

uniken

The Young Ones

Meet academia's next generation



UNSW

- The buzz on biomimicry
- Metro man: Bill Randolph
- Literary Fellowship winner

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Uniken is produced by the UNSW media office
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Australia Post print approved PP224709/00021

UNSW, Sydney NSW 2052

CRICOS Provider No 00098G



Group of Eight

From the Vice-Chancellor

Last month saw the release of the audit report on UNSW by the Australian Universities Quality Agency (AUQA). The audit was rigorous and for many of our staff quite time consuming, but it has been a valuable process and I believe we can be pleased with the outcome.

AUQA identified areas where we need to focus more resources, but overall the report reflected the priorities the University had itself identified, and affirmed that we're moving in the right direction in a number of important areas. The commendation for initiatives such as our new budget model, our risk-management programs and, to quote AUQA, our "scholarly approach to the improvement of learning and teaching", is particularly encouraging.

We are currently finalising an action plan, under the auspices of Professor Richard Henry, Acting Pro-Vice-Chancellor (Education and Quality Improvement), to ensure a comprehensive and co-ordinated response to the report. I take this opportunity to thank everyone who contributed to the audit process, particularly Emeritus Professor Adrian Lee and the Quality System Development Group. The approach we adopted – to be open and self-critical – was clearly welcomed by the AUQA team.

A major coup for UNSW last month was the launch of Australia's first Chair in Water Management, thanks to the generosity of businessman Mr Gary Johnston of Jaycar Electronics who donated \$1 million towards its establishment. Research into water use and environmental sustainability is one of UNSW's major strengths: the new Chair, a partnership between the faculties of Science and Engineering, will enable us to move even further ahead in the field. Congratulations to Professor Ian Acworth, internationally recognised for his research into groundwater physics and hydrogeology, who has been appointed to the Chair.

"The Young Ones", the cover story of this issue of *Uniken*, profiles some of our best and brightest PhD students. The capacity to attract and retain young researchers of this calibre represents one of the most important investments in our future. The establishment of the Graduate Research School last year was a major step towards improving support services for our postgraduate research students. In this context, I am pleased to announce that the newly refurbished postgraduate research student space in the University Library will be officially opened this month.

Mark Wainwright



Arts/law graduate Jackie Hartley has won the prestigious Fulbright Postgraduate Australian Alumni (WG Walker) Award to undertake a Master of Laws in Indigenous Peoples Law and Policy at the University of Arizona, Tucson. Jackie is one of 20 students across Australia to receive a Fulbright Scholarship for 2006. The Alumni (WG Walker) Award goes to the highest ranking postgraduate applicant.

The 27-year-old will examine the status of Indigenous self-determination in international law and practice in the US, and analyse how these perspectives can assist the recognition of Indigenous self-determination in Australia.

Jackie was recently awarded the Lionel Murphy Foundation Overseas Postgraduate Scholarship, which will assist her studies in the US. Her academic success has also been recognised through the University Medal for History, the History Prize for Best Honours Thesis, the Lucinda Adamovich Scholarship in Law, the Frank Crowley Prize for Australian History, University Honours Year Scholarship and the Clayton Utz Scholarship in Law.

Hartley will be honoured at the Fulbright national awards dinner on 18 May and will begin her Master of Laws in early July. ■

The downside of smoking

Men who smoke a packet or more of cigarettes daily are 40 percent more likely to be impotent than non-smokers, according to research published in the journal *Tobacco Control*. The research team, which included academics from UNSW, analysed the responses of more than 8000 men aged between 16 and 59 who took part in the Australian Study of Health and Relationships. The results point to a significant association between smoking and erectile problems. Men who smoked 20 or fewer cigarettes a day were 24 percent more likely to report difficulties maintaining an erection than those who didn't smoke.

Federalism under review

The tax and spending arrangements in the Australian federation need a complete overhaul according to a report by tax expert Professor Neil Warren of Atax.

Commissioned by the NSW Government, the report has found that Australia performs comparatively poorly internationally in terms of intergovernmental funding arrangements. The study shows that while the income tax system balances equity against efficiency, incentive and growth, the federal tax-sharing system does not. Instead, it concentrates on ensuring an equitable distribution of grants between the states with little regard to their impact on economic efficiency or growth.

"Australia has a poor fit between the taxation powers and expenditure responsibilities of the states, which disburse more taxpayer funds – on services such as health, transport and education – than they can raise," Professor Warren said. "Reform in the national interest is overdue and essential if we are to ensure states are adequately funded to meet the challenges of an ageing population."

Hedge funds to bloom

Australian hedge funds will get a \$1.5 billion boost in the next two to five years, according to a study by Associate Professor John Evans of the School of Banking and Finance in the Faculty of Commerce and Economics. The report, commissioned by the Alternative Investment Management Association, found that Australian superannuation funds will be steering their allocations from European and Asian investment strategies in favour of those on home soil. Professor Evans said there would be a 41 percent increase on current investments, which currently stand at more than \$4 billion for the funds included in the survey.

Sydney Swans at study and play

Current AFL premiers, the Sydney Swans, have a number of players who are studying at UNSW in 2006. The line-up includes star Irish import Tadhg Kennelly, Paul Bevan, Ryan O'Keefe, Stephen Doyle and former Essendon player Ted Richards, who are pictured receiving instruction from former Olympian and UNSW judo coach Warren Rosser. He has been contracted by the Swans to provide specialised coaching for the team's ruckmen and defenders.



Quantum leap

Professor Michelle Simmons, from UNSW's Centre for Quantum Computer Technology, has been elected a Fellow of the Australian Academy of Science. At 38 she is one of the youngest ever to join the elite ranks of Australian researchers. Also elected to the Academy is Professor Brian Boyle, an adjunct Professor in the School of Physics. Professor Boyle is Director of the Australia Telescope National Facility.

Heart of the matter

Professor Levon Khachigian, from the Centre for Vascular Research, was last month presented with the GlaxoSmithKline Australia Award for Research Excellence. The award recognises his work on cardiovascular disease, in particular identifying key master regulator genes, such as EGR-1, which control the thickening of arteries after balloon angioplasty.

Woman of steel

Professor Veena Sahajwalla, of the School of Materials Science and Engineering, has been honoured by the US Association for Iron and Steel Technology (AIST) for her ongoing work in developing ways to use recycled plastics instead of coal in steelmaking. She has received the Association's 2006 Environmental Technology Best Paper and Presentation Award for her paper, *Waste Plastics – a Resource for EAF Steelmaking*.

Neville Bonner scholarship winner

Ross Bates has been awarded the prestigious 2006 Neville Bonner Memorial Scholarship. The scholarship was established in 2000 by the Federal Government to support Indigenous Australians to study honours in political science. Only one scholarship is awarded annually. "I am very proud to receive this scholarship as Neville Bonner was a trailblazer in the Australian political system," says Ross, an arts/law honours student.

Archibald photo prize

Vanila Netto has won the 2006 Archibald Photographic Portrait Prize for her work *The magnanimous beige wrap part 1 – (contraption)*. Netto has an honours degree in fine arts from COFA and is currently finishing her PhD in the School of Media Arts.

Online research community

COFA has launched the Postgraduate Research Community [Online], which enables doctoral and masters students to engage and network with other researchers. Associate Professor Jill Bennett, COFA's Director of Postgraduate Research, says the program covers all aspects of postgraduate study. The College has also recently introduced a Master of Philosophy program, which combines an individual research project with coursework subjects.

For the record

The inquiry should go the whole way. It should be a full scrutiny of Australia's role.

Dr Ben Saul of the Faculty of Law, one of 22 lawyers and academics who wrote an open letter to the Federal Attorney-General seeking an expansion of the terms of reference of the AWB oil-for-food Cole commission – The Australian

Power is associated with authority, coercion and inequality. All those are negative connotations. We all know incompetent people who get ahead because they are masters of politics. That contributes to the belief that power corrupts.

Dr Julie Cogin, AGSM – BRW

It's not just about building a fluffy corporate responsibility image; it's about deadline with the problems that are going to arise.

Dr Elizabeth Maitland of the School of Organisation and Management on the importance of geopolitical risk management for Australian resource companies operating overseas – Sydney Morning Herald

If people know they have one place to go to it might address some of the hurdles that prevent people reporting.

Dr Annie Cossins of the Faculty of Law and member of the NSW Government's sexual assault taskforce, which has made 70 recommendations for reform, including the introduction of one-stop-shops for victims – Sydney Morning Herald

We certainly should consider banning them ... young people cannot tell the difference between chocolate milk and vodka-based milk.

NDARC's Dr Jan Copeland on calls for pre-mixed milk-based vodka drinks to be outlawed – Daily Telegraph

Sometimes, I think sport is the last stronghold for nationalism worldwide. It divides people into nation states, but it's healthy.

Dr Geoffrey Brahm Levey, School of Politics and International Relations – Australian Financial Review

Our water future is underground

A Sydney business executive has donated \$1 million to help create the country's first Chair of Water Management, based at UNSW.

Australians consume millions of bottles of mineral water every year with barely a thought about where that water comes from: beneath the Earth's surface.

Despite being the driest inhabited continent and facing a water crisis, Australia's groundwater reserves are vast but poorly understood. That is about to change, however, with the creation of a new water research team at UNSW, thanks to \$1 million worth of generosity from Sydney business executive Mr Gary Johnston of Jaycar Electronics. His philanthropic gift to the Faculty of Science has helped to establish the Gary Johnston Chair of Water Management, in an innovative partnership with the Faculty of Engineering.

Chair will not only help to shed new light on groundwater issues but also set an example to others about the value of long-term strategic thinking on major public issues. He told guests at the recent launch of the Chair at the UNSW Water Research Laboratory that he was delighted to be able to give something back to a country that has been very good to him. "As a nation, I think it's clear that we have misused or misunderstood many of our water resources until now and I hope this appointment marks the start of a new era of better understanding and better management of our groundwater reserves in particular."

Professor Acworth is passionate about the pressing need for more research into the

More than 95 percent of the world's accessible water is groundwater, yet we know precious little about it and how to manage it

Professor Ian Acworth, of the School of Civil and Environmental Engineering, has been appointed to the new post. With 30 years of experience in Britain, Africa and Australia, he is one of Australia's most senior practitioners in the field of groundwater research and is Vice-President of the International Association of Hydrogeologists.

It is intended by the two faculties to establish a core team of researchers to work with Professor Acworth. The Faculty of Engineering has committed to establish the companion lectureship while the Faculty of Science has committed to establishing a companion postdoctoral position. The Dean of Science, Professor Mike Archer, and the Dean of Engineering, Professor Brendon Parker, have both thrown their personal support behind the initiative, which they hope will establish a new bridge of co-operative research and help to break down disciplinary barriers.

For his part, Mr Johnston hopes the new

management of Australia's groundwater, he's also well aware of the need for a major public education program. When he tells people that he's a hydrologist, for example, they often look blankly at him and then say: "Oh, I know, you're one of those people that use the forked sticks to find water!" he laughs.

"More than 95 percent of the world's accessible water is groundwater, yet we know precious little about it and how to manage it. Australia already pipes vast amounts of underground water for agriculture and inland cities and towns and we've been using it as if it were a magic pudding that will never run out," Professor Acworth says.

"I view this appointment as a fantastic opportunity to integrate engineering and science because there's no real division between them when it comes to water: this kind of research fills a central need for Australia." ■

Bob Beale

Risky business

UNSW's Actuarial Studies program in the Faculty of Commerce and Economics is one of the founding members of an international quantitative risk-management initiative, which aims to promote research and accredit postgraduate programs in the field.

The Enterprise Risk Management Institute International (ERM-II) has been established by a group of leading international universities with industry involvement. "A number of recent large-scale financial disasters, such as HIH and Enron, along with significant losses in the financial services and business sectors have highlighted the need for understanding, quantifying and managing risks at an enterprise level," says Professor Mike Sherris, head of the ERM-II University Accreditation Committee. ■

Biomimicry: it's only natural

Aligning human actions with the irrepressible forces of nature, the greatest inventor of all, could be the new century's hottest, greenest, business idea, writes Dan Gaffney.



From left: velcro's hooks and loops were modelled on the cocklebur; adhesives copy geckos' sticky feet pads; self-cleaning paints are based on the hydrophobic surface of the lotus leaf; the kingfisher's beak inspired the aerodynamic design of Japan's bullet train.

The world's best brains in research, technology and business have cottoned on to the idea that mimicking nature's way of solving life's problems could be a short cut to making successful technologies that won't cost the Earth. The logic of 'biomimicry', as the idea is called, is that nature is constantly perfecting energy use, recycling and sustainable survival. Therefore, if we copied nature's tricks we might solve our problems faster, smarter and in ways that don't harm the biosphere.

The good news is that biomimicry is already on sale and making handsome profits for its early adopters. Examples include Lotusan, a self-cleaning house paint modelled on the white lotus plant, and adhesives that copy the sticky footpads of gecko lizards. In Japan, the designers of the 500-Series Shinkansen bullet train created faster, quieter transportation by emulating the sleek aerodynamics of the kingfisher's beak.

Velcro-fastening technology is a renowned example of nature-inspired design. Its creator, George de Mestral, took time to notice how cockleburs attached themselves to his clothes and his dog's fur while they had been walking in the woods. When he examined the burrs under a microscope he saw that they had a stiff, hook-like shape. His observations led him to copy nature by designing a two-sided fastener, comprised of tiny burr-like 'hooks' and fuzzy fur-like 'loops'.

Later this month UNSW's Kensington Group will host a forum featuring one of biomimicry's foremost proponents, Janine M. Benyus. The American biologist and author will share examples from companies that have adopted nature-copying technologies, including Nike, General Electric, Hewlett Packard, and Procter and Gamble. Also speaking at the forum on 25 May will be a number of UNSW academics from the faculties of Science, Engineering and the Built Environment who've brought technologies to market consistent with biomimicry's principles.

Biomimicry (from *bios*, meaning life, and *mimesis*, meaning to imitate) is a new science that studies nature's best ideas and then imitates these designs and processes to solve human problems – Janine M. Benyus, author of *Biomimicry: Innovation Inspired by Nature*

One of these is the UNSW Centre for Marine Biofouling and Bio-Innovation that has, for the past seven years, been developing a suite of synthetic furanones that prevent bacteria from colonising surfaces, such as contact lenses, catheters and the hulls of marine vessels. The technology prevents or disrupts the bacterial formation of 'biofilms' and neatly sidesteps the issue of bacterial resistance. Professors Staffan Kjelleberg and Peter Steinberg discovered furanones' ability to interfere with bacterial signalling systems in the 1990s. They isolated

these compounds from the seaweed *Delisea pulchra*, which grows on Australia's eastern coastline.

UNSW Professor of Multidisciplinary Design, Richard Hough, says: "Biomimicry relies on insights into many natural systems or processes, so it is a great catalyst for cross-discipline research. UNSW's Multidisciplinary Design Initiative supports this broader based research; several current proposals for cross-discipline ARC research contain biomimicry themes. Examples include

the mimicking of the metamorphosis of marble by the introduction of supercritical CO₂ into limestone, and improved reverse osmosis processes for recycling of water.

"By joining researchers into teams to study opportunities like these, UNSW can harness more of its research potential. This is especially true in emerging areas like sustainability, of which biomimicry is an integral part," says Hough, who is also a principal with the Arup Group, one of the world's largest independent multidisciplinary design and consulting firms. ■

Exhausting the options

A study into hydrogen fuel-cell buses being conducted by UNSW’s Centre for Energy and Environmental Markets could pave the way to a cleaner, safer future by reducing emissions of the fumes that damage our health. **Barbara Messer** reports.

Diesel fuel is powering our buses but it’s also clogging our lungs and costing billions of dollars in health expenses related to respiratory problems, lung inflammations and cancer.

As a result, 10 European cities and Perth in Australia are each trialling three identical fuel-cell buses powered by compressed hydrogen, which do not release carbon dioxide or the carcinogenic particles that damage our lungs.

Associate Professor Tony Owen, co-director of the Centre for Energy and Environmental Markets (CEEM) at UNSW, has been studying the viability of hydrogen fuel-cell technology based on the buses operating in Perth. The study is funded by the Department for Planning and Infrastructure in Western Australia as part of its Sustainable Transport

Provided the hydrogen comes from a renewable source, fuel-cell vehicles produce near-zero air pollutants and greenhouse gas emissions, and reduce reliance on oil



Courtesy of WA Department for Planning and Infrastructure

Energy for Perth (STEP) program.

“Hydrogen is an energy carrier, it’s not a fuel,” explains Professor Owen. “Electricity is also an energy carrier, but the major problem with electric cars and buses is they must carry batteries on board that need recharging at regular intervals. This problem doesn’t exist for fuel-cell buses, since the power is produced on board.

“Provided the hydrogen comes from a renewable source, fuel-cell vehicles produce near-zero air pollutants and greenhouse gas emissions, and reduce reliance on oil, an increasing proportion of which must be imported from the Middle East,” he says.

But with a price tag of \$2 million per bus, the costs of using fuel-cell buses must be offset by the benefits of the cleaner urban environment they deliver. This is not the case in Perth, but in Europe, where pollution levels are higher, the benefits of the buses are more likely to exceed their additional costs, according to Professor Owen.

“I suspect more cities will join in the trials. Beijing is getting a large number of the buses for the Olympic Games, and the Japanese are doing a lot of research into fuel-cell buses and cars because they import 100 percent of their oil, mainly from the Middle East.

“Buses have advantages in that they always return to a base where the refuelling can be undertaken. With cars, the benefits have greater potential, and hydrogen would also free the transport sector from its reliance on oil and the damage that volatile oil prices does to the economy. However, the cost of installing a nationwide refuelling infrastructure to service cars would be enormous,” says Owen.

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CEEM is a collaboration between the faculties of Commerce and Economics, and Engineering. Professor Hugh Outhred, of the School of Electrical Engineering and Telecommunications, is the other director of the Centre, which opened in mid-2004 as a UNSW initiative in response to a government review of local infrastructure industries such as the electricity, gas and water markets.

In fact, Owen says research into energy and environmental markets is a massive area of interest to governments looking to reduce the damage pollution causes to public health, the environment and the economy.

“A number of studies have actually quantified the damage to health and mortality caused by air pollution. The combustion of diesel fuel causes greenhouse gas emissions, but far more costly are the emissions of particulate matter or black smoke and soot, which are very dangerous to health,” he says.

CEEM is working with a range of institutions to assess alternative energies, such as the Australian Greenhouse Office, which has invested \$660,000 in a three-year study into using wind energy in the Australian national electricity market.

Another interesting study is being funded by the Australian Stock Exchange, and conducted in conjunction with CSIRO Sustainable Ecosystems, to develop experimental economic tools that demonstrate how markets for environmental products work.

CEEM is sharing its research findings with universities and power companies in Australia, Thailand, China, Ireland, Korea, Spain and Taiwan, where it has hosted a series of workshops. ■



Metro man

The Director of the City Futures Research Centre, Bill Randolph, has a deep understanding of how the built environment profoundly affects our lives, discovers Dan Gaffney.

Chris Cleaver

Bill Randolph reads cities in the way that a board rider studies the surf pounding a headland. He's alive to form, symmetry and dynamics, and the complex forces that create them.

Professor Randolph joined UNSW's Faculty of the Built Environment 18 months ago to lead the Australian Housing and Urban Research Institute (AHURI) and develop the new City Futures Research Centre. His appointment followed 25 years as a professional researcher on urban policy issues in the academic, government, non-government and private sectors.

As he tells it, his fascination for the built environment, especially housing and transport systems, first revealed itself through his childhood fascination with maps. "As a boy growing up in a semi-rural housing estate in the Cotswolds of England, I loved to climb up to a high place somewhere in the surrounding area and pick out the landmarks on a map.

"Our town was built on the remains of a Roman settlement, which had been built over by the Anglo Saxons, who were followed by the Normans, and so on. I guess that's when I started to see how towns were created and formed, and how they affected the people who lived in them," he says.

By the age of 18, Randolph's fascination for the built environment saw him ditch plans to attend art college and head to London to study urban geography at the London School of Economics, where he also took his doctorate. "It was an exciting time to be in London," he recalls. "There was a mood for change, gentrification was going on and I was exactly where I wanted to be."

Randolph's boyhood hobby of surveying the form and function of urban landscapes grew into a passion for map collecting. "I like maps, it's something about the way they spatially represent reality, and as an urban geographer I have spent a lot of time driving around places and simply looking at the built environment. It's a visual science in many ways, and you can tell a lot about a place and its people, just by looking.

"But I'm also interested in the political economy of cities, not just the design and physicality of them. I come from a family that has very strong social justice views, so I am interested in the processes that create cities, the people who live in them and what happens to them."

Randolph spent his early career as a research fellow at the Open University and then at the UK Department of the Environment. As head of research for the UK's peak body for non-profit social landlords, he led the development of national research into affordable housing provision.

He followed this by running a market research consultancy in London that advised government on housing, urban policy and neighbourhood renewal.

My take on Sydney, for what it's worth, is that it's a very socially divided city ... it's certainly not the picture that people overseas have in mind when they think of Sydney

For six years prior to his UNSW post he was Professor and Director of the Urban Frontiers Program at the University of Western Sydney.

"My take on Sydney, for what it's worth, is that it's a very socially divided city," he says. "It's got these fantastic iconic bits to it – the harbour, the coastline and the beaches, which benefit half-a-million people, at most, out of a city of four million.

"Most of the rest of Sydney is near the bottom of the scale when it comes to urban design, housing, amenities and integrated transport. It's certainly not the picture that people overseas have in mind when they think of Sydney.

"However, I believe that cities can create their destiny, in spite of poor historical planning decisions and I'm excited about what the City Futures Research Centre can do to make a positive difference." ■

Doctorates in the house

Meet some of our best and brightest PhD students

Story by Denise Knight





The Young Ones ... from left:
Pierre Richard, Uros Cvorc,
Anuradha Chatterjee,
Duncan McDuié-Ra, Simon
Kwok, Kate Jeffrey, Leanne
Pearson and Cristy Clark

UNSW's PhD students are hot property. Take 26-year-old Ori Allon, whose search engine technology has been snapped up by Google. The computer science doctoral student is now working for the internet giant at its Californian headquarters while he finishes his thesis, but not before making international headlines (full story p11).

“UNSW has an outstanding group of postgraduate research students who represent a key investment in our future,” says Deputy Vice-Chancellor (Research) Professor Les Field. “They’re the engine room of our research effort, and their work makes a significant contribution to the University’s overall research standing. It is a testament to the research training environment at UNSW that many of our best students are highly sought after in Australia and around the world for postdoctoral study and jobs in industry,” he says.

There are some 2800 PhD students currently studying at UNSW across all faculties. *Uniken* sought the views of a selection of students, all under 35, on their research and career plans.

Kate Jeffrey: medical research

Kate Jeffrey’s thesis, submitted in February, investigates what goes wrong with immune cells to cause auto-immune diseases or inflammation. Based at the Garvan Institute, the 27-year-old spent six months in Switzerland as part of her PhD thanks to an Australian Academy of Science award for young researchers. She is planning to pursue a postdoctoral position overseas, at this stage at a new research institute in Vienna.

I came to UNSW after completing honours at the University of Melbourne. My PhD supervisor Charles Mackay had just returned to Australia after a 12-year absence. We came up with a project that utilised my biochemistry/ pharmacology experience in the context of immunology, which is one of the most fascinating systems in our body. We identified an enzyme, PAC-1, as a promising potential therapeutic target in immune-based disorders and the findings were published in *Nature Immunology* in March.

Despite the expected pressures of funding and the drop-off rate of women in this profession at the senior level, I hope to continue in academia. It provides you with the intellectual freedom that you can’t find in many jobs, as well as the international aspect that allows you to live and work almost anywhere in the world. I also have some interest in political advising (so important in Australia) and science communication.

Leanne Pearson: science

Leanne Pearson is hoping to submit her thesis by the end of next month. Her project, supervised by Professors Brett Neilan and Kevin Barrow, is primarily focused on toxins in blue-green algae. As well as an APA, Leanne received support from the CRC for



Water Quality and the German Academic Exchange Service, which funded a four-month research stipend in Berlin.

My research has implications for the water quality industry – the presence of cyanobacterial toxins in our waterways poses a major ecological problem and health threat. By understanding the genetics behind toxin production, we are better equipped to detect and eradicate harmful algal blooms. Also, cyanobacterial toxins are part of a larger group of compounds known as secondary metabolites, which have potent biological activities. Through understanding and manipulating their pathways, we can potentially engineer an unlimited number of new compounds with novel or enhanced biological activities. This technology could potentially be used to turn toxins into medicines – a very exciting prospect indeed!

While I love research, I am more interested in its practical applications and will therefore probably opt for the industry path. My ultimate ambition is to start a scientific consulting business that offers genetic/biochemical tests for water quality and forensics. Hopefully, it could generate enough funds to keep several small research projects afloat on the side. It would be great to maintain an affiliation with UNSW and my current research laboratory.

Pierre Richard: business economics

Pierre Richard is in the final stages of his doctoral research at the AGSM on corporate strategy, innovation and business economics. In addition to an APA, he received a Sasakawa Young Leaders Fellowship.

I apply economic thinking to a range of business problems. Current interests include examining how business-to-business information technologies can be used to reframe supply chains, and the role of complementary assets in seizing innovation-based opportunities. Large organisations do amazing things. That you can buy mobile phones for under \$100 or that Microsoft can bring together 1700 parts from 250 suppliers to deliver the Xbox 360 are amazing achievements. Nevertheless, corporate collapses and lacklustre performances highlight how much more we need to learn about business.

In the immediate future I’ll be teaching and researching in the School of Economics here at UNSW. I have several PhD-related publications to work on as well as some new projects with co-authors both here and overseas. In the longer term, the freedom of academic research will be hard to match. However, in the shorter term I may work in a large organisation for a time, in order to give myself a better insight into how things operate at the coalface (being a business researcher, organisations are my ultimate reality).



Anuradha Chatterjee: architecture

Anuradha Chatterjee came from India to study at the Faculty of the Built Environment. Her thesis examines the theories of John Ruskin, a well-known 19th century art, architecture and social critic. She has a three-year FBE doctoral scholarship and expects to submit her work later this year.

My PhD investigates the conceptual and ethical notions of concealment and revealment informing the design, decoration and construction of architectural surfaces. It entailed archival research and physical survey of buildings and a trip to Venice, Lancaster and Oxford that was funded by the Wightman Postgraduate Scholarship in Architecture.

I hope to teach after graduating and would like to contribute towards encouraging critical thinking in theory and design. I also hope to publish significant parts of my PhD and write on current architectural practice and theory. One of my long-term goals is to go back to India and start exchange programs between universities in the South Asian region in order to build regional competency in architectural theory and thinking.

Cristy Clark: law

The right to water and its implications for human rights is the topic of 27-year-old Cristy Clark’s doctoral research. After a stint as a solicitor in a major law firm, she is now in her second year of full-time study.

My thesis on water rights has a particular focus on the impact of privatisation. This covers quite a range of disciplines and issues including human rights, international trade law and development. My masters degree contained a research component in which I examined both food security and water issues in the area of international social development. Given the legal focus of my PhD I am based in the Faculty of Law, supervised by Associate Professor Andrea Durbach, director of the Australian Human Rights Centre.

I am quite interested in pursuing a career within academia. There seems to be a lot of scope for remaining very engaged within a field of interest outside the academy, while also contributing to public education and research, all of which is very appealing. However, I am also drawn to the idea of working within the NGO sector in a research and advocacy role, or even in policy development. I hope that I will be able to do work in all of these fields at some point in my career.

Simon Kwok: marketing

The buying behaviour of urban Chinese consumers was the topic of Simon Kwok's thesis, which he submitted in January. As well as receiving an APA, his doctoral research was supported by an ARC grant.

I enrolled in a PhD after completing honours in marketing in the Faculty of Commerce and Economics. My research involved looking at the purchasing of packaged goods across a range of products and store types as well as across different Chinese cities and time periods. The idea of studying Chinese consumers in particular came from my supervisor Professor Mark Uncles. As the Chinese consumer market is one of the hottest topics in marketing as well as in business, the topic fascinated me from the outset.

I am planning to start a career in industry – I'm actually taking up a position this month at a global market-research provider. In the longer term, however, I might consider returning to academia to pass on my knowledge and experience to students, as well as continue my research interests.

Duncan McDuie-Ra: politics and international relations

Duncan McDuie-Ra is aiming to finish his PhD by the end of the year. His research is based on a critical study of civil society and social movements. Before coming to UNSW to study for an MA he spent five years travelling and working in Asia, Iran and the Caucasus.

I am looking at environmental and women's rights movements in Northeast India, where I undertook field work last year. My research looks at the influence of identity politics, power inequalities within and between different communities, and constructions of gender and otherness. My thesis considers how these factors affect the way in which environmental and gender issues are framed and addressed in civil society.

I have been fortunate to have done lots of teaching and lecturing since I began my PhD and I really enjoy it – academia is where I want to be. The issue is waiting for a job to come up in my field of development studies/international political economy.

Uros Cvorc: art theory

COFA PhD student Uros Cvorc submitted his thesis in October last year. The topic of his research is the National Museum of Australia.

My PhD looks at the key developments in the museum from conception through to its construction. It covers the debates and reactions in relation to the politics of race and multiculturalism in Australia from the mid-1970s to 2001.

I hope to become a full-time academic or researcher. Right now I am working on getting my thesis published. I am also organising a conference on museums and democracy to be held at COFA in 2007.

Googled: Ori scores a mega hit

Google, one of the world's biggest internet players, has snapped up the rights to an advanced text search algorithm invented by 26-year-old PhD student Ori Allon from the School of Computer Science and Engineering. **By Mary O'Malley**

Ori Allon has developed a search engine tool that is set to revolutionise the way information is efficiently acquired from the internet. "I developed the technology in a few months, based on my thesis," says Allon, who is now working for Google at its Californian headquarters. "I implemented it myself and actually got some pretty good results. Other people at the University helped test it out, and the system got better and better with their feedback."

The advanced text search algorithm will speed up the time-consuming search function by working with existing search engines. The technology allows the display of information from websites directly, without users having to click through to separate pages. The system uses artificial intelligence to guess what people are looking for.

The software was developed with Allon's supervisor, Dr Eric Martin. "I provided the spark but it is Ori who developed this through his amazing creativity," says Dr Martin. "What others would have taken two or three years to do, he did in six months."



It's a real pleasure to see such a smart UNSW student gain the prospect of a significant career with an international giant, and to see such outstanding UNSW technology successfully commercialised

Born in Israel, Allon graduated with first class honours from Monash University before moving to Sydney to start his PhD at UNSW in early 2005.

"It's a real pleasure to see such a smart UNSW student gain the prospect of a significant career with an international giant, and to see such outstanding UNSW technology successfully commercialised," says Mark Bennett, CEO of UNSW's technology transfer company, NewSouth Innovations.

"This is great news for UNSW," says Professor Paul Compton, head of the School of Computer Science and Engineering. "There has been a lot of talk about computing students needing soft skills. Soft skills are important for a lot of

students, but there is also an assumption behind this that all Australia can do is to apply these skills to technology from elsewhere.

"At UNSW we have a different approach. We have the best students in the world in computer science – they win international competitions, as well as work for Google! Our goal is to train these students to be the inventors of new technologies. If they want soft skills they can certainly do a double-degree, but our focus is on deep technical problem-solving and creativity, and no compromises in this," says Professor Compton.

Though working in Mountain View, California, Allon will continue to work on his PhD with Dr Martin.

Good medicine

Neurologists Dr Arun Krishnan, 33, and Dr Steve Vucic, 34, are both PhD candidates in UNSW's Faculty of Medicine. As well as sharing a supervisor, they are both lead authors on research papers published this month in their respective fields. The studies on motor neurone disease and kidney failure involve researchers from UNSW, Prince of Wales Medical Research Institute (POWMRI) and Prince of Wales Hospital (POW).

New clues on motor neurone disease

A team of researchers has found a quicker and more effective way to diagnose motor neurone disease (MND). Around 1400 people in Australia are estimated to have the disease, which commonly affects people in their fifties. It is characterised by twitching of muscles, progressive muscle wasting and weakness, and ultimately complete paralysis.

The diagnostic test, which was carried out at POWMRI, involves Transcranial Magnetic Stimulation (TMS), a painless technique that involves a magnetic coil being held to the patient's head. The coil stimulates the underlying motor cortex, resulting in involuntary movement of the hand. The research, which was funded by the Motor Neurone Disease Research Institute of Australia, was published last month in the journal *Muscle and Nerve*.

"At the moment it may take up to 14 months for a diagnosis, because there is no test," said Dr Steve Vucic. "You have to exclude other medical disorders before you can conclusively say that someone has MND. Our work could change that."

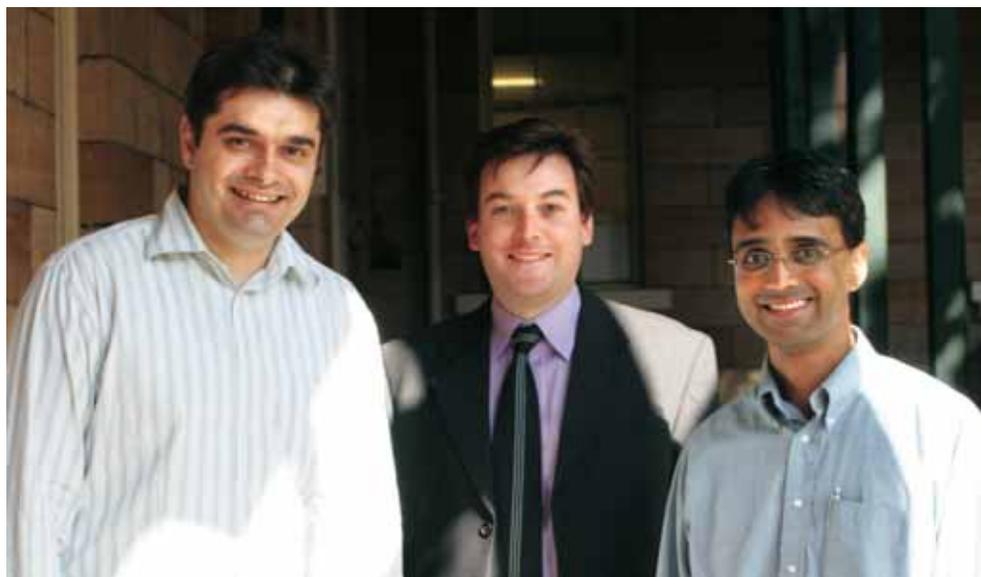
"While no-one wants a diagnosis of MND, it is better to know earlier, so that the patient can be treated as soon as possible with the current recommended treatment, the drug Rilutek," he said. "The data suggests it can prolong life by as much as six to 12 months. At the moment, we can't prescribe the drug until there is a definitive diagnosis, but that can be too late."

"We are stimulating the nerve in the brain which then sends an impulse down to the muscle," said UNSW Associate Professor Matthew Kiernan, a neurologist based at POW. "One of the things we found is that those with MND need less current to excite the muscle than those who don't have the disease. The technique we have used is painless, definitive and takes only a short amount of time."

Kidney patients warned away from potassium

People suffering from kidney failure are increasing their chances of nerve damage in their legs and feet simply by having too much potassium in their diet, according to a study recently published in the *Journal of Neurology, Neurosurgery and Psychiatry*.

For New Zealand rugby player Jonah Lomu severe nerve damage forced him to give up his sporting career for several years until he underwent a kidney transplant in 2004. One in



From left: Dr Steve Vucic, Associate Professor Matthew Kiernan and Dr Arun Krishnan

three Australian adults has an increased risk of developing kidney disease, which is commonly caused by diabetes. More than 50,000 Australians have severe kidney function impairment or kidney failure, according to Kidney Health Australia.

"The majority of people with end-stage renal failure have nerve damage in their legs and arms," said Dr Arun Krishnan. "This can mean they have difficulty walking. Once nerve damage develops, it cannot be reversed unless the patient undergoes renal transplantation. But our research indicates that patients do have some control over their situation."

"We found that a higher level of potassium in renal failure patients causes that nerve damage," said Dr Krishnan. "The clear health message is that anyone with kidney failure or chronic kidney problems should regulate their intake of potassium in an attempt to preserve nerve function." Potassium is found in foods such as bananas, peanuts, soybeans, apricots and sultanas.

"Scientists have known for a long time that potassium was an important substance in terms of regulating nerve function, but until now no-one has made the connection between kidney function and nerve function," said co-author Dr Matthew Kiernan.

The research was supported by the Australian Association of Neurologists Research Fellowship and the NHMRC with grant support from the Brain Foundation, the Sylvia and Charles Viertel Charitable Foundation and the Ramaciotti Foundation.

Susi Hamilton

Top order partnership

Dr Tom Hickie is a barrister and casual lecturer in the Faculty of Law. Dr Anthony Hughes is an historian in the Faculty of Arts and Social Sciences. Together they have taught subjects on sport and law for six years. Their innovative approach in the classroom has earned them a 2005 Vice-Chancellor's Teaching Award for Excellence. They spoke to Alex Clark.

Tom Hickie

I originally taught a subject in this area over 10 years ago in Melbourne and then worked at Sydney University when rugby went professional. When I was encouraged to develop the subject here at UNSW I wanted to have an historian on board to give the issues an historical context – it makes the students better lawyers.

Teaching with Tony works well because we have a similar sense of humour; we're both passionate about the area and often disagree on issues. We try and meet fortnightly to keep abreast of new cases and continually look for new and relevant experiences that will engage the students.

I hope we encourage students to have passion, courage, humour and self-reflection. Passion for their lives and society, courage to stand up when they're in the minority and an understanding that they can change the world. Most importantly, they need a healthy cynicism for our society but also be able to laugh at themselves. I want them to think critically about what's ethical and individually what's right when they're out in the workforce.

Sports law is a growing area and not surprisingly lawyers (including former UNSW graduates) are now starting to appear in the administration of the major codes. For example, there is UNSW alumnus David Gallop who runs the NRL, and Peter Wilson, a recent graduate of the course, who's the "in-house legal" for Soccer NSW. I expect to see many more of our alumni making contributions in this area over the next few years.

Anthony Hughes

Team teaching is a very rewarding experience and educationally it's a much-underused strategy. However, the teachers need to be in tune with each other – that is not to say Tom and I agree on everything. We have conflicting views on a number of important issues but this just enhances the student experience.

The teaching award acknowledges the hard work Tom and I have put into creating a unique course in a developing field of law. Having said that, we believe the students who have been through the course over the last six years have a degree of ownership. The level of positive feedback, including from cross-institutional students, has been amazing.

You've got to be willing to listen to students – they're the most important people here. It is very rewarding to pass on the knowledge and insights I have gained in my own research to students who, on the whole, are very talented and dedicated people. I hope our students walk away with a greater understanding of how our social, cultural and political lives interact. ■



Tom Hickie (left) and Anthony Hughes

The Pavilion on the Village Green

The UNSW Sports Association has grown over 50 years from a modest institution housed in humble huts to a professional organisation that calls the Sam Cracknell Pavilion home. Anthony Hughes with co-editors Richard Cashman and Zolton Zavos have traced its history in their book *The Pavilion on the Village Green*.

The book examines the contribution of sport to university life particularly through the Sports Association, which oversees student sport and co-ordinates the activities of some 40 sporting clubs on campus. "We shouldn't underestimate the influence of the institution of sport in universities, particularly in linking UNSW with its alumni," says Dr Hughes. "However with the introduction of VSU, the Sports Association stands at the crossroads with its future uncertain."

Class of 24/7

Demand for iLectures has tripled this year and students are taking to podcasting in a big way, writes Associate Professor Tony Koppi, Director of UNSW's Educational Development and Technology Centre.

Working with the University's teaching staff over the past six years, EDTeC has achieved considerable changes in the nature of learning and teaching at UNSW.

The introduction of WebCT back in 2000 as the learning management system was a first step to get the ball rolling at UNSW, which by that stage was a little behind the take-up of electronic learning, or eLearning, compared to similar institutions. Since those first courses with 3000 enrolments, it has grown at a sustained rate of 30 percent per year, with close to 100,000 student enrolments in the WebCT systems this session. This makes us a global player in eLearning.



The University has become a place that never sleeps. The heavy usage of WebCT between 8pm and midnight bears this out, although there is no time in a 24-hour cycle when the system isn't being accessed

And the shift from purely classroom-based learning to a blended mode, which includes face-to-face and online is gathering pace. New technologies and teaching practices have enabled students to learn in different ways and just as importantly, from different places, such as in social spaces on campus, from their place of work, in their homes or even while travelling. With more students juggling work and study, about two-thirds of online activity is done off campus.

The online environment allows students to partake in courses and

interact with fellow students, tutors, and teachers in ways that are not limited to the timetable. The University has become a place that never sleeps. The heavy usage of WebCT between 8pm and midnight bears this out, although there is no time in a 24-hour cycle when the system isn't being accessed.

Another initiative that has been successful, some would say phenomenally so, is the deployment of iLecture (currently being rebranded as Lectopia). This service allows staff to nominate which lectures are recorded and made available online to their students. It is a service that has currently been enabled across all the high-usage lecture rooms and replaces the old tape-recording and borrowing service that was onerous to everyone concerned.

Students are able to access these recordings in two ways. First, via links to streaming media where the lecture is immediately available on their computer. Second, via download, where courses can be subscribed to as podcasts and replayed on computers or MP3 players. That student with the white ear-buds in their ears walking past might just be listening to a lecture!

So how popular is this service? On average there are currently more than 6000 hits on the recordings per week, and nearly 30 percent of these are podcasts. And lectures aren't the only material that can be delivered via streaming or podcasting – with a MyMedia account all staff can upload course material such as video or music, or indeed use it for other events. The *Meet the CEO* series hosted by the Faculty of Commerce and Economics is a good example of this.

Students have clearly welcomed the ability to access coursework and resources, and interact with peers and teachers in a variety of ways to suit their particular circumstances and lifestyles. In a recent UNSW student experience survey many students commented positively on these services. In fact students are increasingly expecting this type of access and are asking that lecturers make better use of the online environment. Students are indeed drivers in this increasingly digital age. ■

Fast forward to virtual lectures

Prerecorded CD lectures could see an end to the days of frantically scribbling notes in the classroom. The School of Electrical Engineering and Telecommunications has successfully trialled CD lectures that feature an electronic whiteboard with the lecturer's handwritten notes and a video of the lecturer explaining each point as it appears on the screen.

The novel teaching method was introduced to third-year undergraduate students in Signal Processing and Transform Methods and to postgraduate students in Speech and Audio Processing last year. The response from students has been overwhelmingly positive.

Associate Professor E. Ambikairajah, who developed the teaching tools and ran the trial and subsequent student survey, said 75 percent of students found the prerecorded CDs provided a more efficient way of learning in comparison to live lectures. "Ninety-six percent of the students liked the fact that they could review the CD lectures at their own pace to improve the understanding, and 80 percent of the students felt they learnt more," he says. The CD lectures are designed to be followed up with a face-to-face classroom discussion period in which any questions can be raised.

Playing **with words**

Award-winning playwright John Romeril is the recipient of the 2006 UNSW Literary Fellowship. He spoke with **Anabel Dean** about his work and plans for collaborating with staff and students.

John Romeril confesses to being “a devotee of hard-nosed scholarship in an age of spin”. His dedication to education comes from his exploration of a career that is much more than a job. “It was a calling,” he explains. “I harkened to the pacemaker beeps of an inner compass and became a playwright.”

In winning the University’s Literary Fellowship he joins the ranks of other eminent writers (among them Alex Buzo, Les Murray, Sue Woolfe, Kate Grenville, Linda Jaivin and Frank Moorhouse) who have benefited from the creative and intellectual exchange with staff and students. “I welcome, through this Fellowship, a chance to repay my dues, giving back what I can to the university system that so decisively shaped my options,” he says.

Romeril’s options have so far stretched over four decades, resulting in close to 80 works for stage, film and television. His script for a film called *One Night the Moon* had “greatest reach” but his most admired play was *The Floating World*. It was succeeded by a string of successful works including *The Kelly Dance*, *Hanoi-Melbourne*, *Love Suicides* and *Miss Tanaka* (winner of the 2002 NSW Premier’s Play Award).

He began writing as part of a student theatre group at Monash University, then at La Mama Theatre, and later with the Australian Performing Group at the Pram Factory in Melbourne. His plays – produced by state theatre companies and community theatre groups across Australia – are a kind of theatre journalism. “They are the stories of time paraded across a stage,” he says.

On hearing of Romeril’s nomination for the Fellowship, the Director of NIDA, Aubrey Mellor, enthusiastically responded: “We could use as much of you as could be spared.” Romeril is likely to assist in the development of the directors’ course at NIDA, giving lectures, critically analysing scripts and supporting other public activities.

John McCallum, of the School of Media, Film and Theatre, was equally supportive: “Your work with my students at Newcastle on *The Dud War* all those years ago is legendary – I still use it to inspire new students,” he wrote by email to the playwright. “We could use you in public projects that would reflect well on the university and create exciting new work.”

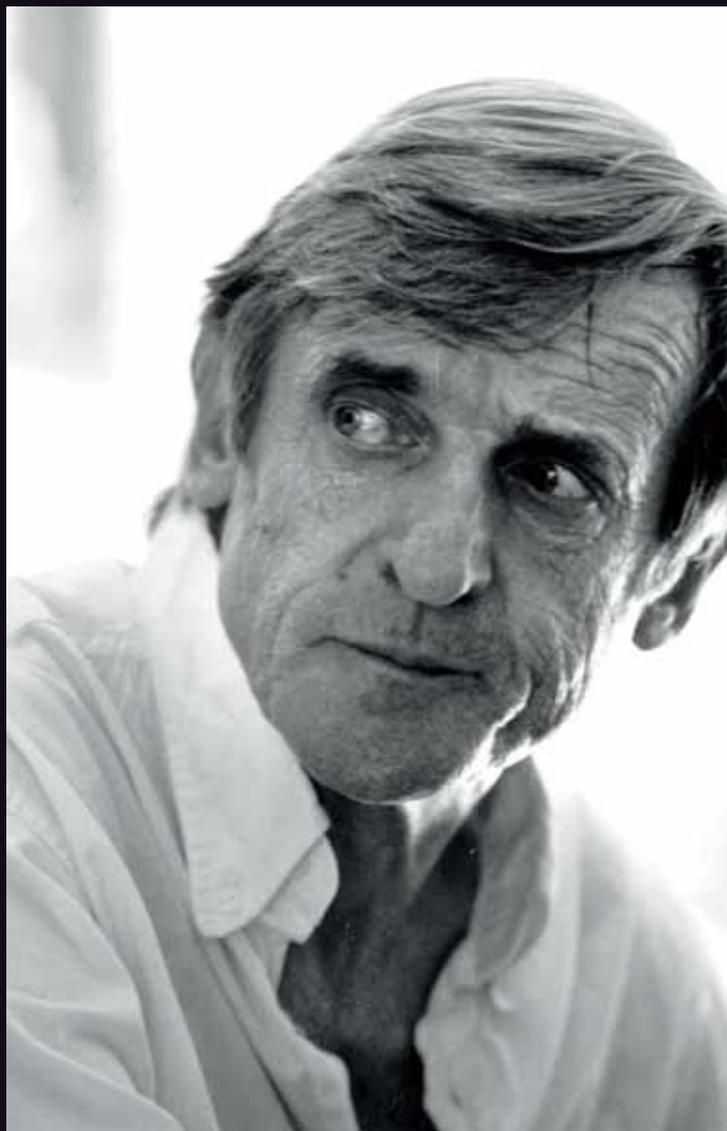
Romeril has been a writer-in-residence at a number of universities in Australia as well as the National University of Singapore. “It’s a recipe for keeping Alzheimer’s at bay,” he laughs. “It does shake up your brain a bit, increases your knowledge; there are always colleagues who are toiling away on interesting areas of research. It’s a very privileged position.”

The award, with a stipend of \$12,000, will provide an opportunity for Romeril to get on with his own writing too (taking up the three-month Fellowship early next year). He has two projects in mind. One concerns his friend Linzee Smith, an Australian theatre director and intellectual, who carved out a life in the avant-garde circles of New York before ill-health corrupted his body and forced his return to Melbourne 20 years later. “His spirit is intact and memory likewise,” Romeril says. “What matters most to me is that I sense my friend telling me his story could keep him alive (and interested in living) a while longer.”

The second project concerns Romeril’s mother who arrived on his doorstep in the 1990s with diabetes, mild to raging dementia and a menu of cancers, which propelled them both on a series of adventures. “Mothering mother” became his job. Romeril failed to tape-record her while she lived but hopes to have a chance to interview her relatives.

It’s too soon to say whether these projects will become a book, a play, a memoir or merely an archival document. “In a way, that’s what makes literature such a punt,” Romeril continues. “You leap into the dark and, with luck, sense a light going on as you fall.”

The University’s volunteer U Committee sponsors the UNSW Literary Fellowship, which is awarded biennially.



**That’s what makes literature such a punt
... you leap into the dark and, with luck,
sense a light going on as you fall**



Back to the future

In this edited excerpt of his graduation address, ABC science broadcaster **Robyn Williams** pulls out his dodgy political forecasting machine to give graduates an insight into the future.

Let me share with you three questions I recently asked former federal science minister Barry Jones and which he told me he's been musing on already.

First, why is the standard of evidence required to demonstrate we have a problem with climate change so much more demanding than that needed to show someone has weapons of mass destruction? Second, why does it seem so much harder to convince some people about evolution by natural selection than it does to show them that children have not been thrown overboard? And thirdly, why is it more difficult in 2006 for scientists to tell us what they are worried about than it is for Paris Hilton to tell us what designer label she has on her underpants?

Barry Jones is working on answers to those questions and I look forward to reading what he may come up with in his forthcoming autobiography.

He once set up a Commission for the Future back in the 1980s and put me on it. We looked forward to a number of significant changes back

John Howard is still Prime Minister in 2016. His deputy is Julie Bishop. Peter Costello and Brendan Nelson have joined Macquarie Bank, which now owns Sydney University, the Sydney Harbour Bridge and most of Mosman. Tony Abbott, Cardinal Tony Abbott, has replaced Cardinal George Pell at St Mary's

then, many of which have become famous, such as global warming, the debate about economic growth, the way career paths will change in the 21st century so that, unlike me, most graduates will have four or five main jobs during their lives, instead of just one. We also foreshadowed the way we should build links to our near neighbours in South-East Asia, India and China, instead of looking always, always, back to Buckingham Palace, Threadneedle Street, Lexington Avenue and Wall Street.

Maybe the Commission for the Future was ahead of its time. Maybe. But it was not an instrumentality for forecasting. Nonetheless we were given, by a small firm in Botany, not far from Sydney Airport, called Dodgy Brothers IT, a device called the Political Forecasting Machine, which, on the closure of the Commission in 1999, became mine. I took it out of the attic this morning, put in another set of diesel batteries, turned the handle, and looked at what it had to say about 2016, 10 years from now.

I thought today's shining graduates would like to know what they're in for. To prepare.

Well in some things, there's no change. In Canberra John Howard is still Prime Minister in 2016. His deputy is Julie Bishop. Peter Costello and Brendan Nelson have joined Macquarie Bank, which now owns Sydney University, the Sydney Harbour Bridge and most of Mosman. Tony Abbott, Cardinal

Tony Abbott, has replaced Cardinal George Pell at St Mary's.

The ALP is still fighting. Kim Beazley is making a fifteenth comeback and hopes for a third term as leader, replacing Simon Crean, to whom he has pledged undying loyalty. Meanwhile in year one of Applied Science at UNSW a young woman, one day to be the next Labor PM, has started her studies.

In other ways, 10 years from now, the world is quite different. American President, Jeb Bush, says he recognises the true enormity of his country's economic problems. For once the world enormity fits, both in the correct application, and the newly adopted one. He promises to take appropriate action, but denies that the war in Iraq is going badly and will soon send more troops.

In some parts of the world some truly shocking natural catastrophes have removed the doubt in most minds that we must, finally, become environmentally responsible in every way. People like Ian Kiernan are still

called watermelons by some political die-hards (watermelons, as you may know already, are green on the outside but deep red on the inside, set to undermine the Australian way of life).

Green business in Australia has exceeded expectations by 2016 and is now worth \$55 billion a year. Jobs burgeon in that arena. Waste is almost a thing of the past. Plastic residues go into steelmaking (a process pioneered at this University) and into road building or the chemical industry. Hydrogen is used to run computers and mobile phones and so has started the push to transport applications.

Finally, finally, a Tasmanian tiger has been successfully cloned and Professor Mike Archer, is seen taking it for a walk on a lead down the beach in Maroubra. It's called Timothy. It looks a bit like a poodle with stripes but Dr Archer denies that any genes leaked across from the neighbour's pet, Francoise.

Such is the world you are in for. It will be a challenge. But with a background from one of the world's truly great universities, you will be set to make a difference. ■

Robyn Williams was a guest speaker at a recent graduation ceremony for the Faculty of Science, during which he received an Honorary Doctorate of Science. Ian Kiernan was also honoured at the ceremony.

