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uniken

Future vision:

Preventing blindness in the next generation

UNSW
THE UNIVERSITY OF NEW SOUTH WALES

Insect inspiration • Galileo's legacy • The ultimate gift

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REGULARS

Cover photo: Patrick Cummins
Special thanks to Asha Cummins, our cover girl.

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Celebrating 60 YEARS of extraordinary achievement

WHY IS IT SO?

Photo: Viorika Prikhodko

The dirt on washing apples

*– **Dr Alice Lee**, School of Chemical Sciences and Engineering*

Pesticides are an indispensable part of modern agriculture. They help farmers sustain high-quality food production at affordable prices. However, pesticides may be a risk to our health if present above safe limits.

Many consumers believe washing can remove harmful residues from fruits and vegetables and some even go as far as using detergents or chemicals to remove pesticide residues. There are many kinds of pesticides used on fruits and vegetables: systemic pesticides are absorbed into plants and move within the plant; contact pesticides work by having direct contact with pests and do not move about from where they are deposited; some are hydrophilic, readily soluble in water; and others are lipophilic and are not soluble in water. So does washing apples make any difference? Apples are generally washed and brushed to clean any dirt and debris from the fruit. Then commercial grade wax such as carnauba wax is applied to increase shelf life. During washing and brushing, more than 50 per cent of water-soluble pesticide on the surface may be removed. However, pesticides that are not water soluble cannot be removed simply by washing. Waxing the apples locks pesticides in. Brushing and rubbing apples has been shown to reduce some of the residues as well as removing some of the wax. The residues that remain on apples are generally below the legal limit, and do not appear to pose any real health issues.

So why wash apples at all?

It is generally good practice to wash apples as one can imagine that these apples have been handled by several people before reaching us. Apart from removing dirt and dust, washing can reduce the number of micro-organisms that can potentially lead to food-borne illnesses.

To remove pesticide residues the best idea would be to peel off the skin, which has been shown to reduce at least 70 percent of the systemic residues. The only problem there is that peeling will also remove many beneficial vitamins and antioxidants that are present in the apple skin.

Now how do you like them apples? •

FOR THE RECORD

"No doctor thinks 'I'm going to work today to infect my patients'. Doctors are going to be horrified when they see these data." – Associate Professor Mary-Louise McLaws, co-author of research which shows doctors are well behind nurses when it comes to having the cleanest hands in the hospital, *Canberra Times*

"I very much doubt that they're related in any way at all other than the fact that they're all part of the tectonic processes of the Earth." – Professor Goff from UNSW's Natural Hazards Research Laboratory in the wake of tsunamis in Samoa and Sumatra, *The World Today*, ABC Radio National

"Australia, New Zealand and North America have traditionally been the countries that have among the highest rates (of cannabis use)." – Professor Louisa Degenhardt from the National Drug and Alcohol Research Centre on some research she has co-authored, *Herald Sun*

"In the last 20,000 to 30,000 years, there's been a substantial reduction in brain size of between 5 and 15 percent. There's every likelihood we're dumber than our hunter-gatherer ancestors." – UNSW biological anthropologist, Dr Darren Curnoe from the Faculty of Science, *Sydney Morning Herald*

"We're doing something unnerving." – Professor of Psychiatry, Gavin Andrews on internet therapy programs for depression and anxiety which can be twice as effective as seeing a psychologist or psychiatrist in person, *Sydney Morning Herald*

"… polarisation between 'job rich' and 'job poor' households is more pronounced in Australia than all other rich countries, except the United Kingdom." – Professor Peter Whiteford, Social Policy Research Centre, *Canberra Times*

Double happiness

More than 400 UNSW alumni from the Asia–Pacific region gathered in Beijing last month to celebrate the University's 60th Anniversary.

The choice of Beijing as the location for what was dubbed the 60/60 Anniversary Reunion, held over the weekend of 16–18 October, acknowledged the fact that Beijing was celebrating in early October the 60th anniversary of the People's Republic of China.

Highlights included the first regional graduation celebration for new graduates, and the awarding of the first honorary doctorates of engineering. These were bestowed on Professor Lu Yongxiang, Chairman of the China Academy of Science, and Dr Sitthichai Pookaiyaudom, Patron of the Thailand Chapter of UNSW Alumni.

Attracting a good deal of interest were two special panel discussions: Doing Clean and Green Business in China, featuring Suntech Chairman Dr Zhengrong Shi, the CEO of Sembcorp Dr Jeffrey Chen and Scientia Professor Martin Green; and Rising to the Top, which saw a number of our leading graduates provide insights into their professional success.

Professor Hilmer opened the celebrations with a keynote Global Leaders Lecture – Building a World Class University – in which he argued that UNSW is "superbly placed" to face the challenges of the next 60 years.

Alumni raised $500,000 for scholarships for the region.

Sunswift shines

Watt a beauty … on day four of the race, IVy clocked an average 84km/h

UNSW's solar racing team had a huge victory in the Global Green Challenge from Darwin to Adelaide. Sunswift IV was the first Australian car to cross the finish line.

As the top-placed silicon cell car, it's a double win for the student-led team.

This was the debut race for Sunswift IV, nicknamed IVy, a three-wheeled, hand-built carbon fibre solar vehicle. The car cruises at 90km/h and can reach a top speed of 115km/h using just 1,300 watts, the same amount of power it takes to toast two slices of bread.

In the overall results, the team was fifth on the road and fourth in its class. The 3000km endurance test for eco-friendly vehicles draws competitors from around the world, including big-budget solar racing teams from the US and the Netherlands.

Sunswift IV was the only student-run team from Australia to contest the race.

Time for recognition

UNSW has again been ranked in the world's top 50 universities, cementing its position as a global leader.

UNSW came in at 47 on the UK *Times Higher Education*–QS World University Rankings 2009, one of six Australian institutions to make the top 50.

Harvard once again claimed the top spot, with Cambridge second and Yale third.

The annual rankings of the leading 200 universities take into account academic and employer surveys, staff-student ratios, research citations and the proportion of international staff and students.

A field of tall poppies

UNSW has rounded off the year with great results in the major ARC and NHMRC funding rounds and a record haul in the prestigious Young Tall Poppy Science awards.

UNSW has received **$47.8 million** from the ARC, the highest level of funding of any university in the country.

The funding, commencing in January 2010, covers 122 projects across the Discovery and Linkage competitive grant schemes.

UNSW is the top performer in Linkage grants, winning $11.36 million for 28 cutting-edge projects involving collaboration with industry partners, who will contribute an additional $19.22 million – a record amount.

UNSW's largest single grant - $1.24 million - is for a project developing biotechnology for clean coal.

UNSW researchers will also share in $36.38 million for 94 Discovery projects.

The Centre for Infrastructure Engineering and Safety won six Discovery grants, totalling $2.12 million and two Linkage grants, making it one of the University's most successful centres in this round.

Building on the strong ARC result, UNSW received more than **$26 million** for 47 projects in NHMRC funding.

The biggest grant was $2.14 million to a team led by Dr Lynn Kemp, investigating the effectiveness of early childhood sustained home visits for families of urban Aboriginal infants.

In a new NHMRC grant category, UNSW also dominated, receiving **$4 million** out of $21 million allocated for The Partnerships for Better Health Grants.

Topping off the year, seven UNSW researchers were given Young Tall Poppy prizes – a record haul for any university.

Dr Valenzuela from the School of Psychiatry shared the top prize of most outstanding scientist for NSW/ACT.

The prizes recognise the brightest young researchers who have achieved significant scientific milestones in areas of most benefit to the community.

Congratulations also go to Dr Marcus Cole (science), Dr Donna Green (science), Dr Mary Kavurma (medicine), Dr Penny Martens (engineering), Dr Matthew McCabe (engineering) and Dr David Warton (science).

Photo: Mike Gal

Light vision … Physics postgraduate student Fera Ridwan with the optical tweezers

Nanotechnology's ray of light

Building the super-fast computers of the future has just become much easier thanks to an advance by UNSW researchers that lets them grab hold of tiny electronical components and probe their inner structure, using only a beam of light.

The discovery moves researchers a step closer to utilising semiconductor nano-wires that will be key components of future integrated devices and circuits.

In a paper published in the journal *Applied Physics Letters*, a team led by Dr Peter Reece, from the School of Physics, and colleagues from the Australian National University, report for the first time that such tiny objects can not only be held by "optical tweezers" but simultaneously studied in detail using a second laser beam.

"The optical technologies that revolutionised long-haul communications and brought us high-speed internet may be the key to the future of on-chip information processing. Working with researchers in the UK, we hope we can harness the 'forces of light' to build and test prototype nano-scale optical devices which may one day power your personal computer," says Dr Reece, a UNSW Vice-Chancellor's Postdoctoral Research Fellow.

Shooting for the satellites

UNSW is a partner in new agreements with Chinese authorities that will give Australian scientists access to high resolution thermal and visual images from Chinese satellites, boosting the nation's capacity to respond to disasters such as the Victorian bushfires.

The agreements provide access to Chinese disaster-monitoring and Earth observation satellites, which will also help researchers monitor the impact of climate change across the continent.

Chinese satellites allow greater area coverage and seven times higher resolution than thermal satellites currently used by Australian authorities for bushfire monitoring.

UNSW Vice-Chancellor Fred Hilmer and representatives of the CRC for Spatial Information (CRCSI) and the NSW Land and Property Management Authority signed Memoranda of Understanding on the satellite access with the China Earthquake Administration and the National Research Centre for the State Administration of Work Safety.

UNSW is recognised as a world leader in satellite image technology. Associate Professor Linlin Ge led a team of satellite radar specialists which provided Chinese authorities with vital analysis of the damage caused by the devastating Sichuan earthquakes. He also piloted the use of Chinese satellite technology in the Victorian bushfires.

New Deans on the scene

Professor Merlin Crossley has been appointed Dean of Science at UNSW. Currently a professor of Molecular Genetics at the University of Sydney, Merlin will take up the position in January.

He has previously served as Sydney University's Acting Dean of Science, Director of Research in the University's College of Sciences and Technologyand, most recently, Acting Deputy Vice-Chancellor Research.

His research has been recognised with several awards, including the Australian Academy of Science's Gottschalk Medal, the Royal Society of NSW's Edgeworth David Medal, and the Australian Society for Biochemistry and Molecular Biology's Roche Medal.

Graduate Research also has a new Dean with the appointment of **Professor Laura Poole-Warren**.

Professor Poole-Warren is currently based at the Graduate School of Biomedical Engineering and is Associate Dean (Research) in the Faculty of Engineering.

Her research activities are focused in the biomaterials and tissue engineering field with specific research interests in examining biomaterials-based approaches for achieving biologically active devices.

Professor Poole-Warren will take up the position on 4 January 2010. Pro-Vice-Chancellor (Research Strategy) Professor Margaret Harding will continue in the role of Dean of Graduate Research until January.

Profiles of the new Deans will be featured in the first edition of Uniken next year.

Raising the bar

Patrons of a bar designed by two UNSW architects can enjoy a drink and literally feel 'under the weather' as they experience the virtual effects of climate change.

Russell Lowe from the Faculty of the Built Environment and COFA's Richard Goodwin collaborated with landscape architect Adrian McGregor to create the *Seven Metre Bar* as part of the City of Sydney's *By George! Laneways* – a project that explores the potential of Sydney's under-utilised laneways with innovative temporary art works.

The bar, in Underwood St near Circular Quay, is positioned seven metres above sea level which represents the worst predicted sea level rise.

The *Seven Metre Bar* is open on Wednesday to Friday from 4-11pm, weather permitting, until January 2010.

Photo: Courtesy of the City of Sydney.

Shades of grey in age-old dilemma

An institute examining the impact of an ageing population has been opened by the Federal Treasurer. As ***Susi Hamilton*** *reports, its cross-disciplinary research is already changing mindsets.*

Photo: Mushenko Photography

Accentuate the positive … Treasurer Wayne Swan sees a silver lining

"Ageing is arguably one of our two greatest economic challenges – along with climate change."

The names read like a who's who of Australia's movers and shakers – Treasury Secretary Ken Henry, Reserve Bank Governor Glenn Stevens, the CEO of the Centre for Social Impact Peter Shergold and Heather Ridout from the Australian Industry Group.

Proving the issue of an ageing population is now at the forefront of the policy agenda, these are just some of the people guiding the newly launched Australian Institute for Population Ageing Research (AIPAR) through its Leadership Forum.

"It is arguably one of our two greatest economic challenges – along with climate change," said Treasurer Wayne Swan at the Institute's recent launch.

By the middle of the century, the Australian Bureau of Statistics predicts the number of Australians over 65 will double to a quarter of the population.

While Mr Swan acknowledged the problems – from slower economic growth to increasing levels of government spending – he also highlighted the opportunities.

"How do we harness the life experiences and intellectual capital of older Australians?" he asked. "How do we facilitate their contribution to the community – in the workplace, as volunteers and as carers? And how do we encourage Australians to recognise the benefits of an older population?

"We need a holistic and comprehensive examination of all these issues. And that is where this Institute comes in. There's never been a more pressing need to bring together academia, government and industry to consider the impacts of population ageing."

It is believed to be the first institute to look at ageing through such a range of disciplines, including economics, actuarial studies, health, engineering, computer science, the built environment and social sciences.

While the synergies seem so natural and important now, they weren't just a short while ago.

AIPAR director Professor John Piggott, who has looked at how governments and individuals can save for old age, has been involved in pension economics for more than 15 years.

"But it is only in the past five years or so that I have come to appreciate the importance of other disciplines in meeting the challenge of demographic shift. The Institute is the result of that appreciation," he says.

Professor Piggott is researching the implications of an ageing workforce with a team that includes an occupational health and safety expert, a demographer and an epidemiologist.

"The idea of transition to retirement – whereby you still work casually to have some income – makes a lot of sense to an economist," he observed. "But if you come at this from an OH&S angle, we'd say there is a lot of evidence showing that when people cease full-time work, they find it very stressful. For an older person, this may have serious health implications. This isn't something traditional economics imports into its thinking."

Another AIPAR project is the quarterly Longevity Index, which will look at the changing cost of financing self-funded retirees.

The researcher behind the index, Professor Michael Sherris, says past modelling has underestimated the population's longevity in light of improved medical treatments – leaving many financial institutions in the red.

It's something that has already caught the eye of the Treasurer.

"These are the types of things we need to know and consider, as policy makers try to understand the costs that the ageing population is confronted with when considering a retirement decision," he said. •

AIPAR is sponsored by PWC Global and the Australian Prudential Regulation Authority.

Masters of China's destiny

A fresh start … Sichuan scholars (l–r) Li Yue, Yuan Xin, Ao Hanyao, Yu Lu, Zhang Xiaohan

Yu Lu was in a fifth-floor university classroom in the Chinese province of Sichuan on May 12 last year preparing for a test when his desk began to shake.

Lu and his friends thought it must be a prank, so stayed in their seats. A few minutes later, with the entire building rocking, they hid under the desks. When the shaking didn't stop they finally fled.

As Lu, 22, joined the millions of people in his home city of Chengdu out in the open the magnitude of the earthquake, its epicentre just 80 kilometres away, became clear.

At 8.0 on the Richter scale, the death toll across Sichuan would eventually reach more than 68,000, with almost 400,000 people injured and 4.8 million homeless.

For the 60,000 students of Sichuan University, including Lu, the disaster meant sleeping rough that first night on the campus lawn in the rain, then days in tents with rudimentary facilities.

Today, Lu and four other Sichuan University postgraduate students are in classrooms at UNSW.

UNSW was the first university in the world to offer scholarships for 2009 to help equip Sichuan's next generation with skills for rebuilding their province and better managing future crises.

Lu's UNSW Master of Policy Studies course is useful for two reasons, he says.

First, the sheer number of casualties, including government officials, means qualified new graduates are urgently needed to fill crucial public sector roles. Second, a quality international education focusing on evaluating and analysing public policy will help put in place the best possible systems for the future.

Fellow scholarship holder Ao Hanyao, 22, is also taking policy studies while Zhang Xiaohan, 23, is studying risk management.

As a volunteer at the local hospital following the earthquake, Xiaohan saw first-hand a health system overwhelmed and unable to cope with the injured or even organise volunteers effectively.

"The earthquake happened so quickly, everything was in such a mess, it was as though there wasn't even enough air for all the people crowded into the hospital," she says.

"But, risk is uncertainty and we need tools to prepare for disasters and build efficient systems which can cope," she says, adding that it is these skills she hopes to gain through her UNSW studies.

They are joined by Yuan Xin, 22, who is studying design and Li Yue, 23, in environmental science.

"The scholarships are [a] very good opportunity for us to study here then go back and help with the reconstruction," says Lu. •

– By **Louise Williams**

The rights stuff

UNSW has played a key role in the push for a national human rights act.

The National Human Rights Consultation, chaired by UNSW Visiting Professorial Fellow Father Frank Brennan, found a human rights charter would prevent discrimination and enshrine individual freedoms.

The review on whether a charter was needed provoked the largest community reaction to any consultation in the country's history with more than 40,000 people writing submissions or attending public hearings.

Australia is the only Western democracy without a legislated charter of rights.

UNSW made six submissions to the committee, while experts from the Faculty of Law, including Ed Santow, Andrew Byrne, Andrea Durbach and George Williams led the debate about the need for greater statutory protection of human rights in Australia.

Attorney-General Robert McClelland released the report in early October, promising a government response to its 31 recommendations by year's end.

Under the charter proposal, the High Court would have the power to issue "declarations of incompatibility" over federal laws if they failed to comply with human rights protections.

Professor Williams, Anthony Mason Professor of Law, says the Brennan report should be implemented in full.

"Australian law still routinely permits the treatment of people in ways that are unjust and infringe the dignity, respect and freedom to which we all should be entitled," he told the *Sydney Morning Herald*.

"Fortunately, the Brennan report shows a better way forward."

– By **Steve Offner**

TV See related video in the Business and Law collection on UNSWTV at www.unsw.edu.au

For more on how academic freedom can be protected in a national human rights act, see the opinion piece from Professor George Williams on page 14.

Photo: AAP Image/Alan Porritt

Outspoken on human rights … UNSW Visiting Professorial Fellow Father Frank Brennan

Through the telescope of history

When Galileo looked through a telescope for the first time in 1609, it was a turning point in science. ***Dr Peter Slezak*** *writes on the 400th anniversary of the event.*

Galileo's observations of the night sky in 1609 were dramatic for many reasons. He made significant scientific discoveries and they changed how we saw our place in the universe.

It also changed how the Catholic Church regarded science and its relationship to the scriptures. In 1632, Galileo wrote a book in which the characters debated Copernicus's views that the Earth was moving both around its own axis and the sun. This was in direct conflict with the literal reading of the Biblical texts. Galileo was denounced as a suspected heretic.

His trial and condemnation a year later is well known but little understood. Galileo was not jailed by the Sacred Congregation of the Holy Office, nor was he tortured, and he didn't say, "And yet it moves!" More importantly, among the many myths surrounding the Galileo Affair, the Church fathers did not reject his scientific discoveries or refuse to look through the telescope, and Galileo was not condemned simply for telling the truth.

"Galileo said the intention of the Holy Spirit is to teach how one goes to heaven, not how the heavens go."

Contrary to the stereotype, the Jesuits in Rome were themselves scientists who admired Galileo and celebrated his discoveries. Not least of all, Cardinal Maffeo Barberini who was Pope by the time that Galileo went on trial, wrote an adulatory poem for Galileo and was a fond friend until the very end when he became infuriated by what he perceived to be Galileo's personal affront and betrayal.

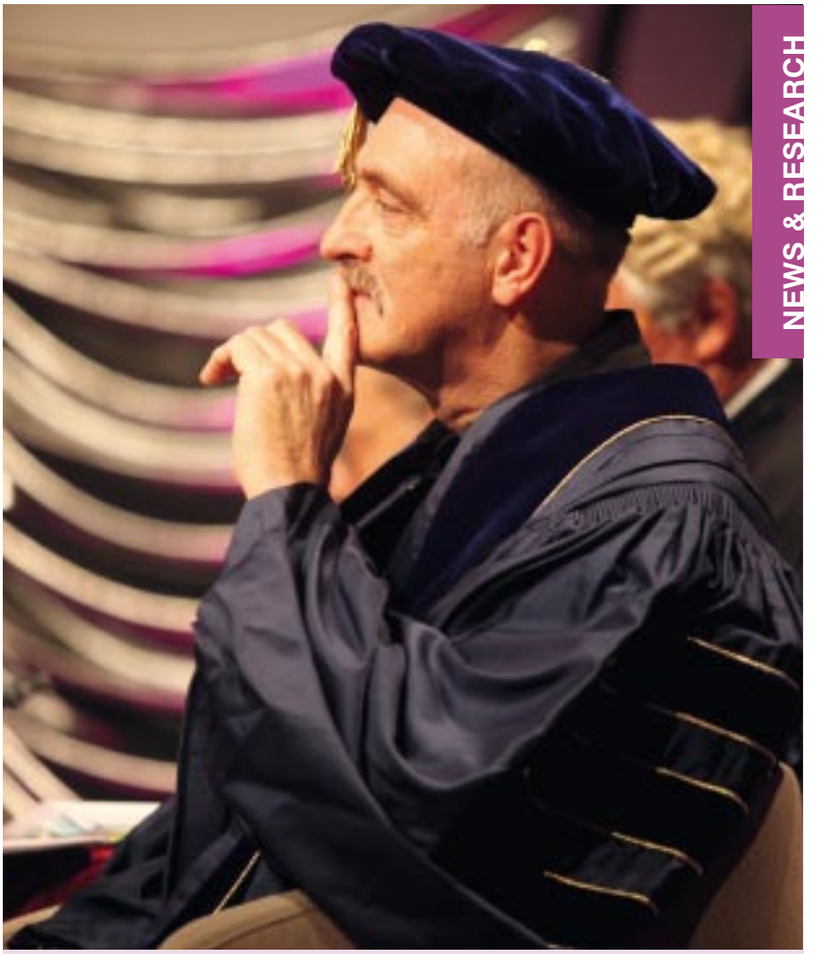
The trial was in part provoked by various disgruntled Aristotelian philosophers, whose theories and professional reputations were challenged. The 1633 trial was more like an interrogation and in the end he was found guilty of vehement suspicion of heresy – which was one of the more serious charges.

In class, as part of the course on the Galileo Affair, we have held a re-trial for learning purposes for students. This year we took it a step further – by hosting a public event (See breakout).

Many questions remain in dispute among historians today, and we may continue to ask whether the condemnation of Galileo was right or wrong in several respects – theological, scientific, philosophical, legal and moral.

It is important to understand that in the 17th century the case for Copernicus's views had not been firmly established. The foremost astronomer and mathematician Christopher Clavius didn't abandon the orthodox Aristotelian/Ptolemaic view. The Copernican theory was not firmly settled perhaps until Isaac Newton's *Principia*, which was written more than 50 years later in 1687. The Church had to follow official procedures for judging matters of "faith and morals" – laid down in the wake of the Protestant Reformation by the 1546 Council of Trent "to control petulant spirits". The ruling was intended to reject Martin Luther's doctrine of private interpretation of the Bible that Galileo was now appearing to encourage. Quoting a cardinal, Galileo said the intention of the Holy Spirit is to teach how one goes to heaven, not how the heavens go. However, the Church was not going to readily grant Galileo what they had denied Luther.

Photos: Grant Turner, Mediakoo



To mark the International Year of Astronomy, a public event was held at UNSW, in which the Galileo Affair was brought to life. *The Re-Trial of Galileo*, the brainchild of Dr Peter Slezak, featured a high-profile cast including the former Premier Bob Carr and Julian Burnside QC (pictured together); the president of the NSW Bar Association, Anna Katzmann; astronomer Fred Watson as Galileo (main picture) and ABC presenters Geraldine Doogue, Alan Saunders and Robyn Williams. In this re-trial, Galileo was found guilty on all three original charges. The event will be telecast on ABC TV's *Compass* program in the new year.

In the end, Galileo was treated relatively leniently. During the trial he was not kept in the dungeons; he resided in an official palace. When he was condemned, he was sentenced to house arrest, and he was still able to continue his work as a scientist. He wrote his most important work about physics in 1638.

The re-trial each year works from an educational and dramatic point of view because the performance is not scripted but an improvised role-play, and the outcome is not a foregone conclusion. •

Man-eating bird was real

An artist's impression of a Haast's eagle attacking moa. Image: John Megahan, PLoS Biology

A huge flesh-eating eagle that became extinct in New Zealand only 500 years ago was an efficient hunter that could attack prey 10 times its size, UNSW research has found, lending credibility to a Maori legend of a giant man-eating bird.

Research from UNSW's School of Medical Sciences and NZ's Canterbury Museum has confirmed that the Haast's eagle – which had a wingspan of up to three metres and claws the size of a tiger's – was indeed a predator and not a scavenger as previously thought.

Skeletal remains of the giant eagle (*Harpagornis moorei*) were first uncovered by Sir Julius von Haast in the 1870s. CAT scan re-examinations of the remains by Professor Ken Ashwell, from UNSW's Department of Anatomy, and a colleague at Canterbury Museum in Christchurch, revealed that the bird had a strong enough pelvis to support a killing blow as it dived at speeds of up to 80 kilometres per hour.

A disproportionately small brain, olfactory and optic capacity in the Haast's eagle also supports the theory that the giant bird evolved from a much smaller ancestor, most likely a genus of raptors which includes the modern day little eagle and the booted eagle.

The rapid growth in body size was likely due to the abundance of large prey particularly the moa, a flightless bird which grew to up to 250 kilograms and 2.5 metres tall.

Maori legend refers to a huge black-and-white predator – the Te Hokioi – that was capable of killing a man.

"That might be stretching things, but it was certainly capable of carrying off a child," Professor Ashwell said.

The investigation was published in the *Journal of Vertebrate Paleontology*. •

Big ideas ride on

*Great thinkers have long looked to nature for inspiration in the field of flight. As **Peter Trute** reports, engineers are looking to the natural world once again to create a new generation of tiny flying machines.*

The video playing on the monitor in Dr John Young's lab is captivating: amid streaming smoke in a dark wind tunnel, a locust's wings create swirls and spirals in dream-like super slow motion.

The ghostly grey footage could be mistaken for a modern art installation, but instead it is part of an engineering breakthrough that has revealed some of the secrets of insect flight and brought a new generation of tiny, man-made flying machines one step closer to reality.

Viewed in slow motion, insect flight is a display of effortless elegance – one of nature's casual miracles. It is also an achievement seemingly outside the laws of aerodynamics – a complex phenomenon that has not been fully understood until now.

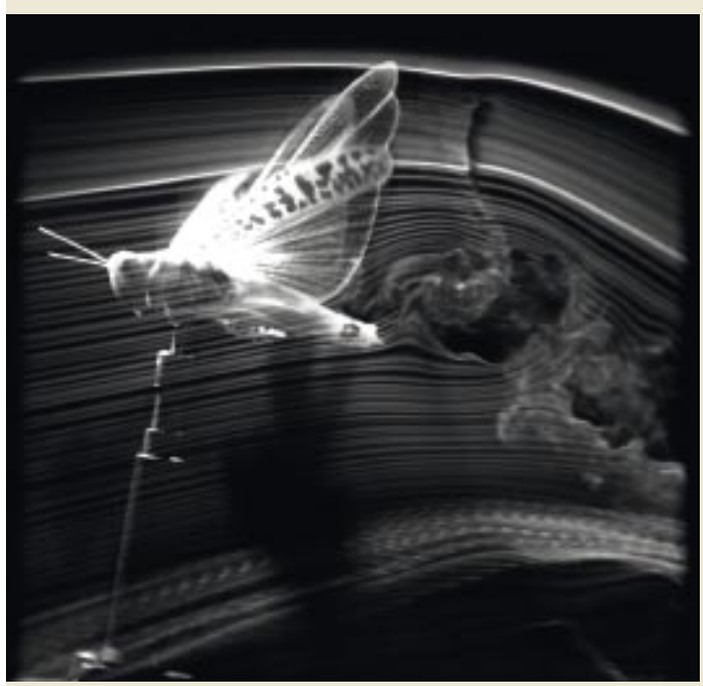
Dr Young, a senior lecturer in the School of Engineering and Information Technology at the Australian Defence Force Academy (UNSW@ADFA) in Canberra, has worked with Oxford University's Animal Flight Group to capture how the shape of a locust's wing changes in flight.

Using four high-speed video cameras to track different characteristics of the wing movements, the researchers gathered the data Dr Young used to make the first three-dimensional computer model.

This model re-creates and illustrates the airflow and thrust generated in the complex flapping movement, unlocking the secrets of insect flight.

The research, published in the journal *Science* in September, allows engineers to understand exactly how the flexing and twisting of a locust's wings allow it to fly with incredible efficiency, often hundreds of kilometres without rest.

"Locusts are an interesting insect for engineers to study because of their ability to fly extremely long distances on very limited energy reserves," Dr Young says.



One of nature's casual miracles ... a locust in flight

insect wings

"An insect's delicately structured wings, with their twists and curves, and ridged and wrinkled surfaces, are about as far away as you can get from the streamlined wing of an aircraft.

"Until very recently it hasn't been possible to measure the actual shape of an insect's wings in flight – partly because their wings flap so fast, and partly because their shape is so complicated.

"Now, with this work, we can say the so-called 'bumblebee paradox', claiming that insects defy the laws of aerodynamics, is dead. Modern aerodynamics can accurately model insect flight."

Leonardo da Vinci was one of the first engineers to look skywards, sketching winged craft in the 16th century. While his vision became a reality long ago, creating tiny, unmanned aircraft has proven to be a new, and very difficult, engineering challenge.

The limitations of conventional wing designs are exposed as scale decreases: stiff, fixed wings and the rotary blades of helicopters fail to generate enough lift to keep an aircraft aloft once their size is reduced to the micro scale.

"My work is part of a program aimed at understanding how insects achieve such high levels of flight efficiency and manoeuvrability, so that we can build miniature robotic flyers for search and rescue, industrial inspection, monitoring of fires and operation in dangerous environments," Dr Young said.

Micro air vehicles could provide unprecedented capabilities in some situations: a micro aircraft carrying a camera and sensors could, for example, enter a collapsed mineshaft or building, show the location of injured survivors and warn rescuers of any airborne toxins.

The modelling of insect flight is part of the burgeoning field known as biomimetics, which follows the concept of looking to nature for sustainable solutions to problems in science and engineering.

"Biological systems have been optimised through evolutionary pressures over millions of years, and offer many examples of performance that far outstrip what we can achieve artificially," says Dr Young.

"Biomimetics is growing now because we've really started to push the envelope on things and we've come up against limits.

"Certainly in the area I'm working in, flapping wings were looked at because people were designing fixed wings and realising they didn't really work very well on the micro scale."

Dr Young's 3D computational fluid dynamics model, developed using a supercomputer at the UNSW@ADFA campus, allowed him to run modified simulations of the locusts' flight to find out how the complexities of the wing structure contribute to efficient flight.

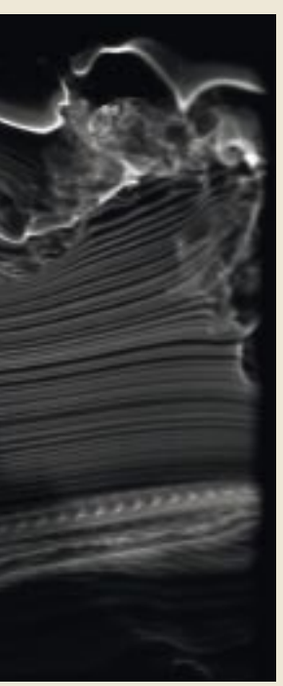
In one test he removed the wrinkles and curves but left the twist, while in the second test he replaced the wings with rigid flat plates. The results show that the simplified models produce lift but are much less efficient, requiring much more power for flight.

Dr Young is enthusiastic about the potential for flapping-wing flight. Possessed of a lifelong interest in all things that fly, he served for a time in the Royal Australian Air Force as an engineer and did aspire to be a pilot before he was "seduced by the engineering side of things".

Flapping wings are unsuitable for passenger flight because of the turbulent ride but the reality of what will be, in effect, man-made insects, is not too far off.

"Certainly these aircraft are going to be fielded in the next decade. They're probably not going to be as sophisticated as nature's flyers but we will see them," he says.

"Technology advances for a reason: because it's required." •



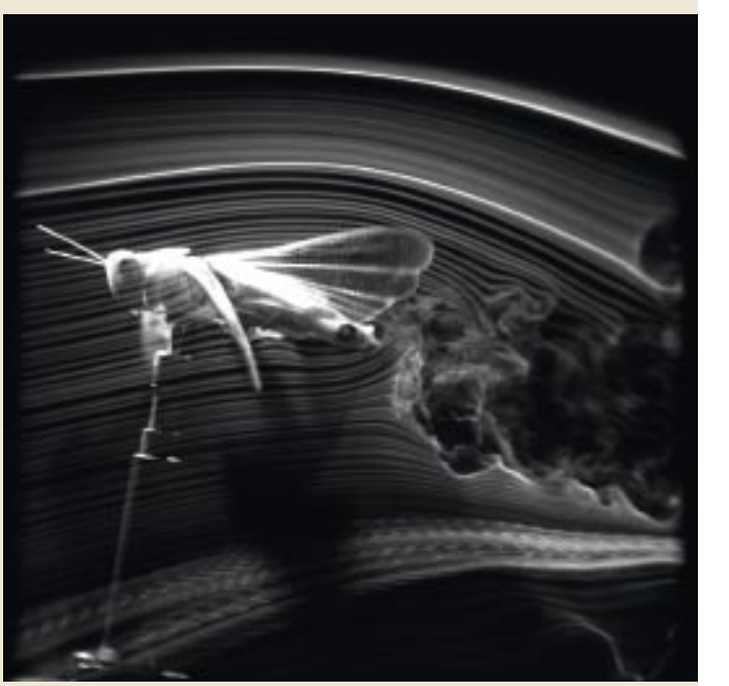
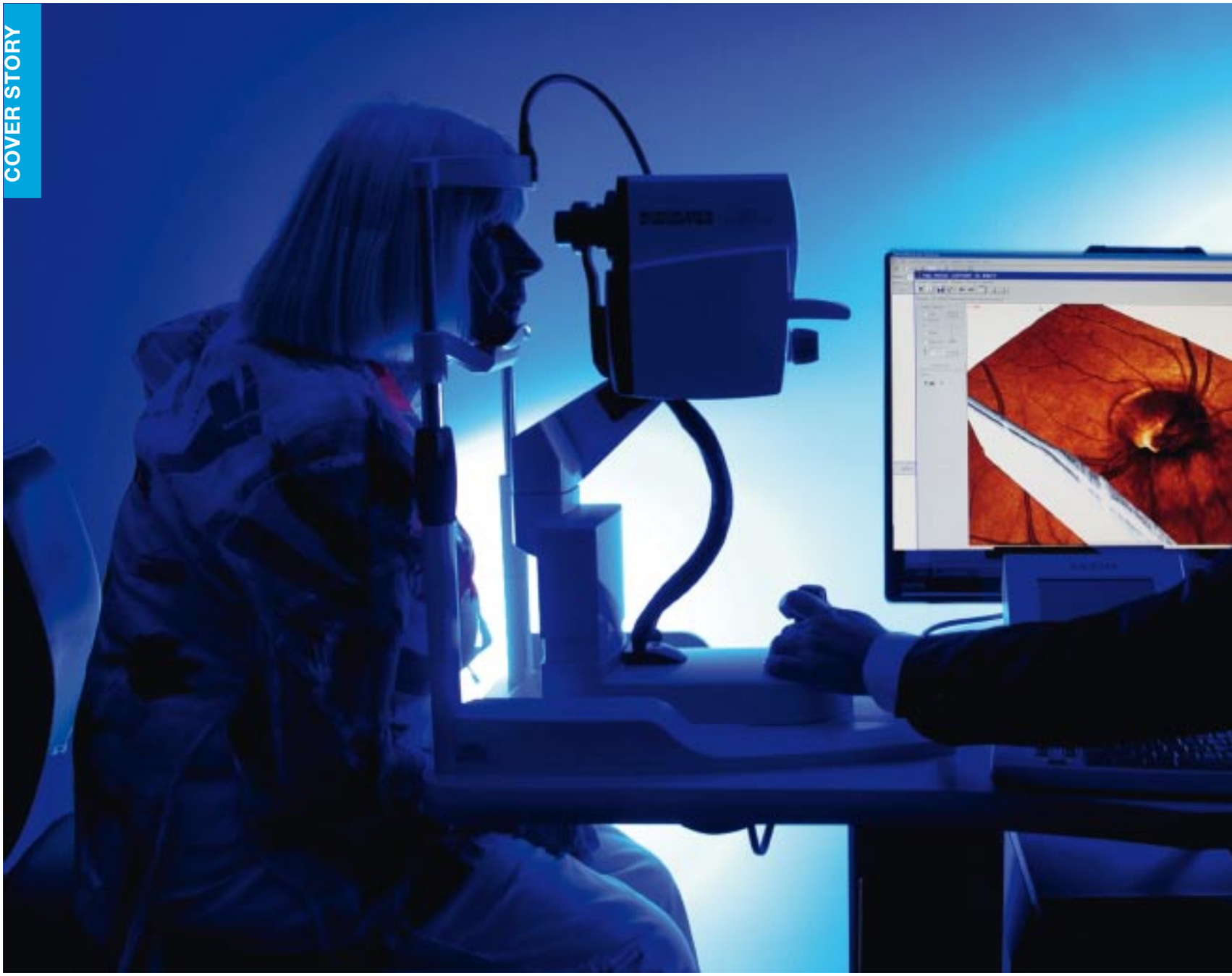


Photo: Animal Flight Group, Oxford University/John Young, UNSW@ADFA



Guiding vision

A new centre has its sights set on reducing preventable blindness, making the best eye care available to everyone. As ***Bob Beale*** *reports, Guide Dogs NSW/ACT has joined UNSW in making that vision a reality.*

Thousands of people at risk of irreversible vision loss due to eye disease are expected to visit the innovative new Centre for Eye Health on campus – and they won't have to pay a cent for access to its exceptional services.

The Centre, which opened earlier this month, not only offers probably the best and most comprehensive range of diagnostic equipment yet assembled in Australia, it will also be free to referred clients.

Guide Dogs NSW/ACT has committed, in a joint initiative with UNSW, to spend more than $40 million over 10 years to equip, staff and maintain a full range of world-class specialist eye imaging and vision diagnosis services.

The Centre will be open to anyone in NSW and the ACT who is referred by their doctor, ophthalmologist or optometrist. It aims to reduce preventable blindness and vision impairment by early detection of eye diseases such as macular degeneration, glaucoma and diabetic retinopathy.

"Preventable blindness comes at a significant cost to the Australian community," says the Centre's inaugural director, Professor Michael Kalloniatis. "Yet 75 per cent of the conditions that cause irreversible vision loss can be prevented or at least minimised if diagnosed and treated early."

Among the $2.5 million worth of equipment is Australia's first Optomap wide-field fundus imaging system, which painlessly takes wide-field images of the back of the eye and optic nerve – without the need for eye-drops or invasive procedures.

The digital images it produces provide an unprecedented 200-degree view. They can be quickly examined on a high-resolution, clinical-grade monitor and magnified, rotated and adjusted for brightness, contrast and colour. It can be used, for example, to detect tiny lesions in the fundus – the interior surface of the eye opposite the lens.

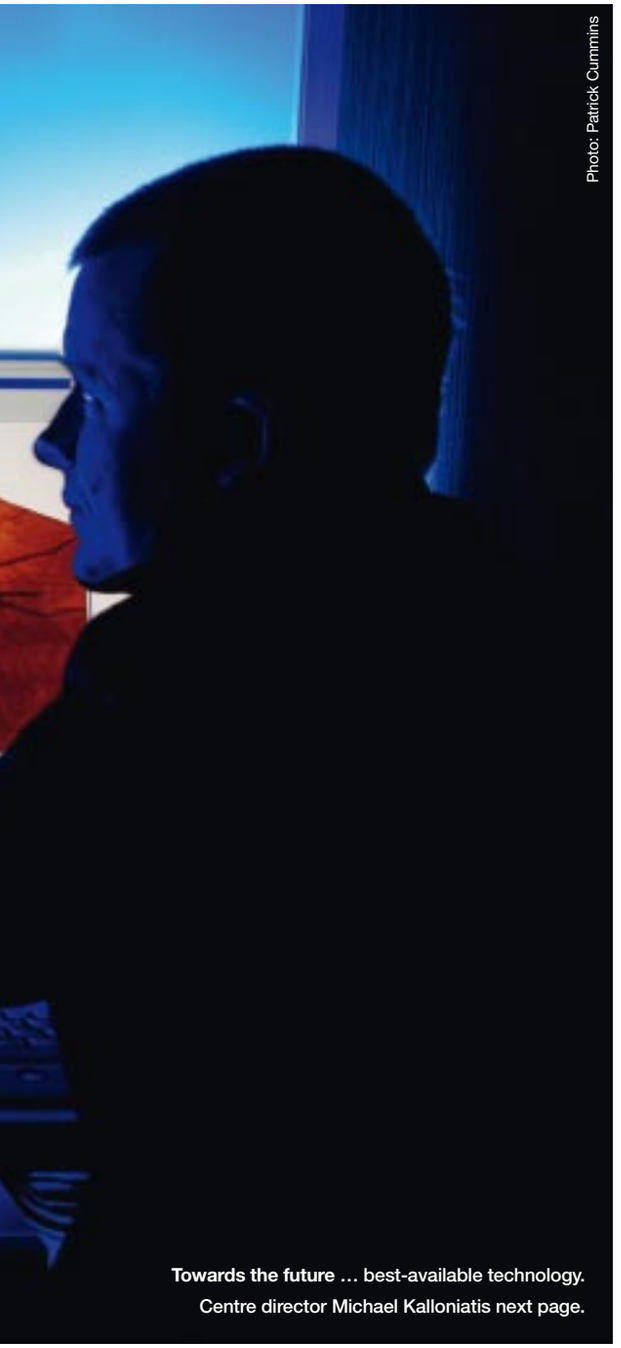


Photo: Patrick Cummins

Towards the future … best-available technology. Centre director Michael Kalloniatis next page.

"The Centre is unique in Australia: for the first time the very best diagnostic equipment will be readily available and integrated under one roof and at no cost to people at risk of developing eye disease," says Professor Kalloniatis.

"Waiting lists are up to two years at many public hospitals, so people will now be able to access tests much sooner. As well, they won't have to visit different centres for different tests – we have everything that's needed here."

NSW Governor Professor Marie Bashir officially opened the Centre on 4 November with UNSW Council member Geoff Lawson acting as MC at the event. Mr Lawson, a UNSW School of Optometry graduate, was briefly involved in contact lens research before his sights were set on a Test cricket career.

But even before it opened the Centre was creating a buzz in eye health circles – more than 400 people attended open days held in

(continues on page 12)

Through a glass darkly

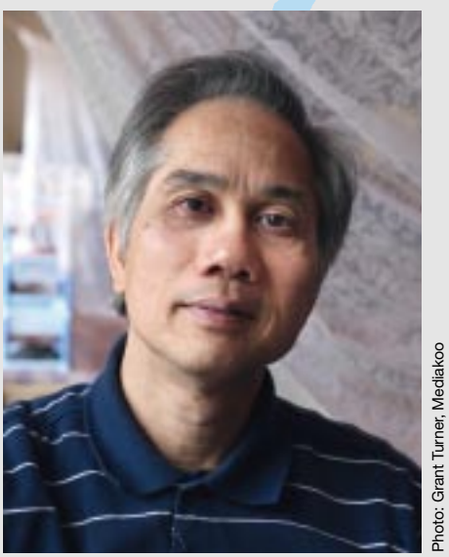


Photo: Grant Turner, Mediakoo

Accountant Samuel Lui knew something was wrong with his eyesight about 12 years ago, when documents started looking blurry.

Living in Singapore at the time, it took visits to several doctors before he was diagnosed with glaucoma, an eye disease in which the optic nerve at the back of the eye is slowly destroyed – often due to an increased pressure inside the eye.

"Once the pressure begins to build up and you start to notice something is wrong, your optic nerve has already been damaged and what is lost is lost – you can't get it back," Mr Lui says. "Its nickname is the sneak-thief of sight. It is very nasty."

After moving to Australia, his condition took a rapid turn for the worse and, despite the best efforts of his doctors, he was declared legally blind and had to retire five years ago. His three children were still school-aged.

Now 52, glaucoma has had a profound impact on Mr Lui's life. He can still see a little but his central vision was attacked, meaning that he can no longer see detail, read printed text or even recognise people's faces.

> **"Its nickname is the sneak-thief of sight."**
> **Samuel Lui, glaucoma sufferer**

His remaining peripheral vision means he has some independent mobility. But he's not taking any chances and is having cane-training from Guide Dogs NSW/ACT so that he has the requisite skills if his vision gets worse.

He's learning new ways to read and write with text-to-speech software, which lets him surf a few familiar websites and use email.

He can't say whether earlier detection of his condition would have saved his sight but he is sure of one thing: "I would say to anybody who has a potential high risk of glaucoma – anyone with a family history of the disease, or who is very short-sighted and aged over 40 – to have an annual check-up to make sure their eye pressure is normal."

Centre Director Michael Kalloniatis … 75 per cent of conditions which cause vision loss can be prevented

Photo: Peter Morris. Courtesy of Guide Dogs NSW/ACT.

"For the first time the very best equipment will be available under the one roof and at no cost …"

(continues from page 11)
August, including 15 per cent of the state's optometrists.

The Centre should greatly improve the efficiency in medical care for eye health. Supplementing the existing services offered by optometrists and ophthalmologists, the testing services will mean that more people can be screened for eye health conditions and then progress on to the relevant practitioner for any required treatment.

It also marks a change of emphasis for Guide Dogs NSW/ACT. Generally associated with providing mobility services to the blind or vision impaired, the charity reviewed the services it offered the community in the lead-up to its 50th anniversary.

This identified an emerging need for more emphasis on prevention and treatment.

A key concern was the intersection of a stressed public health system and an ageing population with attendant emerging vision problems, says Guide Dogs NSW/ACT president Barry Stephen.

"There was a realisation that if nothing changed there could be a tsunami of demand for the mobility services that Guide Dogs provides and that the services demanded were likely to be different and more labour intensive because of the age of the recipient," Stephen says.

Independent economic analysis undertaken by Access Economics for the Centre for Eye Research Australia estimates the total cost of vision disorders in Australia, including those that commonly lead to preventable blindness, is almost $10 billion a year.

As a mark of the need for the new Centre, it is estimated that more than 25,000 at-risk patients will be examined each year when it is fully operational. It will have 11 clinical staff – including optometrists and consulting ophthalmologists – supported by seven operating staff.

The existing nearby UNSW optometry clinic will continue to provide free general vision testing, performed by students from the adjacent School of Optometry and Vision Science.

As well as being a resource for healthcare providers, the Centre will also serve as a teaching facility and help to support the growing cluster of vision research and education organisations at the University.

Over time, the Centre is expected to help advance medical knowledge of the progression of eye conditions. Among the research opportunities it presents is the chance to compare the relative merits of different diagnostic instruments used to detect eye disease, particularly in its early stages.

While the initial focus of the Centre is to deliver diagnostic services, its potential to aid in teaching and research is likely to grow in coming years, says deputy director Associate Professor David Pye.

"It will help to lift our optometry teaching to a new level, especially for final-year students," he says.

Four large consulting rooms in the Centre are designed to allow students to observe patient examinations. Images obtained by diagnostic equipment, for example, will be projected on to a high-resolution 107 centimetre television screen above the patient, so the student can indirectly see at the same time what the clinician is examining.

"There's already strong interest from researchers in our equipment and once substantial client numbers have built up it is expected that research opportunities will be apparent in that database as well," says Professor Pye. "Right now, we're focusing on setting up, learning about the equipment and getting the service side off to a strong start."

The Centre seems destined, then, to play not only an increasingly important role for UNSW and Guide Dogs NSW/ACT, but also for the whole community.

As Mr Stephen says, "It is all about providing a resource that will help eliminate preventable blindness and help in the management of degenerative eye disease." •

Radio technology makes waves

When digital radio was switched on in August, it generated another wave of superseded electronic devices headed for the tip. ***Peter Trute*** *reports on a possible solution to the problem.*

How your radio could look … a mock-up of the technology

As Australians embrace digital radio, a UNSW researcher is determined that tuning into your favourite radio program each morning need not cost the earth.

Dr Miles Park, industrial design program head at UNSW's Faculty of the Built Environment, is investigating how design can combat obsolescence in consumer electronics.

With as many as 37 million functional analogue radios in Australia destined for landfill with the switch to digital he has shown there are creative ways to slow the growth of the e-waste mountain.

Dr Park has developed the DAB (Digital Audio Broadcast) Life, a device that allows analogue radios to be adapted to digital for much less than the cost of a new digital receiver.

While yet to be commercialised, he has shown the concept works by creating a functional mock-up and appearance model. It shows a simple way to extend the life of existing products and reduce the estimated 15 million electronic products sent to landfill in Australia each year.

The DAB Life is the radio equivalent of the TV digital set top box, allowing an analogue radio to pick up digital signals, with the added capability of rebroadcasting the signal to other analogue radios.

"DAB Life is a way to extend the life of existing radios and the way it does this is by piggybacking the new technology on to the old," he says.

Dr Park believes reconfiguring old technology is a practical way to reducing e-waste, which is becoming a global problem.

The United Nations estimates 20 to 50 million tonnes of waste electrical and electronic equipment is dumped in landfills around the world each year. In Australia we buy more than 2.4 million PCs and one million televisions annually, according to the Australian Bureau of Statistics, and e-waste is growing at three times the rate of general municipal waste.

Extending the life of products is more feasible than simply cutting consumption, Dr Park says.

"A way to deal with the obsolescence of e-waste is to think about new strategies that can extend the life span of existing products or find new ways of using those products."

"It piggybacks the new technology onto the old."

As part of his doctoral research, Dr Park developed three strategies to extend product life spans: piggybacking, as demonstrated by the DAB Life; reassignment, where a product is reassigned from its original task to an entirely new function; and scripting, which is about changing the consumer behaviour and attachment to an item.

As an example of scripting, Dr Park suggests a laptop computer, which contains "fast" technology that becomes obsolete rapidly, such as the central processing unit. The functional life span of the product can be prolonged by introducing a new "script", or behaviour that encourages the user to upgrade only outdated components rather than the entire device – and modifying the design of the computer to allow this.

With the Federal Government developing a national waste policy, Dr Park says there are encouraging signs that e-waste is beginning to be addressed in Australia. But major challenges remain, he adds.

"Primarily there are three approaches that need to happen in a coherent way: consumers need to make some behavioural changes; retailers and manufacturers have to take greater responsibility and think about design for longer life and end-of-life strategies; and government has to establish the regulatory frameworks that will create opportunities for new product and business innovation." •

Photo: Phil Carrick/www.fairfaxphotos.com

The price of free thinking

It's time to fight for academic freedom by agitating for a national charter of human rights, says ***George Williams****.*

Academic freedom is essential to the work of Australian universities. Their role in educating students and advancing human knowledge depends upon academics and students working and learning in an environment in which they can freely exchange ideas, challenge conventional wisdom and debate controversial issues.

In countries such as New Zealand and South Africa, academic freedom is protected by legislation or even in a national constitution. By contrast, Australia does not protect academic freedom in its Constitution or by statute, nor does it have a national bill or charter of rights from which it might be implied.

The protection of academic freedom in Australia is limited. Industrial agreements can provide protection, but this is vulnerable. Furthermore, this and other possible sources of protection can be overridden by federal law. Such laws can, and have, displaced the employment arrangements of a university or even any future recognition of academic freedom under state law.

Even though it has limited legal protection, academic freedom is still recognised in other ways. In law at present the freedom is mostly a set of conventions and assumptions for those who work in the university sector. In this form, academic freedom is fragile and easy to breach. Its maintenance depends on the vigilance of those who work in the sector and on the goodwill of those who have the power to undermine it.

Australian academics face the possibility that academic freedom will continue to be whittled away over time. There are many recent examples of the freedom having been compromised, such as through political interference in the allocation of Australian Research Council grant funding, the pressure on universities to become more like commercial enterprises and restrictions on teaching and research under Australia's anti-terror laws.

This is a problem not only for the academics, but also for society. We all depend on the quality of academic work to better understand the problems facing the nation and to promote economic development and social progress.

The federal parliament should legislate to protect academic freedom. The law should be drafted, however, to allow legitimate scrutiny of academics' work and rigorous processes to ensure they operate in an accountable manner.

To protect academic freedom over the longer term we must also realise it is part of larger debates about other important values. These include the independence of the public service and its capacity to provide government with frank advice and the ability of non-government organisations to engage in public advocacy and not lose their funding as a result.

Attacks on these values are all too possible because Australia does not take seriously enough the need to protect our most important democratic rights. Even freedom of speech has no secure protection in Australian law and instead depends upon the goodwill and good sense of the government of the day. When such goodwill is in short supply, or during a climate of popular fear, freedom of speech can be curtailed and with it a number of other important principles like academic freedom. If we do not take freedom of speech seriously, it is hard to argue for the maintenance of something like academic freedom.

"Australian academics face the possibility that academic freedom will continue to be whittled away over time."

The best way forward is not only to legislate to protect academic freedom, but to support, with a coalition of like interests, broader reform to our system of government and legal rules. That reform should include a national charter of human rights. Although such a law has been enacted in the ACT and in Victoria, Australia remains the only democratic nation without a national law of this kind.

Experience elsewhere shows that a charter would give real protection to rights like freedom of speech and could have a powerful impact in shaping public debate. While no such law provides the whole answer, it would be a valuable tool in preventing the further erosion of academic freedom in Australia. •

George Williams is the Anthony Mason Professor of Law and Foundation Director of the Gilbert + Tobin Centre of Public Law at the Faculty of Law, UNSW. He is also an Australian Research Council Laureate Fellow.

Image: ImageZoo/Corbis

A creative approach to writing

Creative writing is undergoing a transformation. ***Stephen Muecke****, the inaugural professor of writing at UNSW, is leading the charge by bringing researchers, the public and writers closer together.*

I see writing as an emerging discipline and an instance of a shift from reflection on literary works to their production. This has happened on several fronts. The information age has increased the economic importance of the creative industries. Vocationalism became more respectable after the Dawkins reforms; then, as universities were semi-privatised, students began to shape the market through their buying power. Suddenly, a lot of students were motivated more by the novel in them, than by the desire to express their admiration for Jane Austen.

Not every student has literary fame in their sights. But only sophisticated readers can be sophisticated writers and that is why a good writing program will have a strong symbiotic relationship with a broad range of humanities teaching. Nevertheless, universities have become the laboratories, or even the factories, for creative work.

Such work seems to have migrated from the proverbial garret of the dim past when there was no funding, via the era when the Australia Council was the writer's sole saviour, to the considerable investment in the university sector today.

University-trained novelists are prime candidates for prizes such as The Australian/Vogel Award, as they have had the advantage of supervision and training in workshops where editorial skills are honed. I think this is the case with last year's winner, Andrew Croome, a recent guest at UNSW, whose novel about the 1950s Petrov affair, *Document Z*, was his PhD in writing at the University of Melbourne.

Meanwhile, in Canberra, the Australian Research Council (ARC) is gearing up for the Excellence in Research Australia trial and grappling with the problem of how creative work can be configured as research and assessed alongside other academic outputs.

Now, as an ARC peer reviewer, I may read a humanities and creative arts discovery project proposal from a writer employed as an academic. The writer's argument in their grant application may be that among readers there are those who would find it of great value to read about how, for instance, someone deals with a dear friend dying of cancer.

Helen Garner's *The Spare Room*, on this subject, begins with a marvellous paragraph that cascades through about five emotions. The work articulates feelings with thoughts, she may argue, as readers go through a transformative experience. This is not just an entertainment. What they learn would flow along intersecting networks I call knowledge acquisition pathways and affect those acquisition pathways.

Does the strength of the proposal, that this kind of writing be understood as research, lie in the fact it has more than mere entertainment value? In one way, no. Works that are successful in market terms may not need a government funding boost, but the research work that seeks to understand them does.

"… students were motivated more by the novel in them, than by the desire to express their admiration for Jane Austen."

Will someone such as Garner need ARC funding to write her next book because it will push the outside of the creative envelope so far that there is no available public for it yet? Perhaps. What is more significant is that a novel as a research output contributes to the discipline and to the good of the nation. Perhaps the technique of free indirect discourse did not need a university to invent it but it needed a helluva good writer, Flaubert, who was getting bored with standard fictional representations of speech. The education of readers and writers hopefully will raise the bar and produce such technical breakthroughs.

At UNSW, we have created UNSWriting, which takes seriously its partnerships with publishers and their writers, cities and their festivals. We are working to put these relationships on a free-flowing and equal footing, while sharing ideas with colleagues.

Historians will look back on this period in Australia's literary life as the time the universities had their chance. This is an opportunity not to domesticate writing but to create partnerships with the industry and the book-loving public to raise the bar and strive for that excellence that the ARC is about to assess. •

The next guest of UNSWriting is ***David Malouf****, who will be on campus on 15 April 2010. Please RSVP to UNSWriting@unsw.edu.au.*

The agony and the ecstacy

*This year's Blake Prize winner, Angelica Mesiti, discusses her award-winning video art, her alter ego and life in front of, and behind the camera lens. By **Fran Strachan**.*

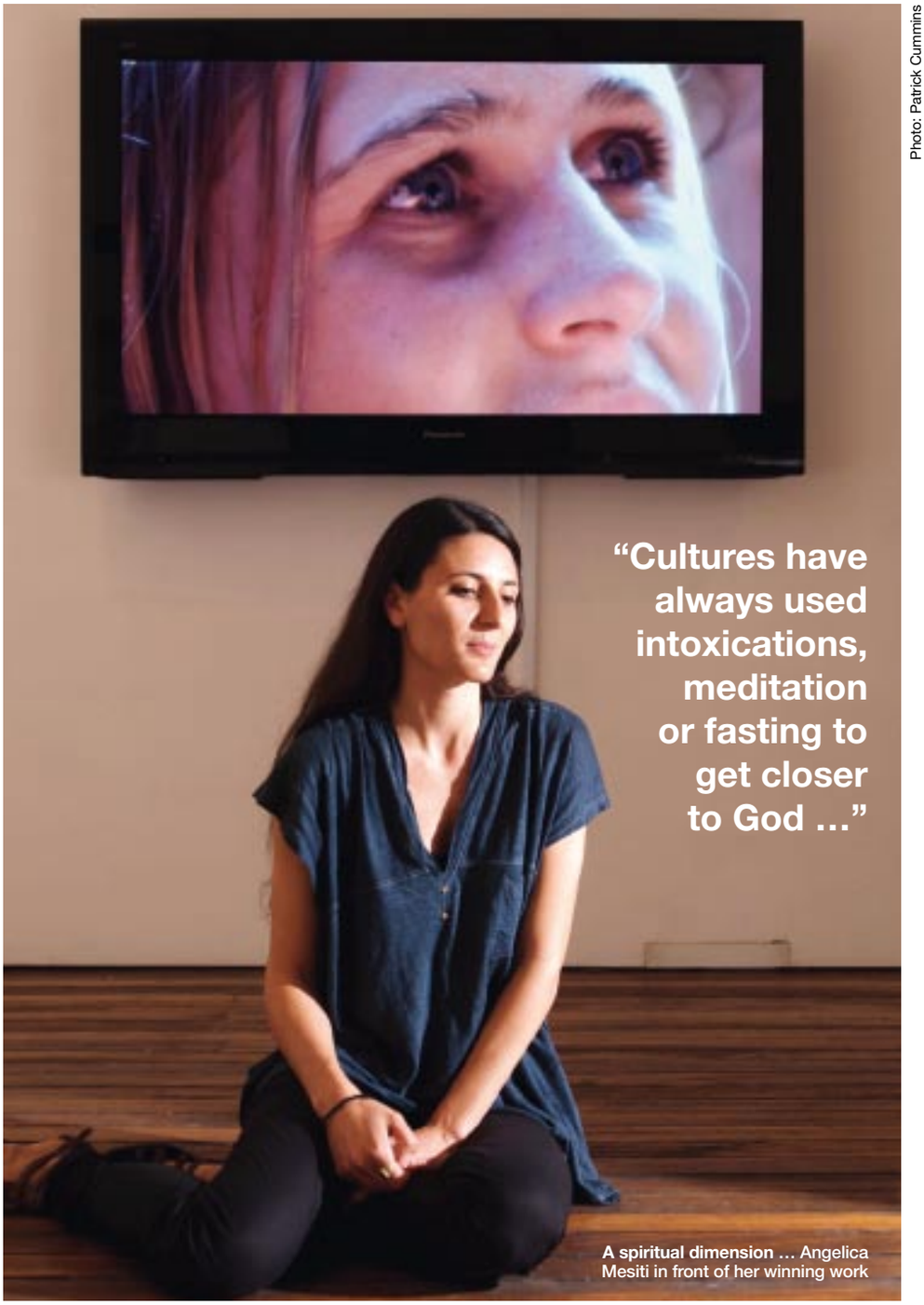


Photo: Patrick Cummins

"Cultures have always used intoxications, meditation or fasting to get closer to God ..."

A spiritual dimension ... Angelica Mesiti in front of her winning work

It's a very contemporary biblical scene. A group of teenagers move rhythmically to a silenced soundtrack, bodies glazed by sweat, hair lank, wide eyes raised reverently to an unrevealed deity. A modern-day Mary Magdalene clutches her mobile phone between praying hands while a boy turns his face skyward, awaiting absolution from the water that showers the crowd, cleansing them of their collective sins.

Filmed from underneath the main stage at the Big Day Out, this video was this year's Blake Prize for Religious Art winner.

Rapture – Silent Anthem is the creation of video artist and COFA Master of Fine Arts student, Angelica Mesiti, and is the first video work to take out the prize in the competition's often controversial 58-year history.

"I was really surprised to win," says Mesiti. "I didn't create this specifically for the Blake, but my intention was always to make a video that explored spirituality, transcendence and worship and how those concepts are displayed in a contemporary context."

Mesiti references historical religious imagery including the 16th century Italian sculptor Bernini's *The Ecstasy of St Therese* in her work. Filming locations were also assessed in detail to decide on camera angles, the sun's position and the rock group that would offer the most "emotionally heightened" atmosphere.

"Ecstacy is cheap," quipped art critic, Christopher Allen, on viewing *Rapture*, in reference to the elevated state of the teenagers featured in the video, but Mesiti believes the fans' drug-altered mood doesn't detract from her interpretation of the spiritual.

"I don't think there's such a thing as *pure* idolisation. Through history cultures have used different intoxications, meditation or fasting to get closer to God or achieve a transcendental state," she says.

A self-described "over-thinker", Mesiti's mind seems to work in over-drive, a quality that has resulted in her meticulously researched and executed video art being exhibited internationally and her cinematic, *The Line of Load and Death of Charlie Day,* being selected to tour Europe with the *Les Recontres Internationale* video festival earlier this year.

Mesiti's intellectualising, questioning side is balanced by an alter ego that's happy to explore the outrageous and the carnivalesque.

Performing nationally and internationally with Sydney-based drag-kings, The Kingpins, for the past nine years, Mesiti, who was pursuing a professional dance career before enrolling at COFA, brings her choreography and video skills to the group. The Kingpins also produce and exhibit video installations of their performances.

"It really is a performance for me, it's an act," she says. "I have a reserved personality and find it difficult getting out of my comfort zone, so in some respects it's good for me. But I could only ever do it with the group, not solo," she says.

The Kingpins provides Mesiti with the opportunity to indulge different approaches to her video art, despite her unease with being in front of the camera.

"I can explore TV, documentary and advertising styles with the Kingpins videos, which is very different to my own work," she says. "I'm fortunate that the two approaches allow me to explore the various sides of my personality."

Just back from a residency at COFA's Parisian apartment, Mesiti is already planning her Australia Council-funded return to the City of Light to produce her new video project, which will merge her varied talents.

"I'm inspired by the antithesis of studio-based practice and video artists who get involved with the world, so my next project will explore that, as well as music and performance," she says. •

Rapture will be screened in Melbourne's Federation Square next February as part of the *Experimenta Utopia Now – International Biennale of Media Arts.*

Photo: Prudence Upton

Tripping the light fantastic

Some of Australia's most promising new choreographers are benefiting from an ongoing dance residency program at UNSW. ***Susi Hamilton*** *reports.*

Dancing out of the shadows … new media artist Jordana Maisie with dancer and choreographer Adam Linder.

Brightly coloured images from a projector swirl across the bodies of two artists in the middle of the studio.

The images their bodies create on the backdrop – mediated through the tricks of computer-generated technology (and some old-fashioned heavy velvet curtains) – are delayed, having an otherworldly effect.

"We're interested in creating an intense, individual experience," enthuses new media artist Jordana Maisie, about the residency she shared with internationally recognised dancer and choreographer Adam Linder.

It's so individual that the work is aimed at a single audience member at a time. The person is led into a space, which is in complete darkness.

"It's a very different approach to space. We have tried to define how an audience member experiences that space," says Linder, a former dancer with the Royal Ballet who last year became the youngest artist to win the prestigious Place Prize for British-based choreographers.

The four-week residency – and the chance to catch up with family and friends – was enough to lure the 25-year-old back to Australia, albeit temporarily.

His collaborator, also based in Europe, says the residency gives artists the chance to take risks.

"There aren't enough spaces like this, where you have the space and time to settle in," says Maisie. "That's when interesting things happen."

The residencies are to become a regular occurrence at UNSW, as they are being supported for the first time with a grant from the volunteer U Committee.

The Dance Research Residency Program is being run by the Creative Practice and Research Unit in the School of English, Media and Performing Arts in partnership with industry through the Critical Path Choreographic and Dance Laboratory NSW.

Some big names in the arts, including Meryl Tankard and Sue Healey, have already had residencies at UNSW's humble Io Myers Studio.

The artists are encouraged to share their discoveries with staff and students, but there is no requirement that their practice has any outcome; the focus is on process and experimentation.

"Residencies such as these will complement our teaching in dance and theatre and performance studies. It will also provide academic staff and students with invaluable opportunities to engage with the creative processes of artists within the university context," says Dr Erin Brannigan, lecturer in dance in the School of English, Media and Performing Arts.

"If you look at the arts, this confluence of ideas and practice has always happened. It's a natural partnership," she muses.

"Universities have always had really strong connections to the arts," echoes Su Goldfish, manager of the Creative Practice Research Unit, where the dance residency program was established.

"The main idea is that it brings students and researchers into contact with artists and turns artists into researchers and students.

"Eventually we'd like to expand the residency program to other disciplines and perhaps offer media or music residencies, for instance," she smiles.

The dance has just begun. •

A gift from beyond the grave

When it comes to making a difference, death is no obstacle. ***Steve Offner*** *reports on those who generously donate their bodies to science.*

When 87-year-old Betty Spencer talks about her own death, it's with an alacrity that's slightly unnerving.

"Once you're dead you're dead," she quips. "Whatever comes next I'm not going to need my body."

The spritely octogenarian, who has raised a family and worked as a volunteer at the old Prince Henry Hospital, believes it's important to be of service. "If you are able to help others along the way, then you should," she says.

That's why after her death Betty has arranged for her body to be donated to science, specifically to UNSW's School of Medical Sciences, where it will be used as a vital study aid for the next generation of scientists and doctors.

"It just seemed like a sensible thing to do," she says of the decision. "I've got friends who say 'oh, I couldn't do that!' and I say 'well, why not?' "

Having human specimens on hand is "absolutely vital" when teaching anatomy at the university level, according to Professor Ken Ashwell.

"There are plastic models but it's very hard to get one that is anatomically accurate," he says. "It's impossible to show the delicacy of the skull, or the fine detail of a limb, for example."

At least 25 bodies are needed each year for teaching purposes, Professor Ashwell says, but some years up to 40 are accepted with bodies kept for up to eight years (with consent).

The process of storing the cadaver is elaborate. Each body is preserved using techniques that can take up to 100 hours. Organs and limbs are separated and micro-chipped for identification during study, with each step carried out in strict accordance with the *NSW Anatomy Act 1977* and the *Human Tissue Act 1983*.

After a period of time, depending on the level of consent given, the remains are brought back together and the ashes are then made available to the family.

"My family – nine of us – all signed up to donate at once."

To acknowledge donors' generosity, the Faculty of Medicine hosts a regular Thanksgiving Ceremony for families and friends. Organiser Marie Kwok says the ceremonies are a way to reinforce with families that their loved ones have made a wonderful contribution. People donate for different reasons, Ms Kwok says, but the main motivation is simply to help the community.

Betty's decision was made on impulse during a family gathering 50 years ago. A friend, she says, was studying medicine and was explaining there weren't enough bodies in the medical school to go around.

"He was talking about skin, I think, and said there was only one piece of skin and there were so many students. And it was my brother-in-law who said, 'you'll want some bodies!' He said yes I think we do. And so my family – nine of us in fact – all signed up at once," Betty recalls.

Betty's husband Richard died in 1962 and was the first in the group to donate. "Six of us have gone so far. There are three of us still to come," she laughs.

Betty says religious belief didn't factor in to her decision: "I feel there has to be something more than here otherwise the whole thing's a funny mess isn't it? And if there isn't … well then you're still dead aren't you?"

It's a sentiment shared by 75-year-old (Uncle) Norm Newlin, an Aboriginal elder from the Worimi people in the Hunter Valley. Uncle Norm first heard about body donation when he began conducting Welcome to Country ceremonies for the University.

An industrial accident 35 years ago had already reinforced his traditional belief that the body and spirit are separate.

"I had an out-of-body experience and that gave me a completely different outlook on life," he says. "I'm a firm believer in helping people, so it wasn't a big decision to make. If it can help someone else then it's worthwhile."

For Betty the value of her family's donation was brought home at the most recent Thanksgiving Ceremony in September. She was there to remember her cousin, who had donated the year before.

"I didn't know what to expect, but I was delighted. I thought it might have been very clinical, but it had a nice religious reference. It was lovely. It made me feel I'd made the right decision." •

A life's work … Aboriginal elder (Uncle) Norm Newlin is donating his body to the University.

Photo: Grant Turner, Mediakoo

Photo: Patrick Cummins

Marching to the beat of a different drum

In the late 1990s Simon Hunt had an alter ego, the political satirist, Pauline Pantsdown. He has had a career in music and is now a lecturer in Digital Media at COFA. By ***Fran Strachan****.*

Pauline Pantsdown was a parody of the politician Pauline Hanson from the One Nation Party who was best known for her views on the so-called privileges of Aboriginal people and Asian migrants, which I perceived to be a racist agenda. I decided the best way to take her on was to parody her, so I took some of her speeches and cut them up with a digital sampler and made two pop songs. One of those songs, *I'm a Backdoor Man for the Ku Klux Clan* was banned temporarily and that went to a High Court case and the other one, *I Don't Like It* became a Top 10 hit and I became, a sort of, popular character for six months or so. I ran for the New South Wales Senate in the 1998 federal election at the same time as working against Pauline. So it was like a serious political theme within this comic guise, I guess.

I'm a Backdoor Man **was nominated for an ARIA, which was amazing. Music and I go a long way back, I played in heavy metal bands from when I was about 12 years old and then punk and experimental stuff**. I was with a band in Berlin in the mid-80s working with classical structures and audiovisual stuff and then I formed a duo with a guy from the Berlin Philharmonic performing contemporary classical music around Europe. I did some film music and sound, then I left music for a while and got into filmmaking and made some successful short films in the '90s. Pauline was like my return to music in an utterly different way. Pauline somehow brought me back, which is a surprising thing to think of.

It's funny, because using media to satirise things is much more prevalent now than it was 15 years ago, you have every 14-year-old in the world cutting up movies now to give them different meanings and uploading them on YouTube. People are a lot more media aware now, so to get something that cuts into people's awareness is a much bigger job these days than it was back then. There is definitely a trend now towards people seeing themselves as part of the media interface – even in the way we organise ourselves socially through Facebook and Twitter. So I guess when I look back to Pauline 10 years ago that was me trying to imitate her media interface; but everyone's doing that in some way now.

My new research interest is electro and African music, I'm interested in the eurocentric way we look at sound and music in a global culture and in European-based education systems. We shouldn't be looking at sound and music from a eurocentric position. If you look at the way people appreciate sound and music within different cultures in the world, the African ideas of music and the place of music in African culture is reflected in a lot more countries and a lot more of the surface of the planet than perhaps the European idea of classical music or its flipside of sound art. European music is just one branch of the tree. When I talk about my interest in African music it's not necessarily that everyone should sit around and play drums, it's more that we can examine a greater area of culture and other cultures across the planet when we do it from an African centre rather than a European one. •

Photo: Turner, Newspix

Pauline Hanson lookalike Pauline Pantsdown with One Nation's David Oldfield in 1998

TV An interview with Simon Hunt can be seen in the Arts and Society collection on UNSWTV at http://tv.unsw.edu.au/video/uni-tv-episode-7.

Photo: Patrick Cummins

Name:
Kamila Shepherd

Age: 24

Faculty:
College of Fine Arts

Research: My Master's research project examines ideas of armour, protection, talismans and the emotional protection of the body. I'm particularly interested in how natural animal defences, such as spines, shells and markings, can be translated visually into wearable art and sculpture.

After observing the protective behaviours of animals, I realised there were parallels with humans and how we protect ourselves with clothing and jewellery. One thing that we all have in common and that transcends religious and cultural boundaries is the fight-or-flight response we experience when feeling threatened.

There's a psychological reinforcement that comes from wearing jewellery. Its presence can be felt on the body – it helps the wearer deal with challenging environments, like psychological armour.

Inspiration: I believe that all objects have healing qualities if they're designed in the right way. I once designed a series of tactile, metal pods that could be held at times of stress and had a soothing effect. Then, for my Master's research, I became interested in more inherently aggressive objects and animals that inspired more actively protective designs. •

Kamila spoke to ***Fran Strachan***