensive program for undergraduate and postgraduate education in meteorology at an Australian university.

Professor Rob Norris, dean of the Faculty of Science, said a striking characteristics of the School of Mathematical Sciences was that one of its strongest research areas was a discipline not commonly found in other mathematics schools.

"The chair is a key part of the school's plans to continue developing meteorology and geophysical fluid dynamics, to take advantage of emerging opportunities in the area, and to further enhance the school's international standing," Professor Norris said.

– Penny Fannin

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Where conferences and culture meet

Monash in Italy

The Monash Centre in Prato, Italy, has been kept busy over the past couple of months hosting major international research conferences and musical performances.

A conference on community informatics – concerned with community usage of information and communication technologies – brought together leading researchers from countries including Australia, New Zealand, the US and the UK.

Jointly organised by Monash's Centre for Community Networking Research and the New Jersey Institute of Technology, the September conference set up an international researcher and practitioner group, the Community Informatics Research Network.

It also prepared a communiqué for the upcoming United Nations World Summit on the Information Society commencing in Geneva next month, seeking support for information society research projects at local, regional and international levels.

Conference co-organiser Professor Don Schauder of the IT faculty's School of Information Management and Systems, said the Prato centre was crucial in bringing together key international participants who would not have found the time to travel to Australia.

Another major international conference on team-working, organised by the Management departments from Monash and Melbourne universities, involved leading researchers from 11 countries and a range of disciplines, including organisational studies, industrial sociology, organisational psychology, engineering and business management studies.

Dr Richard Cooney, from Monash's Department of Management, said key issues to emerge from the October conference included the importance of the ethical dimension of team-working.

And in a change of pace, the Prato centre recently hosted a performance of contemporary Australian music and sound art, written by a selection of Monash University composers and performed by the Florence-based chamber trio Altrove 1.3.

The concert, warmly received by the audience, was introduced by Dr Thomas Reiner of Monash's School of Music – Conservatorium. It included works by Dr Reiner, along with pieces by the School of Music's Mr Peter McIlwain and Monash PhD candidate Mr Steve Adam, a computer musician who generates sounds and rhythms with the aid of special music software.

Prato centre director Professor Bill Kent said recent events at the centre highlighted its significant role in bringing together researchers from all over the world to concentrate on specific projects, and underlined its commitment to showcasing Australian culture.

– Michele Martin

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London talking: Professor Carl Bridge, director of the Menzies Centre for Australian Studies; Dr Kristina Macrae, manager of the London centre and former Federal Opposition leader Mr Simon Crean enjoyed the seminars.

Centre hosts seminar series

Monash in London

Law reform in Australia, national security, higher education funding, Australian social policies and climate reform were just some of the topics covered by prominent Australians and Monash staff at a recent series of seminars at the Monash University London Centre.

The 2003 seminar series was organised in association with the Menzies Centre for Australian Studies at the University of London.

Monash alumnus and former Federal Opposition leader Mr Simon Crean recently delivered a seminar on 'International security and the global economy: Australia's role and the region'.

Other seminar series participants included Federal Minister for Education, Science and Training Dr Brendan Nelson and former deputy prime minister Professor Brian Howe.

Monash London Centre director Professor Merran Evans said the seminars had proved both lively and interesting and had boosted the centre's profile.

"The seminars are an excellent way for UK academics to get to know the Monash London Centre. We also make the seminars open to interested members of the public," she said.

Weblink:
www.monash.ac.uk/events/

First chair of rural nursing

Professor Karen Francis (right) has been appointed inaugural chair of rural nursing, based at Monash University's Gippsland campus.

The major areas of her work will be addressing everyday health care issues, specifically men's health issues, and developing a strategy to improve nurse retention and recruitment in rural areas.

"My first step is to make myself known to the community so we can start the relationship-building," Professor Francis said. "From there, we will identify major needs and find out how we, as a leading education provider in the region, can help the community deliver what is needed.

"From my past work in nurse recruitment and retention, I think there is a lot we can do in terms of developing more family-friendly policies, including more flexible shiftwork. Many nurses leave their employment reluctantly because they are unable to meet the demands of motherhood and the workplace."

Before joining Monash, Professor Francis was associate professor and head of the School of Clinical Sciences at Charles Sturt University, where she was involved in extensive research into rural health issues. She took up her appointment in October.

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Briefly

First woman chief justice

Monash graduate, the Honourable Justice Marilyn Warren has been appointed the first woman Chief Justice of Victoria – the state's most senior judicial position.

In 1985 Justice Warren was admitted to the Victoria Bar, in 1997 she was appointed a Queens Counsel, and in 1998 she became the first woman graduate of the Monash Law School to be appointed to the Supreme Court of Victoria. She holds three Monash degrees (BJuris 1972, LLB 1973, LLM 1983).

Young Australian of the Year

Monash law/science student Hugh Evans has been named Victoria's Young Australian of the Year.

He is the founder of Australia's first youth-run international aid organisation, the Oaktree Foundation, which works with impoverished people in South Africa.

Mr Evans and other state finalists are now in the running to be named national winners in their categories when the Australian of the Year honours are announced on Australia Day, 26 January 2004.

Earlier this year, Mr Evans was also named Young Victorian of the Year.

Legal trainers in Tanzania

A legal training team, led by two Monash University professors, has recently returned from training prosecutors at the UN Rwandan War Crimes tribunals in Arusha, Tanzania.

Monash legal advocacy experts Professor The Honourable George Hampel QC and Adjunct Professor Felicity Hampel SC headed an international team of trainers including two Canadian QCs, two senior prosecutors from The Hague and one English QC.

The invitation to Africa was prompted by the pair's ongoing success in training prosecutors at the International War Crimes Tribunal for the former Yugoslavia in The Hague.

In Arusha, the team trained a group of 24 prosecutors in the theory and practice of advocacy.

Esso award for Engineering dean

Monash Engineering dean Professor Tam Sridhar has been awarded the 2003 Esso Award for outstanding contribution to chemical engineering.

The award recognises significant ongoing contributions to chemical engineering through innovations, or a series of related publications over a number of years.

Professor Sridhar has a long-established international reputation in the areas of chemical reaction engineering and flow of polymers.

The Esso Award is one of a number of annual awards presented in conjunction with the Institution of Chemical Engineers in Australia, the Engineers Australia's Chemical College, the Society of Chemical Engineers in NZ and the Royal Australian Chemical Institute.

Genome solved – hunt for vaccine targets begins

Microbiology

The genes of a bacterium that can kill or cause permanent organ damage in humans have been identified by Monash University researchers, whose efforts are now focused on finding a suitable vaccine.

Professor Ben Adler from the Department of Microbiology led Australia's first bacterial genome project that has identified the genes of the bacterium *Leptospira*. The team has now begun work on finding targets for a vaccine against *Leptospira*, which causes the disease leptospirosis.

"Leptospirosis is an infection of some importance both around the world and in Australia, especially in farming communities," Professor Adler said.

The disease is transmitted to humans by animals and in Australia typically causes influenza-like symptoms and high fever.

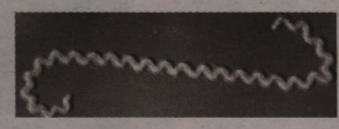
There are estimated to be one million cases of leptospirosis worldwide each year. Although in Australia the disease is rarely fatal, mortality rates in developing countries can be as high as 20 per cent. Workers who have contact with animals are at highest risk – in Australia, leptospirosis is most common among dairy and pig farmers and banana plantation workers who are infected through contact with rat urine.

The bacterium also infects animals and can cause abortion, stillbirths and, in cattle, a drop in milk production.

Professor Adler said most mammals have co-evolved with species-specific strains, or serovars, of *Leptospira*. The hosts can have no symptoms but still transmit these strains to humans.

Professor Adler worked with Dr Dieter Bulach and others in the Department of Microbiology, Dr Rich Zuerner at the US Department of Agriculture and a team led by Dr Elizabeth Kuczek at the Australian Genome Research Facility, to determine the genetic sequences of two strains of the Hardjo serovar of *Leptospira*, the serovar common to Australia.

Bug hunters: Professor Ben Adler and Dr Dieter Bulach are working towards a leptospirosis vaccine. **Photo: Greg Ford**



The *Leptospira* bacterium.

The team used the bacterium's genetic sequence to identify individual genes but then, using scripts and programs designed by the Victorian Bioinformatics Consortium to process the data, they ascribed a function to each gene.

More than 3000 genes were identified over the bacterium's two circular chromosomes – 3111 genes on the large chromosome and 292 on the small one.

Efforts to develop a vaccine against *Leptospira* have been frustrated by the diversity of its main antigens (the sugar components on the outer membrane of the bacterium).

"These proteins of the outer membrane interact with the host, whether it's human or animal, and are targets for antibiotics as well as potential vaccine candidates," Professor Adler said. "Without a genome sequence, we just tried to find proteins that might be on the outer membrane of the organism and might play a role in stimulating immunity.

"By knowing every single gene that the organism has, we can predict which genes produce the antigens that are potentially important in immunity."

The *Leptospira* vaccines that exist at the moment are not suitable for humans and are only effective against individual serovars. "With the genome, we can find surface proteins that are common to all serovars of *Leptospira* and use these as the basis for a single vaccine," Professor Adler said.

– Penny Fannin

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Mining in touch

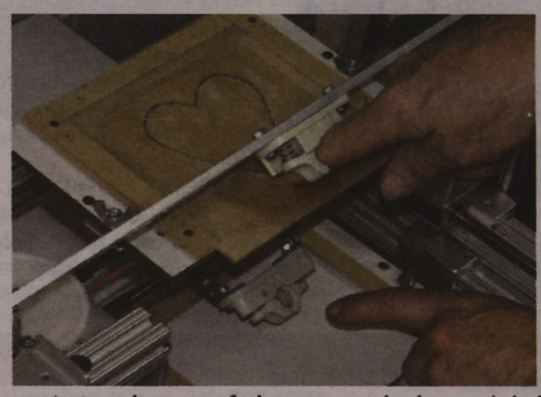
Virtual reality

The abstract world of virtual reality has joined with the earthy environment of minerals mining, due to innovative work by Monash University's new Bionics and Cognitive Science Centre, located at the Gippsland campus.

To remove its staff from hazardous underground mining areas, Australian minerals development company WMC Resources Ltd has given its operators remote control over an underground rock-breaking machine at its Olympic Dam site in South Australia.

However, as the operators are unable to feel the machine's response, Monash researchers are working with WMC to help put them 'back in touch'. The operators will trial technology developed at the Monash centre that provides 3D visual and virtual touch feedback from the machine, helping them feel less remote and more as though they were sitting on the machine.

The new technology involves virtual touch sensors, which use a combination of movement and touch – called haptics. The senses are measured separately using a specially designed device called the Tactile Display System, the first time such a system has been developed anywhere in the world. Previously, scientists have not been able to successfully unscramble all the many inputs to the haptic system such as touch, temperature, shear, movement and pressure.



In touch with technology: The unique Tactile Display System (TDS) that measures movement and touch separately.

Acting director of the centre Dr Barry Richardson said the addition of the sensors to the mining equipment was one practical application of the technology that could also make flight and driving simulators more realistic and allow surgeons to 'feel' what they were doing as they practised on human body simulators.

The centre's researchers plan to use the haptic sensors to provide a complete virtual experience that will ultimately lead to 'whole body' virtual environments in which people can be fully immersed.

The research centre is currently funded through a $360,000 Commonwealth Government grant, one of only nine successful applications in a field of 159.

– Robyn Anns

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$10.3 million NHMRC grant success

Monash University researchers have been awarded $10.3 million by the National Health and Medical Research Council (NHMRC) for 28 new research projects. This money is additional to $21.8 million awarded by the NHMRC to Monash earlier in the year. The two funding injections bring the total of major NHMRC grants to Monash to just over $32 million – topping a great year for the university.

The latest grants will fund projects to include investigations into improving the use of antibiotics; the effectiveness of new treatments for spinal fractures caused by osteoporosis; the proteins that make malaria-infected blood cells sticky; and education and training for parents of adolescents with autism.

Researchers from the faculties of Medicine, Nursing and Health Sciences, Pharmacy, and Business and Economics will receive $10,269,037 of the $163.8 million the NHMRC has made available for this year's project grants.

Vice-chancellor Professor Richard Larkins said the grants demonstrated the strength of the university across many research areas. "Our researchers are conducting investigations into areas of science and medicine that will improve the health of people in Australia and overseas," he said. "They are to be congratulated on their dedication to improving the lives of others."

Four staff members – Professor Jeffrey Richardson, director of the Health Economics Unit; Professor Christina Mitchell, head of the Department of Biochemistry and Molecular Biology; Professor Ross Coppel from the Department of Microbiology; and Professor David Jans from the Department of Biochemistry and Molecular Biology – each received two grants.

Professor Richardson was also successful in winning a five-year Senior Principal Research Fellowship from the NHMRC. In awarding the $678,750 fellowship, the NHMRC panel acknowledged Professor Richardson's international research reputation in a variety of fields, particularly in measuring individual and social benefits for the reallocation of resources in the health sector.

Dr Brian Cooke from the Department of Microbiology also received a five-year fellowship from the NHMRC and was awarded $474,750 over three years to investigate malaria-infected blood cells.

Professor Roger Nation and Dr Craig Rayner from the Department of Pharmacy Practice received $395,638 to minimise the development of resistance to, and improve the safety of, two antibiotics – colistin and linezolid. Professor Nation, head of the department, said multi-drug resistance in bacteria was increasing at an alarming rate. "We hope to find smarter ways of using antibiotics to minimise the development of resistance and minimise the toxicity of antibiotics."

The largest single grant for Monash was awarded to Associate Professor Rachelle Buchbinder, from the Monash Department of Clinical Epidemiology at Cabrini Hospital and Department of Epidemiology and Preventive Medicine, to conduct a clinical trial of vertebroplasty, a procedure used to treat fractures in the spinal vertebrae that have been caused by osteoporosis. Dr Buchbinder received $578,000 over four years to assess the safety, efficacy and cost of the procedure.

– Penny Fannin

LAW

City Chambers

Monash's new Law Chambers, located in the centre of Melbourne, were officially opened in July by Federal Treasurer Mr Peter Costello.

Mr Costello, who holds two degrees from Monash, praised the university's commitment to its law postgraduates – demonstrated by the new Bourke Street premises.

The chambers are fitted with state-of-the-art computer laboratories, modern conference rooms and meeting spaces, study rooms and online access to Monash libraries.

ARTS

Childless by choice

A study this year by the School of Political and Social Inquiry, in the Faculty of Arts, revealed some surprising reasons for Australia's declining birth rate.

It found that paid maternity leave and policy initiatives such as the Federal Government's 'baby bonus' have had limited impact on the decision to have children.

Findings suggested that women are far more concerned about access to long-term flexible workplaces, childcare availability and extended family support than with narrow and short-term financial benefits.

EDUCATION

Building post-Soviet knowledge

The Faculty of Education has helped rebuild the education system in the former Soviet republic of Kazakhstan. **Professor Terri Seddon, Professor Sue Willis, Associate Professor Tony Townsend and Ms Marilyn Fleer** from the Faculty of Education worked with Soros-Kazakhstan and the Kazakhstan Department of Education on several projects designed to improve the education system.

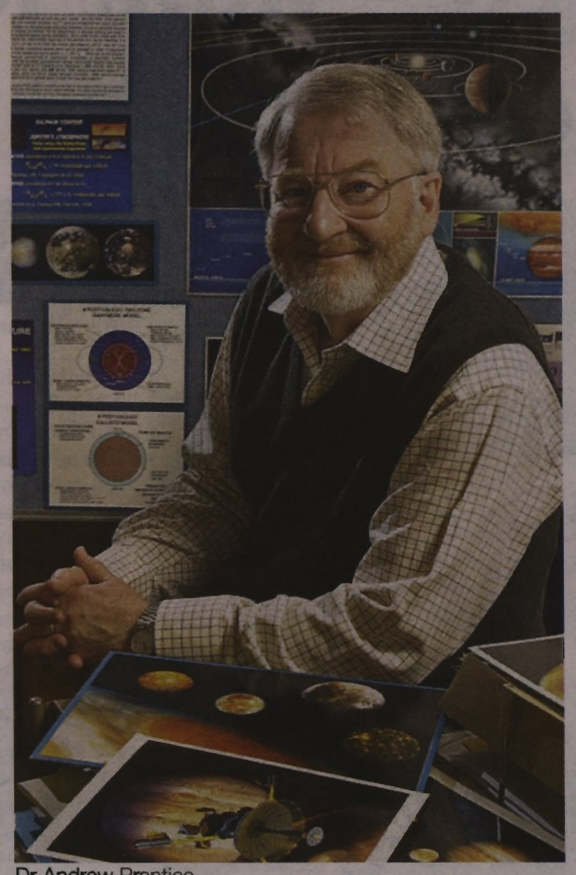
SCIENCE

Space success

Monash mathematician **Dr Andrew Prentice's** 25-year-old theory that Jupiter's fifth largest moon Amalthea, discovered in 1892, was actually a 'captured' asteroid and not a native satellite or moon of Jupiter was recently confirmed through data collected by the Galileo space probe's mission to Jupiter.

The Galileo mission came to an end in September but not before many of Dr Prentice's other mathematical predictions about Jupiter were also proved.

Dr Prentice, one of the world's foremost experts on the formation of the solar system, will work at NASA next year in preparation for the next mission, destined for Saturn.



Dr Andrew Prentice

Controlling crazy ants

The yellow crazy ants that have been decimating Christmas Island's world-renowned red crab population and damaging the island's ecology have been stopped in their tracks by an aerial baiting campaign developed by a team from Monash and Parks Australia.

Dr Dennis O'Dowd and Dr Peter Green from the School of Biological Sciences played the pivotal role in designing and coordinating the control program. Data collected from 50 monitoring stations across the island indicated that the baiting had achieved immediate control of all known crazy ant supercolonies.

ART AND DESIGN

Art and Design dean Professor John Redmond, director of the Museum of Contemporary Art, Sydney, Ms Elizabeth Ann Macgregor, and Fine Arts department head, Professor Bernard Hoffert.

New face for fine arts

The redevelopment of the landmark Fine Arts building at the Caulfield campus was opened in November.

The extensive redevelopment of the heritage-listed building created state-of-the-art studios for drawing, painting, printmedia, photomedia and tapestry, as well as workshops and project spaces.

Monash Art and Design dean, **Professor John Redmond**, said the opening of the building represented an important milestone for the faculty.

MEDICINE

Gulf war effects

The first comprehensive health study of Australia's 1991 Gulf War veterans has found they are more likely to develop psychological disorders than members of the Australian Defence Force who had not been deployed there.

The study, by researchers from Monash's Department of Epidemiology and Preventive Medicine, revealed that Gulf War veterans were at increased risk of developing post-traumatic stress disorder and also more commonly demonstrated other anxiety disorders, depression and substance use disorders including problem drinking.

Surgical simulator

A virtual reality surgical simulator developed at Monash could have a dramatic impact on safety standards and skill levels in hospitals worldwide. The simulator, developed at the Department of Obstetrics and Gynaecology and Monash's Centre for Biomedical Engineering, will enable surgeons to master keyhole techniques that are being used for an increasing number of operations. It allows surgeons to 'operate' on a 3D patient where they can feel the weight and texture of tissues and organs.

Rural GP turn-offs

Monash University PhD researcher **Dr George Somers** found that lack of income, limited access to community facilities and restricted professional opportunities for their partners were the major issues dissuading medical students from taking up a rural career. He said a rotation with a rural GP could help students address or reduce these concerns.

BUSINESS AND ECONOMICS

High scores for Monash MBA

The Monash MBA was named among the top MBA programs in Australia during 2003. It was ranked as the best in Victoria and third in Australia by leading business magazine *Asia Inc.*

The Australian Financial Review's BOSS magazine placed it in the top band of Australian MBA programs, and it received a five-star rating in the graduate management programs section of the *2004 Good Universities Guide*. The Economist Intelligence Unit of *The Economist* magazine also named the Monash MBA as one of only five Australian MBA programs to be rated in the world's top 100.

Monash's MBA and DBA Centre, located at the Caulfield campus, was officially opened by the Victorian Premier, Mr Steve Bracks, in April.

Islamic banking conference

Monash University Malaysia, which is conducting leading research into Islamic banking, hosted an international conference on the subject at the Monash Centre in Prato in September.

The conference attracted interest from researchers, academics and industry leaders from around the world to discuss the social and ethical dimensions of Islamic banking and its global spread.

Islamic banking, with about $500 billion in global assets, is growing by 15 per cent a year, and about 10 per cent of banking in Malaysia is now Islamic.

Professor Jayne Godfrey, head of Monash's Accounting and Finance department, told the conference that Islamic banking was now a major financial force in some countries and was making inroads into Western society.

PHARMACY

Rural pharmacy entry scheme

Monash has introduced a new rural pharmacy entry scheme, beginning in 2004, to help alleviate the shortage of professional pharmacists in rural Victoria.

The Rural Entry Scheme will give students from rural and remote areas an enhanced opportunity to gain entry to the highly sought-after Bachelor of Pharmacy degree. It includes a Pharmacy Rural Scholarship, valued at $6000 a year, to be awarded to the highest-ranking applicant from a rural area.

Drugs for diabetes

A drug to prevent or delay the complications experienced by people with Type I and Type II diabetes is being tested for its effectiveness by researcher **Dr Ossama El-Kabbani.**

Dr El-Kabbani, a senior lecturer in Monash's Department of Medicinal Chemistry, has been examining how well the drug binds to an enzyme called aldose reductase, which converts glucose into a sugar alcohol called sorbitol.

IT

Laugh detectors

Associate Professor Arkady Zaslavsky and his colleagues from Monash's School of Computer Science and Software Engineering are developing systems that recognise people by their laughter, and 'smart' mobile phones with in-built personal assistants that can take messages and advise that their owner is in a meeting.

The research is part of a broader field called mobile and pervasive computing.

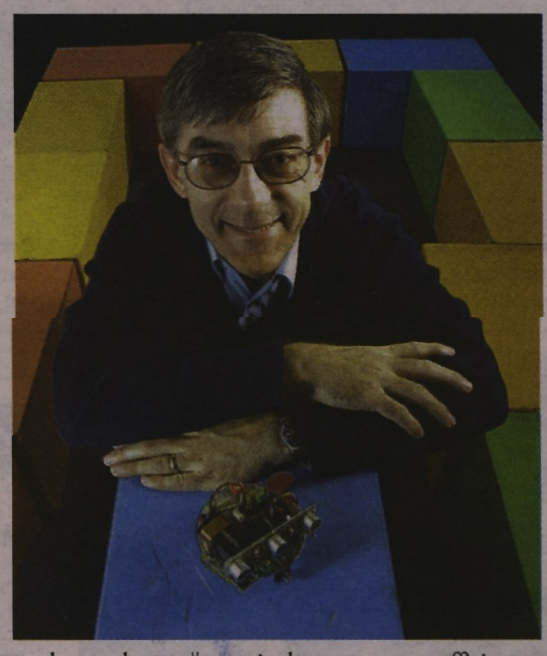
ENGINEERING

Snifferbots

Associate Professor Andy Russell from Monash's Intelligent Robotics Research Centre has created an odour-sensing robot that might one day replace sniffer dogs in detecting drugs, explosives and gas leaks.

The RAT (reactive autonomous testbed) robot is able to sniff its way through a maze of tunnels to track down a chemical odour.

Dr Russell is also developing a learning robot called ADAM (ADAptive Mobile), which is currently learning how to travel around a wooden enclosure in the most energy-efficient way. Learning robots could in future be used to perform household tasks such as vacuuming.



Associate professor Andy Russell

Keeping kids off their toes

Up to 10 per cent of children have a condition that causes them to walk on their toes, a habit that can cause hip and back problems later in life.

Professor David Morgan and Dr Paul Percival from Monash's Centre for Biomedical Engineering are working with staff at Monash Medical Centre to devise exercises that lengthen the calf muscles of these children.

Children already using the exercises have developed longer calf muscles and are able to place their heels on the floor and walk with a normal heel strike.

MUARC

Safe cars

The latest intelligence systems in cars are being tested by the Monash University Accident Research Centre (MUARC) in what is the first study worldwide to assess the effects of such systems on driving performance.

Fifteen Ford passenger cars have been fitted with the Intelligent Transport Systems, such as a seatbelt reminder system and a sensor to warn if a reversing car is about to hit other objects, which are designed to improve safety and reduce road accidents.

The Safecar project will assess whether cars fitted with these systems make people drive more safely during and after using them.

Tractor safety

MUARC researchers are recruiting farmers and farm workers to participate in an Australian-first study that will determine the factors that place farm workers in one of the most high-risk injury categories of any Australian industry.

Dr Lesley Day from MUARC is coordinating the four-year Farm Injury Risk among Men (FIRM) study, which will involve 900 farmers and farm workers from throughout regional Victoria.

In Victoria, about 300 injured farmers and farm workers are admitted to hospital each year and a further 840 present to hospital emergency departments with their injuries.

APPOINTMENTS

Vice-Chancellor

In September, Monash welcomed its new vice-chancellor, **Professor Richard Larkins AO**, who has enjoyed a distinguished career in scientific research and academic management.

Before taking up his appointment at Monash, he was dean of the Faculty of Medicine, Dentistry and Health Sciences at the University of Melbourne.

Deputy Vice-Chancellor

Monash dean of Law **Professor Stephen Parker** was appointed deputy vice-chancellor in June. Monash chancellor Mr Jerry Ellis said Professor Parker would strengthen the senior executive of the university with his widely acknowledged ability as a distinguished academic, planner and administrator.

Deputy Vice-Chancellor (research)

Biotechnology leader and experienced research administrator **Professor Edwina Cornish** is set to join Monash as its new deputy vice-chancellor (research). Professor Cornish arrives at Monash in early 2004 from the University of Adelaide, where she was also deputy vice-chancellor (research). She is a former research and development director and managing director of Florigene Ltd, a plant biotechnology company that developed and successfully commercialised some of the world's first genetically modified plants.

Pro Vice-Chancellor

Family medicine expert and professor of general practice education at Monash **Professor Merilyn Liddell** took up the position of pro vice-chancellor at the university's Malaysia campus this year, replacing **Professor Bob Bignall**, who returned to Monash in Australia.

Faculty deans

Three new deans have been appointed at Monash during 2003.

Professor Tam Sridhar was named dean of the Faculty of Engineering. Previously, he was head of Chemical Engineering at Monash. Professor Sridhar was elected a fellow of the Australian Academy of Technological Sciences and Engineering in 1995, and in 2002 became only the second Monash engineer to be elected to the Australian Academy of Science.

In November, pioneering neuroscientist **Professor Edward Byrne** commenced his appointment as dean of Medicine, Nursing and Health Sciences. He was formerly director of the Centre for Neuroscience and professor of experimental neurology at the University of Melbourne.

Eminent criminologist **Professor Arie Freiberg** will take up his position as dean of the Faculty of Law in January 2004. Before his appointment, he was dean of the Faculty of Arts at the University of Melbourne. Professor Freiberg also spent 15 years at Monash from 1976 to 1990, rising from the rank of tutor to reader in law.

FAREWELL

Professor Darvall departs

After 33 years at Monash, vice-chancellor **Professor Peter Darvall** was given a warm farewell by colleagues in August.

After starting his academic career as a tutor in the Engineering faculty, he rose through the ranks to dean, then deputy vice-chancellor and finally to vice-chancellor.

Professor Darvall accepted the title of emeritus professor to maintain his connection with Monash after his retirement.

ACHIEVEMENTS

Four Monash Fulbrights

Four Monash academics and graduates were this year awarded Fulbright Scholarships to undertake research and further studies in the US.

Senior Fulbright Scholarships went to **Professor David Kinley**, director of the Castan Centre for Human Rights Law, and **Professor Gail Risbridger**, director of the Centre for Urological Research at Monash Institute of Reproduction and Development. Postgraduate Fulbright Scholarships were awarded to commerce and first class honours law graduate **Mr Danny Rosen**, and geography and environmental science graduate **Mr Elya Tagar**.

Professor Kinley will use his Fulbright Scholarship to research human rights and the global economy at Washington College of Law, the American University, Washington DC.

Professor Risbridger will continue her research at Columbia University, New York.

Policy analyst and government adviser Mr Rosen will pursue a masters degree in the US, and Mr Tagar will undertake a masters degree at Columbia University in international affairs with an emphasis on environmental policy.

First Berwick PhD

A thesis on the quality of Australia's ecotourism industry this year earned a Monash student the distinction of being the first PhD graduate at Berwick campus.

Dr Rosemary Black's thesis, 'Towards a model for tour guide certification: an analysis of the Australian Ecoguide Program', proposes a general model for tour guide certification in the industry, with the aim of improving the overall quality of the ecotourism experience.

Under construction: The Australian Synchrotron at Monash, being built at the Clayton campus.

MONASH REMEMBERS

Mural unveiled

In October, a tile mural was unveiled at Monash's Clayton campus in memory of the tragic shooting there one year before.

The unveiling was held on the anniversary of the shootings in which econometrics students **Mr William Wu** and **Mr Steven Chan** died.

Arts/law student **Ms Katherine Ryan**, above, conceived the idea for the mural and managed the production of the permanent display of more than 200 hand-painted tiles by students and staff.

INFRASTRUCTURE

Synchrotron successes

Work on the Australian Synchrotron at Monash University is well under way with excavators and other equipment preparing the site for the first phase of construction.

Construction company Thiess is designing and constructing the building to house the $206 million synchrotron, which is due for completion in 2007.

Monash postdoctoral fellow **Dr Bayden Wood** was one of six Australian scientists to this year receive a three-year Australian Synchrotron Research Program Fellowship. The fellowship will allow Dr Wood, a researcher at Monash's Centre for Biospectroscopy, to access overseas synchrotron facilities.

GRANTS

Support for projects

Research into better antibiotics and into new treatments for spinal fractures caused by osteoporosis were among the dozens of Monash projects funded by the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) this year.

Monash is leading two new ARC centres. One centre is developing intelligent machines that interact with their environment, and the other is focusing on understanding the genetic basis for infectious diseases in animals.

University scientists were also awarded two highly sought-after NHMRC program grants, worth $22 million, to investigate the role of bacteria in human disease and the molecular basis of several important degenerative diseases including dementia and arthritis.

LINKS

Monash and Tsinghua

Earlier this year, Monash entered a special arrangement with China's Tsinghua University to enable the two institutions to deliver postgraduate degree programs at each other's campuses.

The agreement was formalised at a signing ceremony at Monash in February between the then vice-chancellor, **Professor Peter Darvall**, and Tsinghua vice-president **Professor He Jiankun**.

The joint delivery of postgraduate degree programs will strengthen both Monash–Tsinghua academic cooperation and links between China and Australia.

All Rhodes lead to Monash again

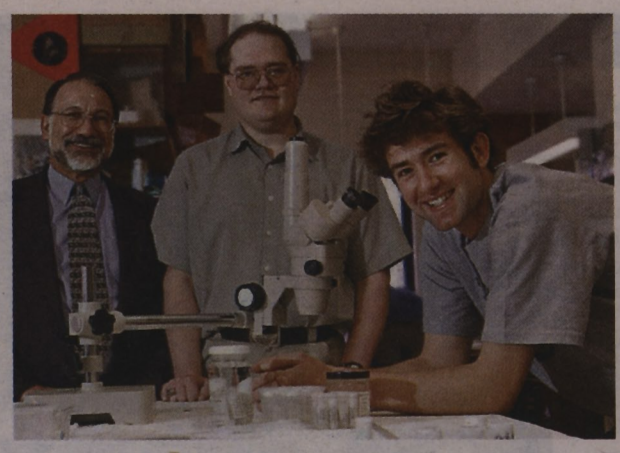
This year's Victorian Rhodes Scholar, Monash University biological sciences student Mr Lucas Bluff, has capped off a Rhodes Scholarship 'hat-trick' for the university. For the past three years, students from Monash have won the coveted opportunity to study at Oxford University.

Monash medical students Mr Nathan Grills and Ms Geraldine Buckingham were named the Victorian Rhodes Scholars for 2002 and 2003 respectively. The 2004 winner, Mr Bluff, who spent this year completing honours in evolutionary ecology as part of Monash's Science Scholar Program, will be studying for his PhD equivalent at Oxford next year.

"The significance of my win is just beginning to sink in," Mr Bluff said. "The opportunity to undertake doctoral research is great – that it will be at Oxford is better, and receiving the Rhodes tops it off.

"I'll be studying under Professor Alex Kacelnik, who heads the Behavioural Ecology Research Group. He has been tremendously helpful throughout the application process, so I'm glad to be able to pay him back with a few years of research.

"So far the plan is to study the rationality of animal decision-making in an evolutionary context, possibly focusing on European starlings and New Caledonian crows, the main models used by the group."



Bound for glory: Rhodes Scholar Mr Lucas Bluff (far right) with (from left) Science dean Professor Rob Norris and Dr Fred Govedich, School of Biological Sciences. **Photo: Greg Ford**

And while Mr Bluff is working towards a career in biology, he does have wider ambitions: "The successful co-existence of humans and nature requires an increased public awareness of science. I aspire to enhance this awareness."

He acknowledged the role of Monash's Biological Sciences school in contributing to his success, saying that the last four years of biology had been enjoyable because of the dedication of the academic, administrative and technical staff of the school.

"Most of my referees for the Rhodes were biologists, and there is no way I could have won it without their help. My study at Oxford will probably build on the work I've done at Monash, which demonstrates the quality of research in the school."

Monash Science dean Professor Rob Norris said Mr Bluff's win was a great boost for the core sciences, and particularly for biological sciences at Monash. "It's a privilege to have attracted and developed such a brilliant young man, with a flawless academic record, who's passionate about what he's doing," he said.

The Rhodes Scholarship is awarded each year to students aged between 18 and 25 who have high intellectual and academic ability, an interest and involvement in the community, leadership qualities and sporting achievements. It provides for study at Oxford University for two years, with the possibility of extending to a third year, and covers tuition fees, return airfares and living allowance.

– Michele Martin

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Schools

Change of Preference

A reminder to all students who recently finished Year 12 that the Change of Preference period is just around the corner. Once students have received their ENTERs, Monash is providing them with the opportunity to speak to faculty representatives at the university's Change of Preference Information Sessions.

The Gippsland region session will be held at the Edison Mission room, building 5N, Gippsland campus, on Tuesday 16 December from 3 pm to 6 pm.

The Metropolitan region session will be held at South One lecture theatre, building 64, Clayton campus, on Wednesday 17 December from 10 am to 2 pm.

For further information about Change of Preference at Monash University, visit www.monash.edu/cop/.

Christmas/New Year shutdown

Monash University will close over the Christmas/New Year period from Tuesday 23 December, and will re-open on Monday 5 January 2004.

Important dates for 2004

Students who are offered a place to study at Monash University in 2004 are reminded of the following important dates:

- Round one VTAC enrolments: 27 to 30 January.
- Orientation: 23 to 27 February.
- Semester one commences: 1 March.

Under the volcano

If you have ever wondered just how a volcano is formed and what goes on under the ground when one erupts, the latest Monash Science Centre exhibition will give you the answers.

Extreme Danger – The Science Behind Natural Disasters explains volcanoes, tsunamis, tornadoes, earthquakes, cyclones, floods, droughts and bushfires – all in the Australian context – by looking at their causes, mechanics and effects.

Exhibition curator Dr Corrie Williams (pictured) said the exhibition was developed in response to teacher demand and public interest in the power of natural forces.

The Monash Science Centre is open Mondays to Fridays from 10 am to 5 pm and Saturdays from 11 am to 5 pm. It is located at Monash's Clayton campus (building 74), with the best access from Normanby Road.

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Photo: Greg Ford

Call to abolish temporary protection visas

Researchers from Monash and Charles Sturt universities have called on the Federal Government to abolish the Temporary Protection Visa (TPV) system for dealing with 'unauthorised' refugees attempting to settle in Australia.

The call has been made in a recent study of the impact of the TPV regime on NSW providers of refugee settlement services including health and education.

Researchers Dr Sharon Pickering, of Monash's School of Political and Social Inquiry, and Dr Michael Gard and Ms Roslyn Richardson, of Charles Sturt's School of Human Movement Studies, found the regime created largely negative outcomes for both refugees and settlement service providers.

Since late 1999, refugees bypassing official immigration processes and arriving in Australia by boat from countries including Iraq, Afghanistan and Iran have been subject to TPVs. Dr Pickering said this means they face "relentless uncertainty" about how long they can stay here.

A TPV provides refugees with a limited range of the benefits awarded to Permanent Protection Visa holders, who are entitled to family reunions and the full range of settlement services.

Many TPV holders have not been able to access Commonwealth-funded education or health services and, while they are permitted to work, they have restricted access to Commonwealth-funded employment and training schemes.

"The impact of restricted services presents significant challenges for organisations working with refugees on TPVs, who are geographically concentrated in NSW," Dr Pickering said.

Based on interviews conducted with 44 people from 16 organisations, Dr Pickering, Dr Gard and Ms Richardson found life on a TPV presented obstacles including poverty, isolation, lack of education and English classes, and difficulty finding employment.

"Service providers roundly condemned the TPV regime," Dr Pickering said. "The overwhelming majority of workers reported feelings of frustration, hopelessness and distress when they reflected on working with refugees on temporary protection.

"The various pressures they pointed to were related to funding restrictions in working with these refugees and the impact of a policy that seeks to alienate and degrade one group of refugees.

"The TPV regime should be recognised as a purely punitive policy affecting a vulnerable and traumatised population and should be abolished," Dr Pickering said.

– Michele Martin

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Children draw their thoughts

What do children really think about the environment? And what can we learn about their innermost thoughts by studying their artwork? These questions were the focus of a recent seminar, presented by visiting Swedish educationalist Associate Professor Eva Alerby at Monash University's Peninsula campus.

At the invitation of the Education faculty, Dr Alerby discussed the findings of her studies of drawings by a group of young Swedes aged seven to 16 years. The study demonstrated the value of using drawings to reveal the children's thoughts about specific topics – thoughts that Dr Alerby believes can form the basis of worthwhile teaching and learning interactions.

The 109 study participants were asked to answer the question: 'What do you think about when you hear the word environment?' by making a drawing using paper and pencils, crayons or water-colours.

"They also had to reflect on their own thoughts, when I asked each person to tell me what he or she was thinking about when making the drawing," said Dr Alerby, who teaches at the Lulea University of Technology in Sweden.

Analysis of the drawings and comments revealed four major themes: the good world, the bad world, the conflict between those two worlds, and symbols and actions protecting the environment.

"Good world-themed drawings commonly portrayed the environment as clean, beautiful and idyllic, while drawings focusing on the bad world depicted various types of environmental destruction such as car exhaust fumes, factory discharges and litter."

Dr Alerby said about half the drawings fell into the good-world category, and these were more common among the youngest children and the girls, whereas bad-world drawings were more common among the boys. Drawings portraying the conflict between the good and bad worlds featured a combination of the two themes, often with one side of the paper depicting the good world, and the other side displaying the bad. These drawings were much more common among the older groups, and the boys.

"For instance, one boy's drawing showed a motorcycle and a pile of trash littering the ground on the bad side, contrasted with a bicycle and a trash can containing the litter on the good side," Dr Alerby said. "The final theme, of protecting the environment, was evident in drawings of different types of recycling stations so that products could be re-used. There were no major differences between the age and gender groups in relation to this theme."

– Michele Martin

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Any way you look at it: Dr Andrea Robinson and son Kane both benefit from the grant scheme.

Photo: Greg Ford

Women scientists' careers don't stall – thanks to baby grant

A senior lecturer in chemistry has become the first Monash University staff member to take advantage of the Faculty of Science's new grant scheme, designed to help female scientists maintain their career momentum while they have their family.

Dr Andrea Robinson of the School of Chemistry has taken up the faculty's $15,000 Populate and Publish grant, introduced in February to encourage female science academics to maintain their research programs during maternity leave.

Dr Robinson used the grant money to hire a senior research assistant during four months of combined maternity and annual leave. "It meant that while I was at home looking after my newborn son, my research projects were able to continue without interruption.

"I was in daily contact with the research assistant, who was able to run my research group, draft papers for publication and keep up with the day-to-day administration of the projects."

Dr Robinson heads a team that has ARC funding to examine the synthesis of new catalysts for application to chemical reactions. One of the applications of this chemistry is the development of pharmaceutical agents for the treatment and imaging of cancer.

"The grant made a huge difference. It meant that my research group of five PhD students, one masters student and one honours student was properly supervised without any drop in momentum. It also meant we were able to draft six papers for publication. I couldn't have carried anything like that workload on my own. Enlisting support was a really good use of the money," Dr Robinson said.

Science faculty dean Professor Rob Norris said the grant was one of several faculty initiatives aimed at retaining good female academic staff. "This grant allows our female academics to feel confident about having a family and advancing their careers," he said.

Dr Robinson has two children, aged two-and-a-half years and eight months.

– Ros White

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Bringing a rare book out of its shell

A fascination with shells and rare books has led a Monash palaeontologist into the world of popular publishing. Dr Jeffrey Stilwell (pictured), a research fellow in the School of Geosciences, has reproduced *The World's First Shell Collecting Guide from 1821*, also known as *John Mawe's The Voyager's Companion or Shell Collector's Pilot*.

Dr Stilwell's fascination with shells harks back to rural Indiana, where he discovered his great-great-grandfather had made a living collecting freshwater shells from the Tippecanoe River and selling them to a button factory. From this beginning, Dr Stilwell developed a keen research interest in fossil shells and how they can unlock the secrets of lost worlds, an interest that has taken him to remote corners of the globe.

While in a tiny Cambridge bookshop in 1995, Dr Stilwell found a beautifully produced 1821 edition of *The Shell Collector's Pilot*. Further hunting revealed an 1804 edition of the book, an 11-page pamphlet with a different title, held by the Mitchell Library, State Library of NSW.

Dr Stilwell has reproduced both editions of the rare book – a venture that found a ready publisher in The Western Australian Museum, which has its own shell experts and valuable shell collection. The result is a beautifully produced book that will please both collectors and those intrigued by the intrepid travels of 19th-century naturalists.

– Ros White

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Exhibition explores Australian tourism

Australian tourism is the theme of a new exhibition of rare books, posters and ephemera at the Sir Louis Matheson Library at Monash University's Clayton campus.

The items on display include books, travel guides, photographs and tourism promotional material published between the mid-19th century and the 1980s.

Monash rare books librarian Mr Richard Overell has put the exhibition together from the library's extensive collection of old and rare books.

Many of the exhibits contain descriptions of Australian life in the early days and the conditions faced by those who ventured here. Others, including the three-volume *Australia and New Zealand*, published in 1875, illustrate the tourism interests of the times with a description of adventuring and kangaroo hunting.

A Picturesque Atlas of Australia, published in three volumes in 1886, contains more than 800 wood engravings depicting historical scenes of discovery and exploration as well as contemporary settlements. Others reflect the early discovery of such modern tourism icons as the Blue Mountains, the Jenolan Caves and the Great Barrier Reef.

Posters and promotional pamphlets from the 1940s and 1950s show a growing sophistication in the use of graphic design and illustrate the impact of colour photography in tourism promotion.

"The exhibition is just a sample of what is contained on tourism in the Rare Book Collection," Mr Overell said. "It is fascinating, and it also provides a valuable insight into Australia's social history of that period and Australia's view of itself."

The exhibition runs until March 2004 and is open during library hours.

-- Ros White

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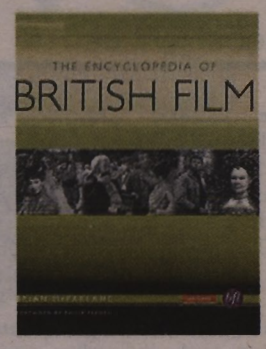
INPRINT

Encyclopedia of British Film

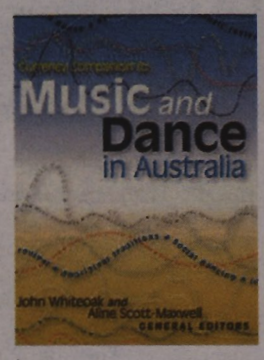


Edited by Brian McFarlane
Published by Methuen
RRP: $49.95

This first encyclopedia of British film presents facts and information from 1895 until 2003 – all the way from the films of the silent screen to the present day. It is a comprehensive reference book, a first port of call for anyone with an interest in British cinema.

With nearly 6000 entries over 774 pages, the book contains lists of stars and character players, directors and producers, cinematographers, composers, studio heads and agents, editors and writers, studios and companies, significant cinemas, costume designers and organisations and institutions. It also features photographs of several of the actors and directors it describes.

Associate Professor Brian McFarlane is an honorary research associate in the School of Literary, Visual and Performance Studies at Monash University.



Currency Companion to Music and Dance in Australia

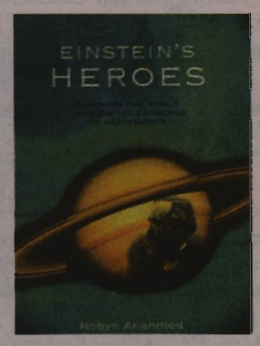
Edited by John Whiteoak and Aline Scott-Maxwell
Published by Currency House Inc.
RRP: $120

This 735-page reference book is the first truly comprehensive guide to the history of music and dance in Australia. It contains 370 articles from more than 270 contributors and a 14,000-word index covering entries from a capella to the zither and everything in between.
The editors, both respected musicologists with a special interest in the complex history of music and dance in Australia, also contributed several entries.

The book is unique in its recognition of cultural diversity and community from 1788 to the present. In keeping with the editors' policy of inclusiveness, the compendium includes not only mainstream works, but also a comprehensive section on Aboriginal traditions, references to immigrants' traditions, the origins of footy songs, and the adaptation of traditional Christmas music to suit a climate devoid of snow and reindeer.

Dr John Whiteoak and Dr Aline Scott-Maxwell are honorary research associates in the School of Music – Conservatorium at Monash University. Dr Scott-Maxwell is also senior Asian studies librarian at the Monash University Library.

Einstein's Heroes



By Robyn Arianrhod
Published by University of Queensland Press
RRP: $24

Einstein's Heroes, a combination of science, history and biography, takes the reader on a journey of discovery about the phenomenon of mathematics – humanity's universal language and one of its most amazing accomplishments.

The book revolves around the lives and work of the brilliant scientists who inspired Einstein, particularly James Clerk Maxwell, Michael Faraday and Isaac Newton.

The author describes mathematics as a magical language of prophecy that allows us to describe things we cannot yet see or even imagine.

Dr Robyn Arianrhod teaches mathematics in the Science faculty's School of Mathematical Sciences at Monash University.

POSTscript

Two leaders in obstetrics and gynaecology have co-authored a new textbook for students and health professionals.

Obstetrics, Gynaecology and Women's Health, published by Cambridge University Press (RRP $89.95), is written by Dr Vivienne O'Connor and Professor Gabor Kovacs. Professor Kovacs is professor of obstetrics and gynaecology at Monash University and medical director of Monash IVF. He is also one of the world's leading IVF clinicians and researchers. Dr O'Connor is a senior lecturer in obstetrics and gynaecology at the University of Queensland.

The book is essential reading for students of obstetrics, gynaecology and women's health. It covers clinical topics and surgical procedures and provides detailed commentary on the contemporary social, psychological and economic issues that affect women's health.

If you are a member of the Monash community and have a forthcoming book, contact media@adm.monash.edu.au.

Books featured in 'Inprint' are available or can be ordered at Monash's four on-campus bookshops.
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• Gippsland +61 3 5122 1771 • Peninsula +61 3 9783 6932
www.monash.edu.au

Predicting our volcanic future

Geosciences

The volcanic province stretching from Melbourne to Mount Gambier is being studied by Monash University scientists who hope to predict the severity of future volcanic eruptions in the area.

The province has been erupting for the past 4.5 million years, said Professor Ray Cas from the School of Geosciences. "The last eruption was at Mount Gambier about 4500 years ago, and given the 4.5 million year life span of the province there's every likelihood there will be an eruption in the future," he said.

Professor Cas and masters researcher Mr Andrew Cheesman are focusing their attention on the Red Rock Volcanic Centre near Colac in western Victoria because the site is home to clusters of scoria cones and large open craters, called maar craters.

"The style of volcanic activity that produces the craters is quite different to that which produces the cones," Professor Cas said.

Mr Cheesman is investigating why the eruption styles of the Red Rock volcanoes have varied between crater forming and cone forming. "If we can determine why the eruption styles of the volcanoes have differed in the past, we might be able to predict the type of eruption that will occur in future and its accompanying hazards," he said.

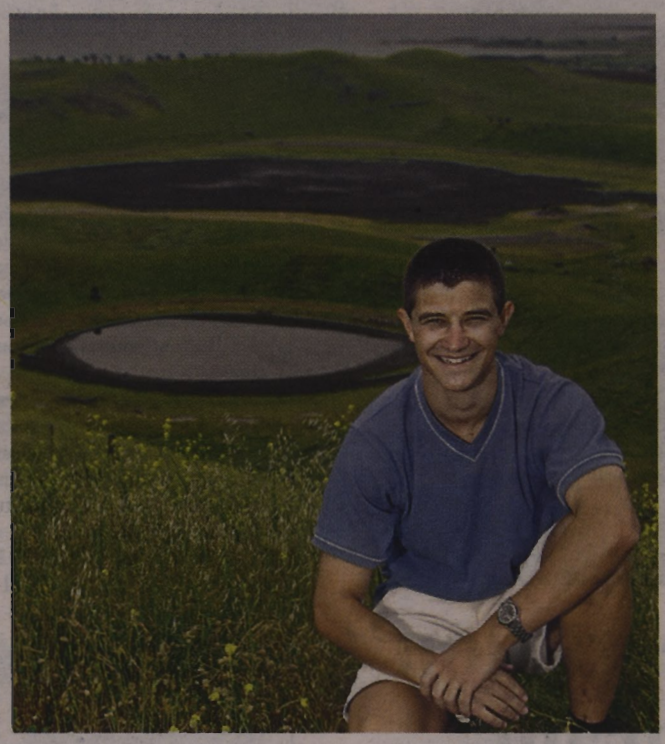
Maar craters are produced by the interaction between magma rising through the earth's crust and water in subsurface aquifers.

"The water undergoes an instantaneous conversion to steam when it comes into contact with the rising magma," Mr Cheesman said. "The expansion that accompanies this change causes a large increase in pressure and the overlying rocks are explosively ejected, producing a maar crater."

The volcanic eruptions that produce scoria cones are driven entirely by volatiles dissolved in the rising magma such as water and carbon dioxide. There are two main ideas of how the cones formed.

One is that during an extended phase of maar formation, the groundwater in the aquifer is used up, and the eruption is driven entirely by whatever volatile content the rising magma might have. The other is that the fractures through which the magma rises to the surface are lined with magma, which solidifies and stops the groundwater from coming into contact with the rising magma.

Mr Cheesman has been studying the rock layers around Red Rock for clues on how the cones formed.



Volcanic mysteries: Mr Andrew Cheesman in front of a volcanic crater lake at Red Rock Volcanic Centre near Colac.

"A gradational change between the layers would suggest there was a progressive drying up of the aquifer," he said. "A sharp and sudden change would suggest the conduit became lined with magma, which stopped the water from getting through."

Professor Cas said determining how the cones formed would help predict whether future eruptions would be cone or crater forming and how damaging they might be to human life and the landscape.

"The lava/groundwater interaction produces a phenomenon called base surges, where steam and ash flow along the ground for several kilometres, killing animals, destroying buildings and threatening human life," he said. "The process of cone formation is a more steady state eruption style that produces a rising column above the vent. You get ash and scoria on the landscape, and although it causes damage, it is not as life-threatening.

"We can't predict where or when the next volcano might come up. But we hope, in future, to at least be able to alert people as to how severe its eruption might be."

– Penny Fannin

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The home fires that warmed America

Climate

The North American continent has been warmed by the burning of fossil fuels over the past 50 years, according to a collaborative study by a Monash University researcher and colleagues in the US and UK.

Previous studies of the causes of 20th-century warming have mostly concentrated on global-scale patterns of climate change, because the amount of warming caused by human activities is harder to detect over smaller areas.

But Dr Karl Braganza, a postdoctoral research fellow in Monash's Centre for Dynamical Meteorology and Oceanography, and climate scientists from the US and UK have developed a statistical technique that compares the impact of human activities on regional climate to climate change due to natural variability.

They used the technique to examine whether the temperatures that have been recorded in the US and Canada over the past 100 years were human-induced or due to natural climatic variation. The research was published last month in the international journal *Science*.

"Most of the observed global-scale warming over the past 50 years is believed to have been due to an increase in atmospheric greenhouse gas concentrations," Dr Braganza said. " We, along with other climate research groups, responded to a call from the Intergovernmental Panel on Climate Change to investigate the causes of regional climate change."

North America was studied because good-quality data on average surface temperatures was available from the years 1881 to 1999.

"Over the past 100 years, it has been observed that in North America there has been not only a change in average temperatures but also changes in the temperature contrast between land and ocean, faster warming at higher latitudes and faster warming of night-time minimum temperatures over daytime maximum temperatures," Dr Braganza said.

"For each of these factors we compared the observed temperature changes to the temperatures predicted by five different climate models. The models predicted what would have happened to the climate given natural variation and also the impact greenhouse gas concentrations might have had on climate."

Even factoring in temperature changes caused by solar radiation and volcanic activity, Dr Braganza's statistical analyses indicated that the North American climate change between 1950 and 1999 was most likely due to human activities that have increased greenhouse gases through the burning of fossil fuels.

"In contrast, during the first half of the century, observed warming in North America was most likely the result of a combination of human-induced and natural variations in climate," Dr Braganza said.

A statistical analysis has begun on whether human activities have affected Australian temperatures.

– Penny Fannin

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Preventing panic the online way

Psychology

Monash researchers have developed a way to deliver a proven therapy for Australia's thousands of panic sufferers, using the internet.

Panic disorder, which affects just over one in 50 Australians, can be effectively treated using Cognitive Behavioural Therapy (CBT) in face-to-face sessions with a psychologist. But personal CBT sessions are unattainable for many people in regional areas with panic disorder, or for people who cannot afford ongoing psychological services.

Panic disorder is characterised by unexpected panic attacks and worry about these attacks. CBT for panic disorder involves providing information about panic and anxiety, breathing re-training, guidance in modifying certain thoughts and gradual exposure to feared panic sensations. It is typically administered during face-to-face meetings with a psychologist.

Professor Jeffrey Richards from the School of Primary Health Care and Dr Britt Klein, Dr Marlies Alvarenga and Mr David Austin from the Department of General Practice have spent the past five years developing an online version of CBT for panic disorder and agoraphobia, named *Panic Online*.

Panic Online includes a diagnostic assessment and incorporates well-established CBT techniques to help sufferers overcome their fears.

Professor Richards said research had shown that *Panic Online* was highly effective, proving better than other self-help procedures, including a self-help manual and basic information about panic and anxiety.

Several research studies have found CBT to be a highly effective form of therapy for people with panic disorder, with 75 to 95 per cent of sufferers panic-free after three months of treatment. The Monash research team is now conducting a study to compare *Panic Online* with face-to-face CBT and medication known to alleviate panic disorder.

"If *Panic Online* is found to be as beneficial as these established best practice therapies, then we can confidently recommend it to people who are unable or disinclined to enter face-to-face therapy," Professor Richards said.

Participants in the study take part in an interview to determine their eligibility, and then complete 12 weeks of therapy involving either *Panic Online* or face-to-face CBT with a psychologist, or medication administered by a psychiatrist.

People who are interested in the study should visit *Panic Online* at www.monash.edu.au/mentalhealth/paniconline or contact Ms Nelum Selgado on +61 3 8575 2245.

– Penny Fannin

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