



**New role:** Recently appointed vice-chancellor Professor Peter Darvall talks with biochemistry honours student Ms Sweechin Ling, left, from Malaysia, and third-year computer science student Mr Mark Pilcher, from South Africa. Photo Greg Ford.

## Research and teaching to the fore: new VC

The quality of teaching and research will be the top priorities of the new vice-chancellor of Monash University, Professor Peter Darvall.

Announcing the appointment recently, Monash University Council expressed its delight in Professor Darvall's acceptance of the challenging role and noted his respect among the wider Monash community.

"His understanding of Monash and the path it is on, and the widespread support he enjoys across the university, are among his many qualifications for the role," Council said in a statement.

Professor Darvall (pictured) joined Monash in 1970 as a lecturer in civil engineering, becoming dean of Engineering in 1988 and deputy vice-chancellor (Research and

Development) in 1993. He has degrees from Melbourne, Ohio State and Princeton universities.

Professor Darvall told all Monash staff in an email that he was honoured to serve them as vice-chancellor at such an important time in the university's history.

"The last month has been a testing time. Recent events were traumatic, but will in time be seen as a small hiccup in the life of a prestigious and spirited university. The university will come out of it better and stronger, I believe, with its core values reinforced," Professor Darvall wrote.

During his term as vice-chancellor, which will last until a longer-term appointment is made, Professor Darvall said he would

continue to emphasise the elements that had given Monash its reputation.

"Every day our research makes important contributions to the community in all manner of fields. Every day our students move through important stages in their professional and personal development under our guidance," he wrote.

"Every day we provide all kinds of services which enrich national life. Every day the reputation of Monash grows as a great Australian institution, as our 150,000 graduates make their mark.

"The university is all of us. We can be enormously proud of what has been achieved in just forty years, and confident in moving forward to reach our ambitious goals within Australia and beyond."

## Enzyme findings raise hopes for bone diseases

Monash University researchers have identified two basic mechanisms that control the level of calcium deposition in bones and joints, a finding that could lead to treatments for osteoporosis and some forms of arthritis.

Professor James Goding and Mr Adnan Sali from the Department of Pathology and Immunology, in collaboration with researchers in San Diego, California, have discovered that the enzymes PC1 and alkaline phosphatase – which are found in bone and cartilage – are involved in controlling bone density.

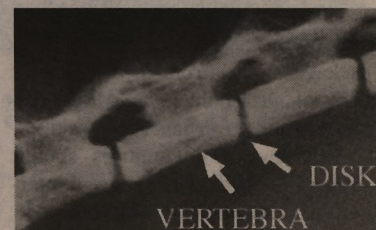
In conjunction with pharmaceutical company Pfizer, the researchers are testing thousands of compounds to find potential drugs that interfere with these enzymes and which could be useful in treating some forms of arthritis. Improved understanding of the enzymes could also lead to better treatments for osteoporosis, Professor Goding said.

Investigations into the enzymes began with collaboration between Professor Goding and Mr Sali with Professor Robert Terkeltaub from the University of California at San Diego. Their research showed that high levels of the PC1 enzyme caused abnormal calcification of cartilage, leading to a condition similar to osteoarthritis.

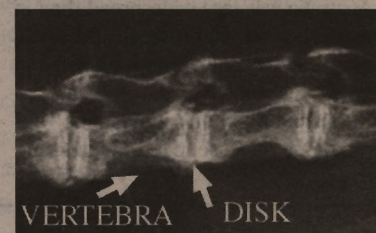
To find out more about the PC1 enzyme, Professor Goding and Mr Sali studied mice in which the gene for the PC1 enzyme was removed.

"The first thing we noticed was that the mice could not curl their fingers and toes because they developed a kind of arthritis," Professor Goding said. "When we x-rayed the mice, we found abnormal calcium deposits in and around the joints, and their vertebrae were osteoporotic. Our work showed that both over-production and under-production of PC1 led to faulty calcification."

At about the same time, Professor Jose Luis Millan of the Burnham Institute in San Diego was studying



**Healthy:** The spine of a mouse with the PC1 gene which controls bone density.



**Diseased:** The spine of a mouse which lacks the PC1 gene will stiffen due to too much calcium.

mutations in the alkaline phosphatase gene, which causes a condition known as hypophosphatasia where bones are soft and can spontaneously fracture. He showed that mice that lacked the gene for alkaline phosphatase lived only a week after birth and had severe abnormalities in their bones.

The three groups then teamed up to study 'double knockout' mice in which both the PC1 and alkaline phosphatase genes were missing. Their results were published in the *Proceedings of the National Academy of Sciences USA* in July.

Mice that lacked both genes had less severe problems and lived longer than if just the alkaline phosphatase gene was knocked out, Professor Goding said.

The work showed that bone abnormalities caused by the lack of alkaline phosphatase could be counterbalanced by the removal of the PC1 gene and vice versa, and that normal bone

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# Corporate governance threatened by bad trends, ASIC chairman warns

Some current "pernicious and endemic" trends in corporate governance in Australia are threatening its viability, warned the chairman of the Australian Securities and Investments Commission, Mr David Knott, recently.

Speaking at the launch of the new Monash Governance Research Unit (MGRU) at Parliament House, Mr Knott said a new outbreak of corporate greed, a failure by boards to put a brake on excessive and structurally unsound remuneration practices, and a focus by management and boards on short-term payoffs were threatening good corporate governance in Australia.

"The disproportionate inclusion of options in a CEO's remuneration package is an affront to the general body of shareholders and to principles of good governance," he said.

"All developed countries should support the urgent adoption of international accounting standards to show such options as an expense in company accounts."

Evidence suggested the degree of decline in corporate governance in Australia was less widespread than in America, Mr Knott said. However, good corporate governance needed to be viewed not as a fad or a mantra to be invoked when convenient, but rather as an essential and enduring



ASIC chairman Mr David Knott spoke at the launch of the new Monash Governance Research Unit. Photo Joe Mann.

component of any sound economic and regulatory system.

Mr Knott said Monash "had got its timing right" in establishing the new research unit, which will seek to identify how corporations are governed in Australia.

The centre will aim to develop a comprehensive index that will help

identify risk factors, improve transparency and accountability of institutions, assist in policy development and address issues of corporate social responsibility.

MGRU co-director Dr Ken Coghill, from Monash University's Faculty of Business and Economics, said poor corporate governance affected global economies, corporate performance, trade, social development and political stability.

"We must research and reform those areas of national governance that undermine our social and economic development," he said.

"Our research will be invaluable to design improved systems and interaction between government, business and the community, which will lead to better policies and services that may help prevent the situations we have seen recently with the collapse of multinationals like Worldcom, HIH and Enron."

The MGRU was opened by Monash chancellor Mr Jerry Ellis in the presence of dean of Business and Economics Professor Gill Palmer and leading figures from education, government and the business community.

Fiona Perry

## New professor to promote an understanding of Islamic finance

Monash University Malaysia is hoping to carve a niche in the field of Islamic finance and capital markets with its research into the banking sector.

Newly appointed professor and chair of accounting and finance at Monash Malaysia Professor Bala Shanmugam has helped establish the research project which will examine the role of the Islamic financial system in Malaysia and its relationship to similar systems in other Islamic countries.

Professor Shanmugam said that unlike conventional banking where interest rates formed the basis of pricing models, Islamic banking started off as a humanitarian-based service.

"In the early days of Islam, the dominant form of finance consisted of a partnership between lender and borrower based on the fair sharing of both profits and losses. Interest payment and interest charges are forbidden," he said.

"Another distinctive feature of Islamic banking is its focus on developmental and social goals. Profit-and-loss sharing, with its focus on cash-poor but promising entrepreneurs, holds more economic potential than

conventional, collateral-based lending, which favours established businesses.

"Islamic banking is essentially a marriage between capitalism and charity. Its concept of 'capitalism with a big heart' is what appeals to the customers."

The system was 'invented' more than 1500 years ago when the Holy Quran was revealed but became more widespread about 30 years ago.

Professor Shanmugam said that because of its success in creating an Islamic financial system that was stable and feasible, Malaysia had been looked upon as a model for other Muslim countries.

But, he said, the system in Malaysia still had "room for improvement".

Professor Shanmugam said Monash's Banking and Finance Unit, which had considerable research and development expertise in Islamic banking, could make significant contributions towards developing, organising and implementing new and viable financial products.

He said the research project aimed to promote an understanding of the Islamic financial system and its operations through research publications,

conferences, seminars and training programs.

It will also determine the effectiveness of the Islamic banking and capital markets and identify any weaknesses and limitations.

Professor Shanmugam, who will lead the research team comprising senior researchers from Monash University, Universiti Brunei Darussalam, Universiti Multimedia Malaysia and other research institutions, will look into specific areas within Islamic banking with an emphasis on e-banking and the development of new financial instruments.

"I'll be looking into areas like e-banking, which is currently not available within the local Islamic banking system, as well as the introduction of new products and making existing financial instruments more commercially attractive to the clients while ensuring they maintain their Islamic features," he said.

"I am also looking into constructing pricing models for innovative Islamic financial instruments without using interest rates as the base."

Islamic banking is globally accepted as an important and viable financial system, with more than US\$200 billion being managed by Islamic financial institutions.

It is widespread in most Islamic nations and can exist on its own, as it does in Iran and Pakistan, or can co-exist with conventional banking systems as it does in Malaysia.

Rahmah Daud

## IN BRIEF

### International centre launched

A new hub for Monash's international activities has opened at the university's Clayton campus.

The Monash University International Centre, a modern three-storey structure fronting Wellington Road, will be home to about 800 students from Monash College, the Office of International Development, the international marketing and recruitment units for the IT faculty, the associate dean (International) for Information Technology, Dr Robin Pollard, and the associate dean for Business and Economics, Professor Rob Willis.

The new centre will also house the Monash University English Language Centre.

Speaking at the centre's official opening, executive director, International, Mr Tony Pollock said the centre reflected the university's commitment to global development.

### Printing lab opens at Monash

A new \$2 million technical and research facility at Monash University's Clayton campus will help serve as a troubleshooter for more than 6000 large and small printing companies in Australia.

The National Printing Laboratory is the first government and industry-sponsored facility designed to support Australia's printing and packaging industries, providing state-of-the-art testing and research facilities.

The facility is a joint venture between the Victorian Government,

Monash University and industry partners including Note Printing Australia, Australian Paper, Norske-Skog, Visy, Amcor, Toyo and SICPA.

### Indonesia Sultan welcomed

Monash University has celebrated its relationship with Gajah Mada University with a visit by the Governor of the Indonesian Province of Yogyakarta, His Highness Sri Sultan Hamengkubuwono X.

At a reception held at the Clayton campus recently, the Sultan launched a new Javanese-English dictionary, co-produced by Monash honorary research fellow Dr Stuart Robson and Indonesian academic Mr Singgih Wibisono.

### Rural medicine in the city

The Gippsland-based Monash School of Rural Health now has a permanent home in metropolitan Melbourne.

The school, which was opened at the university's Clayton campus, will provide meeting facilities for visiting rural academics, computer facilities and a meeting place for rural undergraduate and postgraduate students.

It will also act as the headquarters for WILDFIRE, the Monash Rural Students Practice Association.

The School of Rural health is one of seven schools within the Faculty of Medicine, Nursing and Health Sciences.

It has regional clinical schools at Gippsland, East Gippsland, Bendigo and Mildura and an office of the head of school at Traralgon.



## Art unveiling marks NAIDOC Week

A new Indigenous art acquisition was unveiled recently at Monash University's Centre for Australian Indigenous Studies as part of celebrations for NAIDOC Week. The painting, 'Kaapay ... Kuyan (2000)', by Ms Rosella Namok, was purchased jointly by the Monash University Collection and the centre. Pictured at the unveiling were, from left, Monash University Museum of Art director Ms Jenepher Duncan, Boonerwung elder Ms Carolyn Briggs and centre director Professor Lynette Russell. Ms Namok is a member of the Lockhart River Art Gang, a group of Aboriginal artists from Far North Queensland, which has developed a reputation for taking Aboriginal art in a fresh direction, linking the traditional with the modern. Photo Peter Anikijenko.

## Enzyme findings raise hopes for bone disease treatments

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development required a balance between the actions of these enzymes.

"Our research has improved our basic understanding of bone calcification. In the long term, this understanding of the PC1 and alkaline phosphatase enzymes may lead to improved treatments for diseases such as osteoporosis and some forms of arthritis," Professor Goding said.

"Our findings could also help children with the rare genetic disease

hypophosphatasia, as they have deficient mineralisation of their bones, which means the bones are fragile and break easily. The fact that knocking out PC1 partially corrects hypophosphatasia in mice means drugs that inhibit PC1 might help children with this disorder."

The National Health and Medical Research Council and Pfizer funded the research.

Penny Fannin

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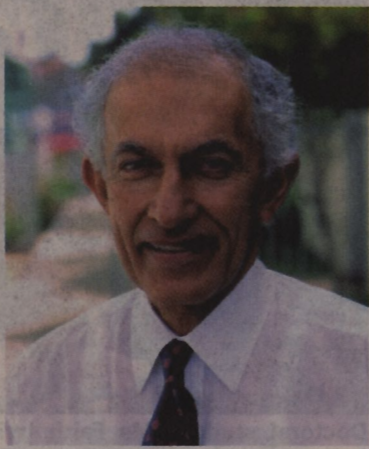
# Men's health expert takes on leading role at IRD

World-renowned reproductive biologist Professor David de Kretser has taken up the directorship of Monash University's Institute of Reproduction and Development (IRD).

Professor de Kretser has spent the past year coordinating the university's biotechnology strategies in his position as associate dean of biotechnology development in the Faculty of Medicine, Nursing and Health Sciences and has further advanced the development of the Monash Institutes of Health in his role as executive chairman.

In collaboration with Professor Alan Trounson and other colleagues, Professor de Kretser has been instrumental in securing federal funding for two major research facilities at the university – the \$5.5 million National Centre for Advanced Cell Engineering and Australia's first Biotechnology Centre of Excellence, the \$43.5 million Centre for Stem Cells and Tissue Repair.

He has returned to IRD at the invitation of the dean of Medicine, Nursing and Health Sciences Professor Nick Saunders and will replace present director Professor Alan Trounson, who will lead the new Centre for Stem Cells and Tissue Repair.



Professor de Kretser was the founding director of IRD and held the position until the end of 2001.

His reputation in the medical and scientific community as a world expert in men's reproductive health and his position as head of the federal government's Andrology Australia program, which aims to improve knowledge of male reproductive health, will be an invaluable addition to the institute.

Since its beginnings in 1991, IRD has grown from around 70 dedicated researchers into a thriving community

of more than 200 scientists and graduate students.

Professor de Kretser said IRD would maintain links with the stem cell centre while continuing its excellent research into prostate disease, male infertility, the mechanisms behind the disorders of prematurely-born children and functional genomics, where the role of genes in human disease are identified so that treatments can be found.

"This is an exciting time for the institute as our researchers continue to make significant progress in each of these fields," Professor de Kretser said. "For example, at the Centre for Molecular Reproduction and Endocrinology, researchers are focused on determining the causes of male infertility and developing diagnostic tests. The centre's insights into male reproduction are forming the basis for the development of novel, safe and reversible contraceptives and therapies.

There were also interesting challenges ahead for IRD as it joins with other institutes to form the Monash Health Research Precinct at the Monash Medical Centre and enters detailed planning for a new building at that site, Professor de Kretser said.

# Flood of insects changes the outlook on forest management

A Monash University study of the Murray River floodplain, the first to document the effects of river regulation on land invertebrates, has demonstrated that when river red gum forests flood, the number and diversity of insects and spiders increases.

Ms Andrea Ballinger, a PhD student at the Australian Centre for Biodiversity in the School of Biological Sciences, has studied invertebrates that live among the river red gums of the Barmah Forest and has found a flood-adapted species of ground beetles and wolf spiders that had previously not been seen in the area.

The presence of these species and their importance to the area's ecology indicate that they should be considered when authorities look at how water is allocated, Ms Ballinger said.

"It's crucial that we know what's happening to the invertebrates because they are food for small mammals and insect-eating birds," she said. "Invertebrates also play a very important role in the processing of nutrients and represent the vast majority of biodiversity."

Ms Ballinger's research is part of a larger program being overseen by Dr Ralph MacNally and Professor Sam Lake in which scientists are looking at the impacts on animals of changing the flood regimes and removing logs from the red gum forests.

The Murray-Darling Basin Commission and the Cooperative Research Centre for Freshwater Ecology have funded her research.

The Murray River was first dammed in 1934, substantially altering natural flood patterns. Logging of the river red gums that dominate the floodplain has also changed the ecology of the area.

"Damming of the rivers and redirection of water to irrigators has disrupted the natural flooding patterns," Ms Ballinger said.

"The area floods much less frequently than it used to, and the

duration and the seasonality of the flooding has also changed. In recent years, river managers have become more aware of the importance of 'environmental flows', which are releases of water from dams intended to meet environmental needs.

"In summer 2001, Barmah Forest received its second-ever environmental water allocation, resulting in a 20-year-high flood," she said. "The response of the invertebrate fauna was dramatic. As the flood waters receded, the aquatic bugs were stranded and formed a 'prey soup'. Then all these ground beetles and wolf spiders that hadn't been recorded there before moved in. They hunted along the edge of the water and

thrived on the invertebrates in the prey soup.

"This year, there was less flooding and we didn't get the specialised species coming in. The implication of this is that under the natural conditions before damming, all these specialised floodplain fauna would have been provided for, but now that there's no flooding you're potentially threatening these species."

Ms Ballinger said her research, coupled with European findings that river regulation has dramatic effects on the structure of invertebrate communities, made it clear that management of the Murray River floodplain should be reviewed.

Penny Fannin



PhD student Ms Andrea Ballinger is studying the effects of flooding on land invertebrates. Photo: Peter Anikijenko.



## London centre launched

At the recent launch of the Monash University Centre in London were Australian High Commissioner to the United Kingdom Mr Michael L'Estrange (pictured above, middle), Monash dean of Law Professor Stephen Parker (right) and King's College principal Professor Arthur Lucas (left). Monash deputy chancellor Dr June Hearn opened the centre on 10 July in a ceremony held at Australia House. Centre director Professor Merran Evans and Monash deputy vice-chancellor (Academic and Planning) Professor Alan Lindsay were also in attendance. Monash showcased its expertise in the sciences, sport and international education during a week-long series of seminars and events marking the opening of the centre. Located on the Strand opposite the Australian High Commission, the centre will develop links with governments, educational and cultural institutions and industry in the UK and Europe.

## Monash shares in \$40m infrastructure grants

Monash University is a partner in 10 of the 16 consortia that were awarded Science, Technology and Innovation Infrastructure grants by Victorian Minister for Innovation Mr John Brumby recently.

The grants will be used to build world-class facilities that will enhance Victoria's involvement in nanotechnology, materials manufacturing, drug and vaccine development, oral health and mathematical sciences.

Monash will share in \$42.55 million of the \$59 million the state government has made available for round two of the infrastructure grants.

The university will lead two of the consortia – Nanotechnology Victoria, which received funding of \$12 million, and the Centre for Pre-Clinical Drug Candidate Optimisation, which received \$4 million – and will be a partner in eight others.

Vice-chancellor Professor Peter Darvall said the grants were a wonderful result for Monash and its partners.

"This demonstrates once again the strength of Monash University across a range of sciences. It's wonderful to see our champions are out there doing better than ever," he said.

Director of Nanotechnology Victoria Professor Barry Muddle, from Monash's School of Physics and Materials Engineering, said the project would consolidate and grow the research base for nanotechnology in Victoria, particularly its interface with the biotechnology community.

"The three areas where Nanotechnology Victoria will contribute most are materials and sensing

devices for biodiagnostics, drug delivery and tissue therapy," he said.

"For tissue therapy, there will be a lot of emphasis on the development of substrates and scaffolding for tissue engineering."

The Centre for Pre-Clinical Drug Candidate Optimisation will fill the critical gap that falls between drug discovery and drug development, said the centre's associate director, Dr Susan Charman, from the university's Department of Pharmaceutics.

The Australian Sustainable Industry Research Centre (ASIRC) received a grant of \$2.4 million and will be established at Monash's Gippsland campus.

The ASIRC will provide Victorian industry and communities with solutions to the management of waste products.

Monash University researchers are also partners in:

- Clinical Trials Victoria, which received a grant of \$8 million.
- Victorian Centre for Advanced Materials Manufacturing, \$5 million.
- Victorian Institute for Chemical Science, \$5 million.
- Victorian Centre for Oral Health Science, \$3.5 million.
- The Virtual Reality Observatory of Melbourne, \$1.3 million.
- Australian Mathematical Sciences Institute, \$1 million.
- Centre for Education and Research in Environmental Strategies, \$350,000.

Penny Fannin

# New approach to Indigenous education

An innovative cross-cultural development program designed by a Monash Education doctoral student is helping Victorian teachers improve their teaching of Indigenous people and issues.

Ms Faith Irving, who is also a primary school teacher, developed the Koorie Education Awareness Project (KEAP) to encourage non-Indigenous teachers to work with Indigenous mentors and help them develop the skills to teach Indigenous studies programs appropriate to the local area.

Ms Irving said the program would provide a state-wide network of non-Indigenous and Indigenous Victorian educators to give students across the state the opportunity to learn about

Indigenous heritage and contemporary culture.

"Instead of just looking through a few outdated books, teachers will now be able to draw on the mentoring system to develop something relevant for students," she said.

Ms Irving said extensive consultation with Indigenous educators and organisations was the hallmark of the program, a Teacher Release to Industry Program, which is being funded by the Department of Education and Training and supported by the Victorian Employers' Chamber of Commerce and Industry.

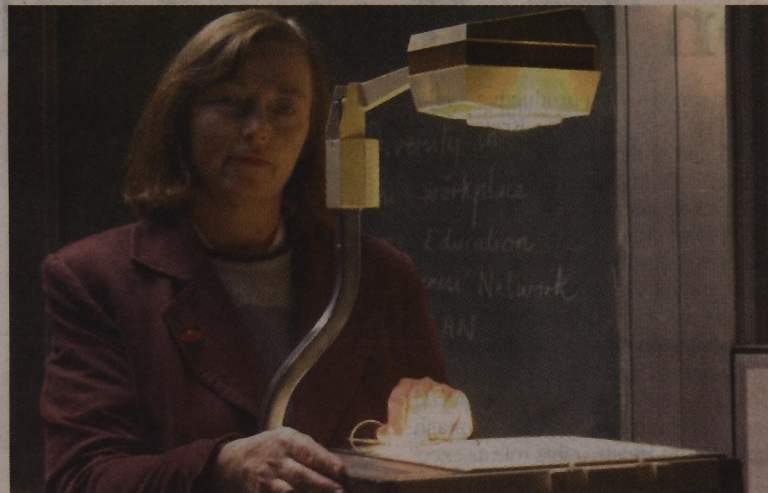
"It's a grassroots collaboration between Indigenous and non-Indigenous teachers, using the channels of protocol and communication

in a respectful, efficient and effective way."

She said a lack of factual information and understanding in the wider community had resulted in unhelpful stereotypes and inaccuracies, with non-Indigenous people often lacking the cultural knowledge to counter their preconceptions.

"A key feature of KEAP is the promotion of cultural awareness training for teachers. What happens in the classroom is going to affect the ability of those children to work in a multicultural work environment, and also in a wider context, in the way we treat each other as human beings."

Konrad Marshall



Doctoral student Ms Faith Irving is improving the teaching of Indigenous people and issues. Photo Peter Anikijenko.

## Schools

### International Application Day

An International Application Day will be held at the Monash University International Centre, Clayton campus, on Saturday 31 August from 10 am to 4 pm.

International Application Day is aimed at international students who are currently living in Australia and who want to study at Monash University.

Students can obtain information about faculties, campuses and courses and, if they apply on the day, Monash will waive the \$50 application fee.

For event information, contact Monash International on +61 3 9905 8311 or visit [www.monash.edu.au/intoff/appday](http://www.monash.edu.au/intoff/appday).

### Engineering information evening

Monash University's Engineering faculty will hold an information evening on Wednesday 4 September at 7.30 pm in lecture theatre C1, building 63, Clayton campus.

Year 10, 11 and 12 students are invited to attend the session, which will provide information on engineering courses and career options.

Speakers will include Engineering dean Professor Mike Brisk, a current engineering student and an engineering graduate. Students will also be able to talk with departmental advisers about course options, prerequisites, double degrees and employment opportunities.

Information on the faculty's range of student support initiatives will also be available, and the program will include a tour through key teaching, laboratory and research facilities.

For more information or to RSVP go to [www.eng.monash.edu.au/dean/business/marketing/news\\_events/events/Information\\_Evening.html](http://www.eng.monash.edu.au/dean/business/marketing/news_events/events/Information_Evening.html) or visit the Engineering web page at [www.eng.monash.edu.au](http://www.eng.monash.edu.au) and follow the links under 'News and events'.

### Business and Economics brochures

The *Monash Faculty of Business and Economics Schools Kit* is now available and has been posted to all schools.

To receive additional copies of the kit or any of the brochures enclosed, contact Ms Lynne Macdonald, on +61 3 9903 1465 or email [lynne.macdonald@buseco.monash.edu.au](mailto:lynne.macdonald@buseco.monash.edu.au).

### Experience Monash

The Experience Monash program will be held at Peninsula campus on 2 October, at Clayton campus on 3 October and at Caulfield campus on 4 October.

The program, for Year 10 and 11 students, provides them with a unique opportunity to gain an insight into the many areas of study at Monash University.

Students can choose from a series of practical sessions which will introduce them to different academic areas and will gain an overview of the social and support services, such as accommodation, finance and sports, available at the university.

For further information, go to [www.monash.edu.au/psa/programs](http://www.monash.edu.au/psa/programs).

A full program and booking forms will be sent to all schools in August.

## Take a journey through two centuries of English literature

A collection of books dating as far back as the 1600s and providing a journey through more than two centuries of English writing is currently on display in the rare books section of the Matheson Library at Monash's Clayton campus.

On display until the end of December, *English Literature to 1800* provides the rare opportunity to see copies of major works by English writers, as they would have appeared to a contemporary audience. More than 100 early volumes are on display.

According to rare books librarian Mr Richard Overell, the works on

show cover a wide variety of subjects and include religious texts, sheet music, political satires and even 18th century pornography.

"People today often talk about those who lived in past eras as if they were children, but this exhibition includes many well-written and intelligent works that deal with some very sophisticated subjects," he said.

"The satires in particular show a culture that was very concerned with current events, and the satirical books and political poems illustrate the wit, insight and craft of many long-dead authors."

According to Mr Overell, satire was not only used to attack the political figures of the day. One well-known poet, Alexander Pope, became famous for using his writing to criticise his estranged friends, he said.

"Pope was one of the most successful writers of the 18th century, but he is also well known for his literary attack of former friend and fellow poet Lady Mary Wortley Montagu. The cause of their animosity has been a matter of speculation for centuries, though one theory claims that when Pope declared his love for Lady Montagu, she could not suppress her laughter."

Poems by Pope and Lady Montagu are featured in the exhibition.

The oldest books on show are a pair of 1602 editions of Chaucer. Often seen as the first writer of English, as distinct from Anglo-Saxon literature, Chaucer, who died in 1400, wrote many poems, the most famous of which is *The Canterbury Tales*.

Even in the 17th century, Chaucer was considered to be an ancient author, and glossaries were provided in editions of his work to explain some of the old English words used in his writing.

**What:** *English Literature to 1800*

**When:** Until late December

**Where:** Rare books exhibitions area, Matheson Library, Clayton campus

**Who:** For more information, contact Mr Richard Overell on +61 3 9905 2689.

Derek Brown



Literary history: First-year commerce students Ms Susie Cheong and Mr Simon Zannis inspect a 1602 edition of Chaucer. Photo Richard Crompton.

## Exercise program prevents falls in the over 70s

An exercise program that focuses on improving balance can significantly reduce the number of falls in people aged over 70, a joint study between Monash University and the City of Whitehorse has found.

The study, of 1090 people aged over 70 and living at home, was the first to look at the individual contribution of exercise, improved vision and the removal of home hazards to the prevention of falls.

The approach had important policy implications, as it could identify whether it is more cost-effective to deliver just one intervention or all three when trying to prevent falls.

Senior research fellow Dr Lesley Day, Professor Brian Fildes and research fellow Mr Michael Fitzharris from the Monash University Accident Research Centre found that exercise

was the only intervention to significantly affect the rate of falls in the over 70s, lowering the annual fall rate by seven per cent.

Dr Day said that although removing home hazards or improving vision did not have a noticeable effect individually, when combined with exercise the fall rate dropped by 14 per cent to 38 falls per 100 people per year. The results were published in the *British Medical Journal* last month.

Dr Day said the study showed that an exercise program of one session a week for 15 weeks and focusing on improving balance, flexibility and leg strength was sufficient to reduce falls. The program, which involved stepping, squats against a wall and the use of ankle weights and balance boards, was the shortest program of the lowest intensity shown to have a falls-reducing effect.

"Falls in the over 70s are a significant problem," Dr Day said.

"In about half of all falls, there will be some sort of injury, and in one to three per cent of cases that will be a fractured hip. Given Australia's ageing population – even if the rate of falls and injury don't change – the numbers will increase, so from a public health point of view there's an imperative to prevent falls among older people."

The most recent figures, from 1995, indicate that the total cost to the community of falls occurring among the over 65s in that year was \$1083 million.

The research was funded by the National Health and Medical Research Council, the Department of Human Services, VicHealth, the City of Whitehorse, Rotary and the National Safety Council.

Penny Fannin

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# Corporate collapse: who is responsible?

## OPINION



Who is responsible for corporate success, failure and conduct? Professor of financial accounting at Monash University **JAYNE GODFREY** argues that responsibility needs to be accepted across the business community, from boards of directors, auditors and executives to analysts and investors.

**H**IGH-PROFILE corporate collapses such as Enron, WorldCom, HIH and OneTel have led the business world to refocus on the roles of accounting and corporate governance. Reform is now on the agenda.

An inevitable response by the public to corporate collapses is the call for regulators to act. However, lessons about corporate responsibility and ethics do not only apply to the conduct of boards of directors and to the independence and competence of auditors. Particularly in the US, debate is concentrated on the incentives provided to executives and the competence and ethics of those executives. But analysts and boards of directors also need to accept responsibility.

Boards of directors govern in a strategic sense. They do not manage on a day-to-day basis. But to be strategic in directing their organisations, it is crucial that they have a good understanding of their firms' financial position. Every director should have an understanding of the accounts to be able to question them. As well, every board should have at least one director (and preferably more) with the expertise to delve well beyond the financial statements tabled. A good board has a variety of expertise relevant to the business, but financial expertise should always be present. Boards need the expertise to understand, the interest and ability to question, and the courage and tenacity to probe and not accept answers that do not satisfy them.

Not all boards have that expertise and follow-through. I would not recommend any person to accept membership of a board that does not contain that high level of expertise unless they, themselves, are very skilled in financial statement analysis.

Investors need to examine financial statements, not only to learn about profits and dividends, but also to assess directors' qualifications. Boards should be required to have at least one member who is a qualified accountant with both expertise and currency in the area of financial reporting. At least one member should also have auditing expertise in order to understand the limitations of an audit and how best to obtain maximum value from it.

The probability of deliberate financial misreporting or business fraud is a function of three ingredients: opportunity, probability of detection, and propensity to commit. Consistent with this, chief executive officer incentives and greed have been blamed for at least some corporate failures.

Theory suggests that short-term earnings and share-based executive compensation can align the interests of managers and shareholders.

Recent events suggest that they can also create inappropriate incentives where the incentive-based compensation is (a) excessive, or (b) too heavily weighted towards rewards for



**Tense moments:** A series of recent high-profile corporate collapses have sent stock markets around the world into a trading frenzy. Photo: AAP

short-term performance. We have salary caps for footballers ... perhaps the same notion should be transferable to the business community?

Boards of directors and senior executives must also exercise corporate responsibility in appointing staff. Firms employing chief financial officers and other financial staff who (a) are not educated to understand the practice and importance of accounting, (b) are not subject to a professional code of ethics, and (c) have earnings-based bonuses are at higher risk than they ought. This is especially so if the chief financial officer is

creatively, but not necessarily for managing financial risk or appropriate accounting, the key roles for a chief financial officer. Membership of professional bodies does not necessarily mean that a person will behave ethically, but at least it should imply an awareness of professional and ethical responsibility. I suspect that in Australia we would find that the proportion of qualified accountants holding chief financial officer positions is much higher than in the US.

The role of auditors also cannot be ignored. Debate focuses on a number of mechanisms designed to ensure

Sign-off procedures throughout an audit so that each party in an audit team takes responsibility not only for the conduct of their part of the audit but also for alerting their seniors is also warranted. This might motivate more junior auditors who are uncomfortable with client practices to act on the courage of their convictions.

However, several significant recommendations are not under consideration. This includes (a) arrangements to ensure auditors have incentives and protection when acting with independence in a manner that can reduce the audit firm's fees from

issue is when the firm also acts in a corporate advisory role such as underwriting an issue by a firm it analyses. Clearly, such conflicts of interest should not be allowed.

During financial crises, focus is rarely balanced with an understanding that many firms do not fail. Most firms report honestly and accurately, and many directors faithfully fulfil their responsibilities with the utmost integrity.

Indeed, research has found that earnings are often managed so that they improve the way the accounts reflect firms' underlying economic activities and position. Corporate responsibility is actually alive and well ... just not everywhere!

■ Professor Jayne Godfrey is head of financial accounting in Monash University's Department of Accounting and Finance. She is also a director of a key Government Business Enterprise, an honorary fellow of the Finance and Treasury Association, a fellow of both CPA Australia and the Institute of Chartered Accountants and a member of the Australian Institute of Company Directors. In 2001, Professor Godfrey was a national finalist in the Shell Community and Government category of the Telstra Business Women Awards.

### The probability of deliberate financial misreporting or business fraud is a function of three ingredients: opportunity, probability of detection, and propensity to commit.

beholder to the chief executive officer for their position and the chief executive officer has short-term earnings-based and/or stock-based compensation.

Interestingly, a recent US study reports that, as is the case for approximately 20 per cent of the chief financial officers of the US Fortune 500 firms, neither Enron's nor WorldCom's chief financial officer had formal accounting qualifications.

Their MBAs probably provided excellent grounding for managing

auditor independence, including restricting the extent to which an auditor can earn non-audit service fees, mandatory rotation of auditors or audit partners, compulsory tendering of audits, and board of director nomination of auditors without executive input.

In particular, an independent corporate governance committee having authority to appoint the auditor and to develop and review corporate governance strategy is a sound proposal.

audits or non-audit services, and (b) quality controls for independent corporate audits.

In many investment advisory firms, one part of the firm analyses corporate performance and another brokers investment transactions. Problems exist when analysts are remunerated either explicitly or implicitly on the basis of the volume and value of the investment trade, so there are incentives for analysts to inflate forecasts and ratings to encourage trade. An even bigger

# Children's tale brings laughter to the fore

The story of a greedy bird that steals the moon from the night sky is sure to enchant young visitors to the Alexander Theatre at Monash University's Clayton campus next month.

*Kookaburra Who Stole the Moon*, a musical performance brought to Monash by REM theatre, follows the adventures of a host of Australian bush animals as they try to make a kookaburra laugh so he will open his mouth and let the moon go.

According to writer and composer Mr Peter Winkler, *Kookaburra*, which will be on show at Monash on 10 and 11 September, uses sound and dance to involve young audiences in the performance.

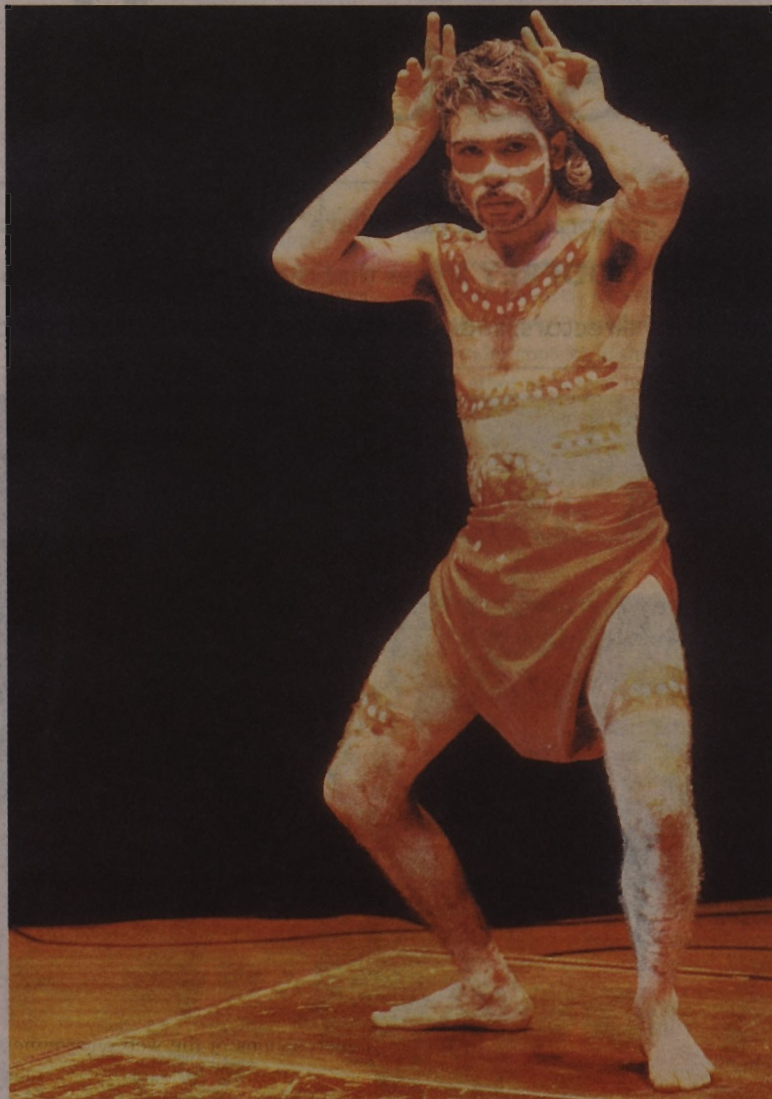
"I have been interested in writing music for children for a long time, and it was clear to me that just hearing an orchestra play did not always interest children," he said.

"With this in mind, *Kookaburra* uses the instruments of the orchestra to tell a story with specific sounds representing each of the animals that feature in the tale. For example, the kangaroo is portrayed using the jaws harp, and a clarinet mouthpiece emphasises the kookaburra's distinctive laugh."

Mr Winkler said the audience is introduced to the sounds that represented each of the animals at the beginning of each performance, so they can recognise them when they are featured.

In the Monash production, contemporary and Indigenous Australian dance forms are combined with the music of the Monash School of Music - Conservatorium's Chamber Orchestra.

An interactive workshop follows each performance in which the children are taught the characteristic dances of each animal. The children



**Kangaroo hop: Young audiences will be kept entertained as they follow the adventures of a host of Australian bush animals in the *Kookaburra Who Stole the Moon*.**

are then encouraged to act out the animal's movements in response to music from the orchestra.

**What:** *Kookaburra Who Stole the Moon*

**When:** 10 and 11 September

**Where:** Alexander Theatre, Clayton campus

**Who:** For more information and bookings, contact the Alexander Theatre on +61 3 9905 1111.

## ARTSCENE

### Artist heads to London's East End

Monash University staff member and ceramics artist Mr Michael Doolan left Australia last month to take up a three-month visual arts residency at the Australia Council for the Arts studio in London.

Receiving one of only four \$10,000 visual arts residencies offered each year by the Australia Council, Mr Doolan, from the Department of Fine Arts, will spend 12 weeks living and working in London's East End.

According to Mr Doolan, East London hosts a cluster of artist studios and is fast gaining a reputation as one of Europe's cutting-edge artistic centres.

"Knowing I'll be surrounded by a large number of working artists in one of the most vibrant artistic communities in Europe is very exciting," he said.

"It is a fantastic opportunity for me to take some time out and really focus on my work."

### Manga graduates a first for Monash

The Japanese Studies Centre at Monash University recently celebrated the successful completion of one of Melbourne's first manga drawing courses for beginners.

Manga is the Japanese equivalent of a comic strip, although the subject matter is more varied and the artwork often more detailed than that of Western comics.

Director of the Japanese Studies Centre Dr Alison Tokita said students had been very enthusiastic about the course and already there was strong demand for the intermediate course.

The course involves students learning manga illustration skills and techniques and creating their own character in a manga strip.

### Free lunchtime concerts

Music lovers will be able to enjoy a wealth of talent during this month's free lunchtime concert series at Monash University.

Monash voice teacher and soprano Ms Vivien Hamilton will present a selection of vocal arias in Cossar Hall at the Parkville campus on 6 August at 12.40 pm.

Acclaimed pianist Mr David Ward will perform a number of Mozart piano sonatas at the Music Auditorium at Monash's Clayton campus on 8 August at 1.10 pm.

Monash piano lecturer Mr Kenji Fugimura and cellist Ms Zoe Knighton will perform a program of 19th century sonatas at the Hexagon Theatre at the Gippsland campus on 12 August at 1.10 pm and at Cossar Hall at the Parkville campus on 14 August at 12.40 pm.

On 15 August, the newly formed group Tremenos will perform a program of Schubert, Mozart, Webern and Beethoven at the Music Auditorium at the Clayton campus. The concert will begin at 1.10 pm.

Clarinetist Ms Brigid Burke and pianist Mr David McNichol will perform masterworks from the late 20th century in the Hexagon Theatre at the Gippsland campus on 19 August at 1.10 pm and at the Cossar Hall at Parkville campus on 20 August at 12.40 pm.

Two of Melbourne's most respected improvisers, Dr Tony Gould and Mr Bob Sedegreen, will perform together on the piano in the Music Auditorium at the Clayton campus on 22 August, followed by a concert of new works by group Hybrid Futures on 29 August. Both shows will begin at 1.10 pm.

For more information, contact +61 3 9905 4698.

## Ancient art weaves a new pattern

A new exhibition opening at the Switchback Gallery at Monash University's Gippsland campus this month is set to dispel the myth that tapestry is a 'dull' art medium.

Featuring new tapestry and tapestry-related works by 10 Australian artists, *Gravity* is an exhibition which Ms Kate Derum, curator of the exhibition and lecturer in Monash University's Faculty of Art and Design, hopes will highlight contemporary use of the medium.

"With this exhibition I am keen to dispel the stereotype that tapestry is not real art and that pieces created using this medium are formulaic or dull," she said.

"By bringing together the work of some of the more cutting-edge artists working in the field, I hope we can show that tapestry is an art form as vibrant as any other, and one that deals with modern themes."

The exhibition, which runs from 16 August to 20 September, includes 20 artworks that use tapestry techniques to explore the human image and its relation to space. It provides a useful introduction to the medium's variety, Ms Derum said.

"Aside from straightforward tapestries like the large work by Sara Lindsay, or the life-size figures that encompass computer-style imagery by Hilary Green, the exhibition also includes a number of works that show the versatility and range of the medium," she said.

"Of the more unusual works in the exhibition, the sculptural heads made of cloth by Susan Beatty provide a prime example of how the techniques and materials of tapestry can be incorporated into other forms of art."

According to Ms Derum, *Gravity* also explores some of the strengths of tapestry as an artistic medium.

"All the works on show are very active and clearly show the way tapestry is able to portray an incredibly strong quality of colour and give an artwork a sense of material richness," she said.

**What:** *Gravity*  
**When:** 16 August to 20 September  
**Where:** Switchback Gallery, Gippsland campus  
**Who:** For more information, contact the gallery on +61 3 5122 6261.

Derek Brown



**Designer comfort: Industrial design student Anthony Storen used recycled wine corks to create this chaise longue. Photo: Richard Crompton.**

## What a corker!

A chaise longue made out of recycled wine corks was just one of several experimental works by industrial design students on display in the *Re-use* furniture exhibition held recently at Monash University's Caulfield campus.

The exhibition was inspired by the idea of recycling or re-using items that would otherwise have been discarded and making them into functional objects, said exhibition curator and industrial design course coordinator Mr Selby Coxon.

"Interestingly, the exhibition saw mass-produced items being turned into one-off pieces of craft," he said.

"The pieces ranged from the playful, such as a McDonald's food bag doona, through to the thoughtful, such as a table made out of CD cases and a chaise longue fashioned from paper pulp."

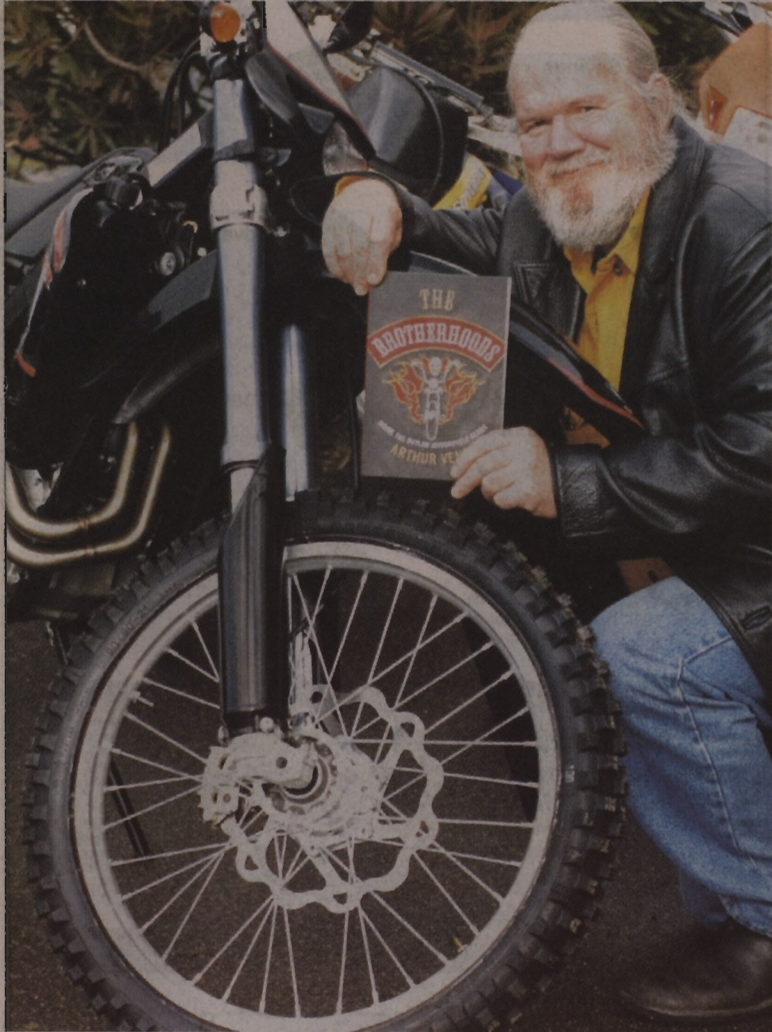
All works in the exhibition were by third-year Bachelor of Industrial Design students, who developed the work in their furniture design elective unit.

Other works included a bar stool made from steel iron work and a screen made out of postcards.

# Examining bikie culture

When Associate Professor Arthur Veno was growing up, he was fascinated with bikie gangs. And while he never actually joined one, his interest led him to become one of Australia's leading experts on bikie culture.

In his new book *The Brotherhoods*, Dr Veno, now an honorary research fellow with Monash's School of Political and Social Inquiry, draws on 18 years of experience, meticulous research, in-depth interviews and anecdotes.



Inside story: Associate Professor Art Veno gets close to gang culture in his book *The Brotherhoods*. Photo: Delwyn Hewitt.

The former director of Monash University's Centre for Police and Justice Studies said he first became interested in gang culture when he was a child living in the US.

"Because of my father's penchant for living near ghettos, gang life was always a feature of my childhood, and although I stayed outside that culture, many of my friends were drawn into it," he said.

While the book examines many of the common issues associated with bikie gangs – such as hierarchies, drugs, crime, women, club nights and, of course, the bikes themselves – the main focus of the book is on overall bikie lifestyle and philosophy.

According to Dr Veno, the bikie gangs operate within a set of strict rules, which are often at odds with the philosophy of riding on the open road.

"It's a paradox really, because some of the rules and regulations can be very oppressive and rigid, but the bikie lifestyle is that of the individual getting on his bike, riding out free."

Dr Veno said the one word he would come across over and over in his discussions with bikies was "freedom" and that for many, this was the reason they adopted the bikie lifestyle.

"There's a sense of freedom in riding like there's no tomorrow on the open road, the wind in your face, handling a powerful and responsive machine – you can't get that in a car."

"For them the freedom also lies in shutting out the stress of office politics, boring jobs and bad relationships."

Konrad Marshall

# The art of drawing goes on show

A new exhibition of large-scale drawings by renowned Australian artist Mr Jan Senbergs will open at the Faculty Gallery at Monash University's Caulfield campus this month.

The exhibition, *Long Arm Drawing*, is a selection of drawings created by Mr Senbergs over the past 10 years.

Better known as a painter of urban and industrial landscapes, Mr Senbergs said the exhibition provides a snapshot of his works on paper and is more concerned with the act of drawing rather than with any particular theme.

"My work often explores urban settings within the natural environment," he said. "It is a theme that can be found in many of my works, and in the past I have created paintings of mining sites, settlements in Antarctica and stylised city picture maps."

"But this exhibition is different. The drawings I've included are not studies for future paintings but works in their own right. In these drawings, I am looking to experiment with the images themselves rather than portray a specific idea."

Some pieces on show incorporate African and New Guinean figures that, Mr Senbergs said, were animated by the drawing process.

"Following on from figures like Picasso who, early last century, took African images and interpreted them into Cubist works, I'm using my drawing to look at these figures in a different way," he said.

Also featured is a series of large drawings which, when joined together,

show a panoramic view of the artist's studio. According to Mr Senbergs, artists have been painting or drawing their studios for centuries.

"Whenever I move into a new studio I like to produce an image of that studio – in this case a group of drawings. It's a kind of record of that place and time focusing on all the small, everyday things that surround you as an artist," he said.



On display: Australian artist Jan Senbergs provides a snapshot of his work in his latest exhibition, *Long Arm Drawing – Jan Senbergs*.

**What:** *Long Arm Drawing – Jan Senbergs*

**When:** 15 August to 13 September

**Where:** Faculty of Art and Design Gallery, Caulfield campus

**Who:** For more information, contact the gallery on +61 3 9903 2707

Derek Brown

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Konrad Marshall

## INPRINT



### Flame Tree: Selected Poems

By Kevin Hart  
Published by Paper Bark Press  
RRP: \$39

"I think the music of words is always in me, almost to the exclusion of any other sort of music, and perhaps necessarily so for me," says Kevin Hart, poet and author of this new collection of selected poems. The collection of more than 100 poems, which combines metaphysics and song, was chosen by Hart and spans 25 years of his career from 1975 to 2000.

His six collections of poetry have won many prizes, including the NSW and Victorian Premiers Awards for Poetry and the Christopher Brennan Award from the Fellowship of Australian Writers, which recognises poets who have made a sustained contribution to Australian poetry.

Kevin Hart is currently a professor in the Department of English and the Centre for Comparative Literature and Cultural Studies in the Faculty of Arts at Monash University.



### Beyond Babel: Language Learning Online

By Uschi Felix with contributions by practitioners  
Published by Language Australia  
RRP: Book \$55, CD \$27.50, book and CD \$77

This book offers an insightful presentation of web-based language learning, combining reflections on developments, practice and research in a refreshingly jargon-free style. It draws on the experience of teachers, professional and amateur developers, and students of all ages in a variety of approaches and settings.

The author presents a substantial body of new research into students' perceptions of the web environment and the relative influence of learning strategies, learning styles and study preferences. The book includes an updated version of *Virtual Language Learning*, covering some 600 useful language learning websites, which is also available on the accompanying CD-ROM with direct links to the web.

Professor Uschi Felix is director of ArtsIT and associate dean of the Faculty of Information Technology at Monash University.



### Re-Imagining Cultural Studies:

The Promise of Cultural Materialism

By Andrew Milner  
Published by Sage Publications  
RRP: \$54.95

*Re-Imagining Cultural Studies* traces the continuing influence on contemporary cultural studies of Raymond Williams, a theorist whose enduring and original work concerns the materiality of culture itself, seeking to restore Williams to a central position in the formation and development of cultural studies.

Through reappraising Williams' work on topics such as media studies, Marxist literary theory, new historicism and postcolonial studies, a consistent way of undertaking cultural studies emerges that challenges many of the accepted approaches in this field.

Making a strong case for Williams' relevance to both the academic disciplines of literary and cultural studies and the new politics of the anti-globalisation movement, this book will prove instructive to those working in the fields of literature, sociology, media and cultural studies.

Andrew Milner is professor and director of the Centre for Comparative Literature and Cultural Studies in the Faculty of Arts at Monash University.

## POSTscript

Leonie Naughton, a recent research associate in the School of Literary, Visual and Performance Studies at Monash University, has released a new book, *That Was the Wild East: Film Culture, Unification and the 'New' Germany*. The book gives an insight into popular film culture and art-house cinema in Germany from 1990–1999. The book will appeal to those interested in film studies and film history, German history and culture, as well as German unification and recent developments in German cinema.

If you are a member of the Monash community and have a forthcoming book, contact [monashnews@adm.monash.edu.au](mailto:monashnews@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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# Artificial muscles no longer at arm's length

Monash University researchers, in collaboration with colleagues at the University of Wollongong, have developed salt-based liquids that improve the performance of artificial muscles by thousands of times.

The discovery has progressed the development of artificial muscles to such an extent that simple prosthetic devices containing artificial muscles could be available within three years, said Professor Doug MacFarlane, from the Chemistry department.

Professor MacFarlane and Dr Maria Forsyth, a reader in the School of Physics and Materials Engineering, have spent five years developing the 'ionic liquids' – salts that are liquid at room temperature. The Australian Research Council funded the work.

Artificial muscles that mimic the expansion and contraction of natural muscle have been under development in laboratories for 20 years and operate in the same way as a battery – with electrodes and an electrolyte. But the limited lifespan of these muscles has meant they cannot be used in humans.

"The electrolyte in between the electrodes was, until recently, a relatively simple salt in a solvent," Professor MacFarlane said. "This meant that the expansion and contraction of the muscle did not last for long – it degraded and, ultimately, the electrolyte evaporated."

However, the ionic liquids developed by Professor MacFarlane, Dr Forsyth and their team do not evaporate and allow the contraction and expansion of artificial muscles to go on indefinitely.

Professor MacFarlane said that until now artificial muscles had been able to undergo no more than 10 cycles of expansion and contraction.

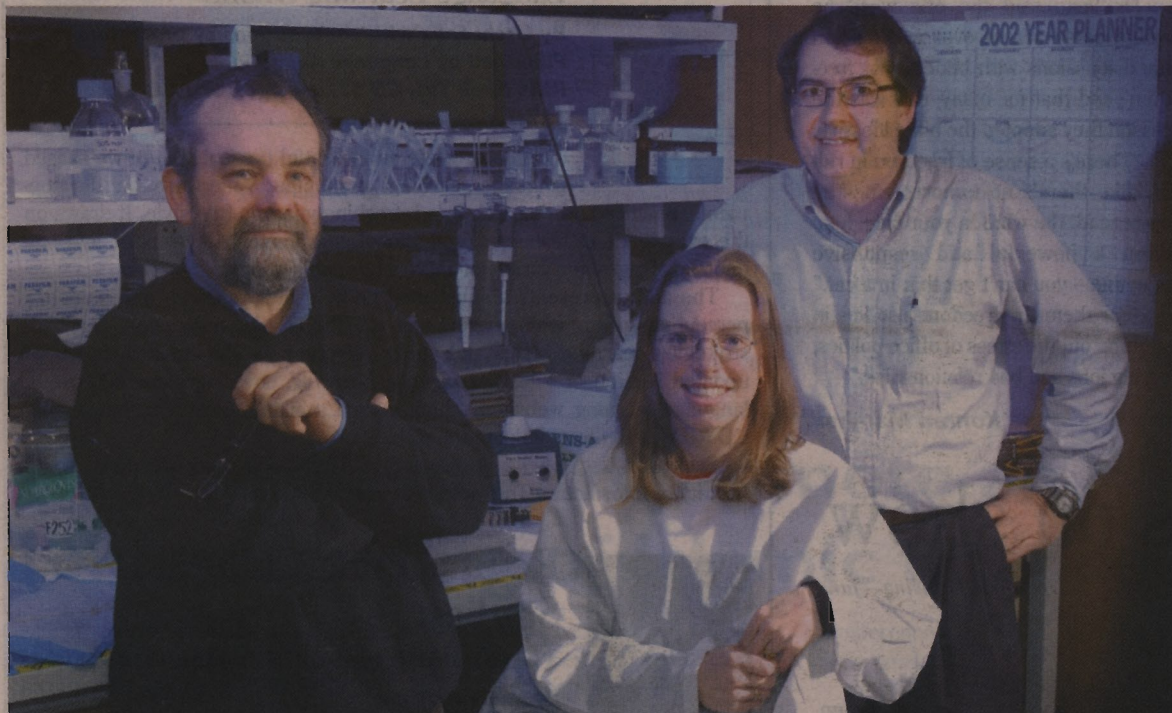
This advance will be used to create textiles that expand and contract and will also have applications in batteries and solar cells, Professor MacFarlane said.

"In the much longer term, you can expect to see artificial muscles that cause whole limbs to move. At the moment, this can only be done using a motor with gears, cogs and cables," he said.

The discovery, which also involved researchers from Santa Fe Science and Technology in the US, was published last month in the international journal *Science*.

Penny Fannin

## Researchers find brain steroid link to SIDS



**Link to SIDS:** Researchers, from left, Dr David Walker, PhD student Ms Saraid Billiards and Dr Jonathan Hirst have found a link between a high level of brain steroids and SIDS. Photo: Greg Ford.

Monash University researchers have found that bacterial infections lead to high levels of a brain steroid that could make babies extra sleepy and prevent them from waking when they have difficulty breathing.

For many years, bacterial infections and low blood oxygen levels have been linked with Sudden Infant Death Syndrome, but it has been unclear why they cause babies to die.

But in studies on lambs, physiology PhD student Ms Saraid Billiards found that low levels of a bacterial endotoxin caused brain steroid levels to dramatically increase and that the

lambs subsequently became extremely drowsy and difficult to wake.

The research, which was funded by the National Health and Medical Research Council, has been accepted for publication in the international journal *Pediatric Research*.

"These brain steroids, called neurosteroids, are naturally occurring compounds that have known sedative and anaesthetic properties," Ms Billiards said. "Lambs that had just a slight infection were drowsy and not interested in feeding, but control lambs with no infection were restless and quite active."

"It could be that when babies suffer even a mild infection their brain steroid levels increase, they become drowsy and then they have blunted responses to everything that's happening around them," she said. "If they develop breathing problems while they're asleep that cause their blood oxygen to fall, they don't have the appropriate arousing response that allows them to wake."

Principal research fellow in physiology Dr David Walker, who, with senior research officer Dr Jonathan Hirst, supervised Ms Billiards' research, said it might be possible to save babies' lives by using drugs to block the sedating effect of the brain steroids.

"Mothers of SIDS babies will often say 'he or she was such a good and quiet baby'," Dr Walker said. "He or she might have been a quiet baby because the brain produces this natural steroid that causes the baby to be sleepy and sedated."

"In our research, we also found evidence to suggest that low blood oxygen levels, which are common in babies with poorly developed lungs, cause some drowsiness."

"When those low blood oxygen levels were combined with the increased brain steroid concentrations due to infection, the lambs became remarkably drowsy – there was a real additive effect."

Penny Fannin

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