

ISSUE 42

JULY/AUGUST 2007

uniken

Announcing
the Lowy
Cancer
Research
Centre



UNSW

\$10 MILLION DONATION FROM FRANK LOWY: LARGEST IN UNSW'S HISTORY

Contents

- 4 Well connected: Campus plans outlined
- 6 Lending a hand: New model for UNSW Library
- 7 The planet hunter
- 8 Lowy's gift to cancer research
- 10 The honourable Dr Lowy
- 11 The matter of mind
- 12 Fighting fear
- 13 Sex, teens and schizophrenia
- 14 Adding dimension to design
- 16 Research on a roll
- 17 Project X revealed
- 18 One Earth
- 19 Micro-masters of the universe
- 20 Australia in the age of terrorism

Uniken is produced by the UNSW Office of Media and Communications
T 02 9385 2873
E uniken@unsw.edu.au
www.unsw.edu.au/news/pad/uniken.html

Editor: Mary O'Malley

Deputy Editor: Victoria Collins

Editorial team: Judy Brookman, Dan Gaffney, Brad Hall, Susi Hamilton, Jane Hunter and Erin Rutherford.

Design and production: Gadfly Media

Proofreading: Pam Dunne

On the cover: Science Faction/Getty Images.
Australia Post print approved PP224709/00021
UNSW, Sydney NSW 2052
CRICOS Provider No 00098G



Five minutes with ...

Associate Professor Prue Vines

Faculty of Law's director of first-year studies, co-director, Private Law Research & Policy Group and keen tae kwon do practitioner



Britta Campion

What attracted you to tae kwon do?

I had to take my two young sons to their tae kwon do class. I sat on the sidelines and kept thinking 'why am I just sitting here and not doing it?' so one day I just joined in. That was seven years ago and I have been training ever since. Luckily my boys, now 19 and 17, were willing to tolerate my presence. The boys and I have been in classes together all along.

How often do you train?

I train three to four times per week. The boys are better learners than I am - they are both black belts now. I'm a brown tip. As an academic I'm good at learning words and concepts but bad at remembering physical movements, especially in a sequence. That aspect of tae kwon do has been a big challenge for me.

What are the benefits of tae kwon do?

I do a particular style called Australian Freestyle. It has more upper body work and punching than the tae kwon do you see at the Olympics. In the beginning I did Australian Freestyle because that was the class that the boys were enrolled in but I have found it to be better in terms of general fitness and when I have had to use my skills in self-defence, which has happened.

Does it help with letting out irritation and frustration?

It's great! It means a complete shift of mind focus and is very disciplined. It's not just mindless punching, there is a real focus on technique and process.

What do you enjoy about Law at UNSW?

The satisfying thing about being an academic working in law is that we can actually make a difference in the world, through our input into law reform and changes to the legislature. And it means that you can be idealistic without just being wet.

I also like teaching. I like having the opportunity to emphasise to students that lawyers are not just business people with additional skills. Part of a lawyer's role is to uphold the rule of law. In Australia we take law for granted but if the rule of law breaks down then lawyers are the people who must stand up.

What would you like your students to take away from your classes?

I'd like to think that my students end up with the idea that law can be a noble profession, even if it isn't always practised that way. ■

Ageing: Threat or Promise

Australia faces an ageing population. *Longevity and Social Change in Australia* (UNSW Press) is a collection of essays examining how this trend will shape Australian society in the 21st century.

Launched by the NSW Minister for Ageing Kristina Keneally at the Australian Social Policy Conference this month, the book covers issues including ageing amongst

Indigenous Australians and ethnic minorities, as well as retirement incomes, health, family relations and town planning.

Emeritus Professor Sol Encel from the Social Policy Research Centre is one of the three editors of the book, along with Professor Allan Boroski from La Trobe University and Associate Professor Elizabeth Ozanne from the University of Melbourne.

"Ageing is not a disaster," he says. "We wanted to produce a book that would refute the claims made by politicians and the media that our ageing population is bad news for the country. In fact, the great majority of older people are fit and well and making a worthwhile contribution to society."



For the record

It's been a bumper vintage.

Dr Chris Tinney on the announcement that a team of international astronomers, of which he is a member, have found 28 new planets - Sydney Morning Herald

The only thing worse than closing down the Singapore campus would have been not closing it.

Vice-Chancellor Professor Fred Hilmer on the decision to close UNSW Asia - The Straits Times

I'd rather be the 100th.

UNSW alumnus Dr Kelvin Kong on being Australia's first Aboriginal surgeon - The Australian

We need them to know they can't wear the white coat forever.

Senior lecturer Carmelle Peisah on her study which found that elderly doctors are putting patients at risk - Sun Herald

It's recognition that individual universities can't compete any more on the climate science challenges that confront Australia.

Professor Andy Pitman on the climate change research alliance between UNSW, ANU and Monash University - Campus Review

Essentially the take-home message was that if you don't know that your child has a peanut allergy and the doctor says you child is allergic to peanuts, you need to say: "Are you sure?"

Dr Brynn Wainstein on his study that found that doctors are over-diagnosing peanut allergies - West Australian

User friendly

Do you wish you had been the one who spotted *Blue Poles*? Buying art can be daunting. COFA's Associate Professor Joanna Mendelssohn has some tips.

1. Buy what you like, in the end you have to live with it.
2. Never buy what you don't like. Buying 'investment art' is the aesthetic equivalent of those get-rich-quick finance schemes that end in disaster.
3. Get to know your local public collections, and join the Gallery Society or Friends group.
4. One of the most pleasant ways of spending a Saturday afternoon is going on a leisurely "gallery crawl" with friends. Do this for some months before buying anything.
5. Get to know artists. Do this through being a regular visitor of commercial galleries, or best of all go to art school exhibitions. Many of Australia's leading artists started out showing at the COFA Annual. There's nothing like the thrill of being one of the first people to spot the talent of next year's big star.

The COFA Annual will be on view at COFA from 29 Nov - 7 Dec 2007.

Safe or sorry?

Since 11 September 2001 Australia has enacted a host of new laws as a key component of its efforts to combat terrorism. A major international symposium was held at UNSW this month to discuss the challenges that protection from the threat of terrorism presents to the rule of law.

Hosted by the Gilbert + Tobin Centre of Public Law, *Law and Liberty in the War on Terror* provided a forum for experts from Australia, Canada, the United Kingdom and the United States to analyse common trends in the legal responses to terrorism.

According to Dr Andrew Lynch, Director of the Centre's Terrorism and Law Project, "Improving our understanding of how law can be used to combat terrorism while still respecting fundamental principles such as the rule of law and the protection of human rights will assist in the development of a better, more coherent framework for national security."

(See Last Word on page 20.)

Controlling cannabis

The Federal Government has announced that the National Drug and Alcohol Research Centre (NDARC) at UNSW will lead a multi-million dollar consortium, to establish a National Cannabis Control and Prevention Centre.

In making the announcement, the Minister for Ageing, Christopher Pyne, who also has responsibility for illicit drugs, alcohol and tobacco policy, said the centre would play an important role in providing information, particularly to young people, on the risks associated with cannabis use.

The other consortium members are: The National Drug Research Institute (NDRI), ORYGEN Youth Health, The National Centre for Education and Training on Addiction (NCETA), The Ted Noffs Foundation (TNF), The Australian Institute of Criminology (AIC) and Lifeline Australia.



Photos: Katie Pashley

Well connected

Flexible spaces that promote cross-disciplinary research and teaching are the hallmarks of building work on Kensington Campus.

The scaffolding has come down, the removalists have left and Kensington Campus is settling down to another invigorated phase, one of many that is transforming the University's Sydney home.

Business is well underway at the Law Building and Chemical Sciences Building complex, part of the North Mall Development Zone (NMDZ) project to create a vibrant new precinct in the middle and lower sections of Kensington Campus. It is the single largest development project undertaken by the University and part of the overall development strategy, commonly referred to as Campus 2020.

But as one construction team leaves another is preparing to move in. Major work is now set to begin in the Biomedical Precinct in the north-east corner of the campus. A new cancer research building (**see cover story**) will be built in the area that is currently a car park near High Street. It will connect to the Wallace Wurth medical building and house UNSW medical researchers and the Children's Cancer Research Institute. Collaborative research and flexible laboratory spaces are hallmarks of this new development, which will be supported by specialist research equipment suites.

"As foreshadowed in the Campus 2020 Masterplan, UNSW is moving towards the future by creating spaces which accommodate cross-disciplinary research and teaching," says Graham Parry, Deputy Director of Property Strategies Projects.

"The Chemical Sciences Building at lower campus is a perfect example of cross-disciplinary activity, bringing the Faculties of Science and Engineering academics and students together."

The Chemical Sciences Building complex is the fusion of a brand new building for the School of Chemistry and UNSW Analytical Centre and the partly renovated Applied Sciences building which houses engineering researchers and academics.

With the completion of the revamped Heffron building, the Australian School of Business is moving in stages. The AGSM building on the Kensington campus will continue to be used for the delivery of MBA and Executive Programs, and AGSM's Executive Programs and MBA (Executive) programs will still be delivered at the O'Connell Street building. The Australian School of Business's new building houses teaching facilities and break-out spaces for students.

The Dalton Building has also been completely refurbished with new postgraduate areas, academic and administration offices for the School of Chemistry on levels one and two. New learning areas and computing facilities for undergraduates are on the ground floor. The Dean of Science is already housed in the building which has a bridge link to the new Chemical Sciences Building. The Chemical Sciences building complex is designed to promote collaborations between Science and Engineering and also has strong links to Medicine through the major research infrastructure of the Analytical Centre.

The current Food Sciences buildings near Gate 2 are slated to be replaced by parking. The plan is to move the staff to the Chemical Sciences Building. Parking under Campus 2020 is being concentrated in stations near major entry points. It is part of a "green" philosophy to remove parking from the landscaped and public spaces of the campus.

Campus 2020, the future vision for the campus, has now been approved by Randwick City Council in the form of a Development Control Plan. The plan provides for extra student housing on High Street, and a "village atmosphere" for that area. The intention is to develop the site to accommodate about 1000 students in apartment-style accommodation.

Design for an additional 319-bed project at New College is underway. This project will complement the college's existing accommodation and

“ Collaborative research and flexible laboratory spaces are the hallmark of this development.”

is targeted at meeting the needs of postgraduate students. Construction will begin this year, with completion due for the start of session one, 2009. “The development overall signals where the University is heading: cross-disciplinary facilities that allow staff and students to collaborate and enhance the overall UNSW experience,” says Mr Parry.

Open for business

The Australian School of Business™ is settling into a new building - and a new identity as one of the finest centres of business education in the world.

The Australian School of Business resulted from integration of the Australian Graduate School of Management (AGSM) and UNSW's Faculty of Commerce and Economics.

The result is a new brand that UNSW is confident will further enhance the School's reputation in the Asia-Pacific region and allow it to offer unparalleled choices around academic leadership, research and teaching excellence in the Australian market.

Professor Cameron, Dean of the Australian School of Business says deciding on the name has been a rigorous process that has included consultation with key stakeholders such as the business community, alumni, academic and professional staff, and students.

“The name, Australian School of Business, reflects both the significance of our vision for the school as an Australian and regional leader in business education, and the unique brand equity UNSW and AGSM bring to the school,” Professor Cameron says.

In determining the name, Professor Cameron says three key components were debated.

First, the use of the word “business” as a descriptor won clear support. “Our stakeholders had a view that business was the most universal and descriptive term that was applied to the nature of what we do,” he says.

Second, the term “school” was preferred to alternatives such as “faculty” given that the former is the most commonly used term for such entities, particularly in North America.

The third was “Australian”. Professor Cameron says history supports using the term given the AGSM's national mandate and prestigious reputation over many years.

“Certainly our current standing as the leading business school in the country, which is generally recognised, also justified that naming and makes a strong statement with regard to our intended positioning in the future.

“It's been very well received by our stakeholders both internally and externally and I think there's a sense of enthusiasm now to move forward under that banner,” Professor Cameron says.

The newly badged school will offer a full range of undergraduate, postgraduate and research programs. The AGSM brand will be retained and its MBA and Executive Programs will continue to be offered. Professor Cameron explains: “AGSM programs are well understood and recognised in the market. We certainly wanted to retain the equity associated with the AGSM brand.”

Greater scale will allow the Australian School of Business to create a centre of excellence in business education and research in the region, and help the recruitment and retention of world-class academics.

A September launch for the school is planned to coincide with the opening of a new building at the Kensington Campus in Sydney. The fine detail of a new branding campaign is currently being finalised. ■



Andrew Chung, image courtesy of Francis-Jones Morehen Thorp (fjmt)

Lending a hand

The UNSW Library builds a new model for service delivery

The rise of the internet has prompted a shift in direction for the UNSW Library, with a greater emphasis on material being available anywhere at any time.

Librarian Andrew Wells says modern libraries now host physical and online collections, backed by a range of services that allow academics to interact with information.

No longer is it necessary to physically visit the Library, although more than 246,000 academics and students passed through the Library's gates in May. Many more, however, access a wide range of online content for an extraordinary range of discipline-specific information.

"They can do this whether they are in our research station at Fowlers Gap, at a rural hospital or right here on campus," says Andrew.

The physical space in the Library is being reorganised to suit the changing needs of academics and students.

The move of the Faculty of the Law to its own building and relocation of the Biomedical collection has allowed the Library to house the physical collection of books in one space, over a greater number of floors.

"This allowed us to reconsider our service delivery," says Andrew. "Before we effectively had five satellite libraries in this one building."

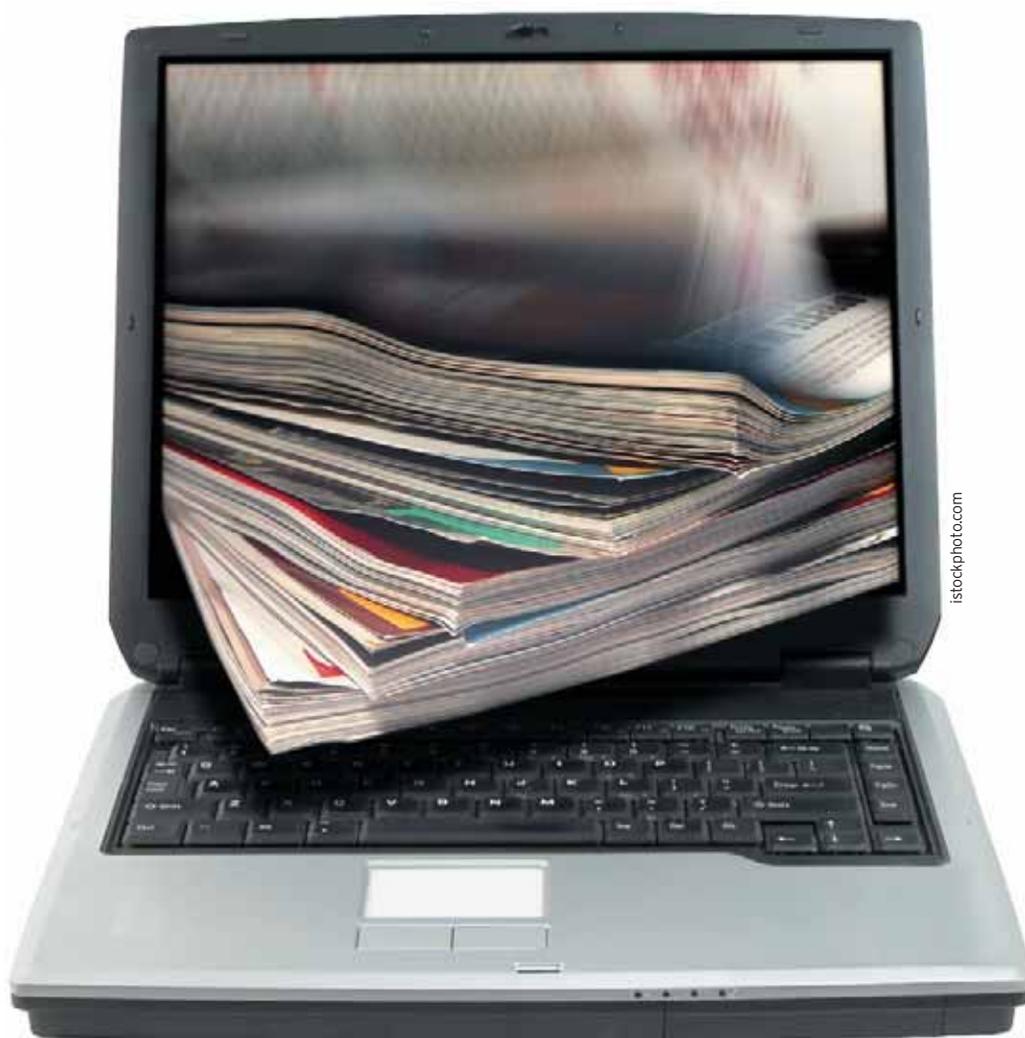
The plan now is to act as one single library but with special Outreach Librarians working closely in faculties to determine their specific needs.

"This brings a communication model that we've never seen before," says Andrew. "We will have people out in the faculties in close touch with the academic community, finding out what people want and need."

Librarians are working on a range of services to ease the life of academics, such as targeted information about newly published material in their area being delivered to their desktop.

More space is being allocated in the lower floors to solo and group work areas for students, with quieter study spaces shifting to the higher floors. This reflects the cross-disciplinary and collaborative nature of modern universities.

For the first time in the library's history, about 100,000 rarely used books from the collection were recently relocated to the CARM archive in Melbourne – a large research collection that is now accessible to



the UNSW academic community. This move has caused some consternation among some academics.

"We were simply running out of physical space," says Andrew. "The books will be properly housed in archival conditions and can be accessed from the catalogue (LRD) and delivered quickly after putting in a request." (See <http://lrd.library.unsw.edu.au/> and [http://carm.caval.edu.au.](http://carm.caval.edu.au))

Professor Stephen Fortescue, from the Faculty of Arts and Social Sciences, said tensions were probably inevitable when so many faculty staff still need to work with books, including old books that don't get used often.

"However, the library hasn't abandoned books," he acknowledges. "It has some obvious constraints in that regard and other priorities as well. But we're dealing with that through our Faculty Library Committee, and keeping a close eye on the CARM collection and other forms of delivery from off-campus collections."

"Both students and staff have high expectations of the library," says Deputy Vice-Chancellor (Academic) Professor Richard

Henry. "The nature of those expectations varies widely. For some students the library experience means a bustling internet cafe. Some staff retain a traditional view of the library and seek a quiet space where they can access a physical collection. Some students visit the library every day of the week; others access online resources every day but never enter a library building.

"One of the challenges for a contemporary library is to satisfy the multitude of different demands. This is made more difficult by the harsh reality that the library will never have a large enough budget to meet insatiable appetites that staff and students have for library resources."

Professor Fortescue appreciates the benefits of the electronic revolution. But he is pleased that at least some aspects of the classic library experience remain unchanged.

"I was in the library the other day, to read some journals that aren't available electronically," he says. "They were on one of the higher floors, where the new quieter study spaces are. It was roomy and quiet, and I was reading something on real paper – it was just like the good old days." ■

The planet hunter

By Dan Gaffney

Few can say they've scanned the heavens and found a new planet but with 30 discoveries to his credit, UNSW astronomer Chris Tinney is by far and away Australia's most exceptional planet hunter.

It's an impressive tally, considering that astronomers have identified only 230 or so "exoplanets" beyond our solar system since the first was found some 40 light years from Earth just over a decade ago.

Dr Tinney led the Australian contingent of an international team that in June announced the discovery of 28 more planets in our galaxy. Discovered over the past year, they raise the number of known worlds orbiting other stars to 236 - a 12 percent increase.

The team used telescopes at the University of California's Lick Observatory, the W.M. Keck Observatory in Hawaii and the Anglo-Australian Observatory, near Coonabarabran in western New South Wales. Together, the team has discovered more than half of all known exoplanets.

Although most of the new finds are probably giant balls of gas, more like Jupiter than Earth, Dr Tinney believes the escalating pace of discovery is improving the odds that our galaxy is "swarming with smaller, rocky and potentially habitable worlds" too small to detect with today's telescopes.

"I think it's extremely likely that we eventually find habitable planets," says Dr Tinney, an ARC Professorial Fellow who joined UNSW this year after 12 years as head of astronomy at the Anglo-Australian Observatory.

"It's mostly a challenging technical problem. What we do know is that every time we advance our detection techniques towards finding lower mass planets, we find more planets. And so I think it's extremely likely that, as we extend down to finding Earth-mass planets, we'll find them as well.

"They may not be as common as the giant gas planets such as Jupiter that we're mostly finding at the moment but even if they were, say, a hundred times less common than the gas giants, and if there were 100 billion sun-like stars in our galaxy then that's still at least 10 million Earth-like planets out there."

The 28 newly confirmed planets are among 37 new objects, which include seven brown dwarfs - objects too small to become stars



David A. Hardy, astroart.org (c) PPARC.

but too big to be called planets - and another two "borderline" objects, which are either very large planets or small brown dwarfs.

"Brown dwarfs are the little stars that couldn't," says Dr Tinney, who received his PhD from the California Institute of Technology and who returned to Australia in 1994, following a research fellowship in Europe.

These sub-stellar objects fall somewhere between being a planet and a star. Their mass is too small to generate nuclear fusion at their core, so they don't burn as brightly as stars - making them difficult to see in the vast reaches of space.

Planet hunters have held a long interest in these small, not-quite-stars because they can tell us about the birth and death of planets and stars. Astronomers use brown dwarfs as proxies for planets because, unlike the known exoplanets, a parent star doesn't swamp their light. In one "nearby" brown dwarf they have observed changes in brightness, which suggest the existence of weather patterns, as seen in solar system planets.

Like a cosmic game of hide and seek, Dr Tinney says the key to successful planet hunting is knowing what to look for.

"The universe is a big piece of real estate," he says, "so astronomers have developed a few techniques to improve their odds of finding planets in the vast cosmos beyond our solar system."

One method, informally known as the "Doppler wobble" method, measures tiny changes in a star's velocity, caused by the mutual gravitational pull of planet and star, which makes the star to execute a tiny orbit of its own.

Astronomers can identify this orbit as a cyclical "Doppler" shifting in the frequency

of light waves the star emits. Detected as a red-blue oscillation in the visible-light spectrum, this stellar wobble is a hint that something, possibly a planet, is orbiting the star.

This is the technique that has been used to locate most known exoplanets and was used by the Australian-US-UK team that announced the new crop of planets.

Another trick for locating distant planets is to look telltale dimming, or "transit", in the light emitted by solar-like stars, which indicate that a planet is passing in front of its parent star.

Says Dr Tinney: "Transits because the orbiting object, which could be either a small star, a brown dwarf or a large Jupiter-sized planet, is blocking a tiny fraction of the star's light from Earth's viewpoint. These dimming events interest astronomers because, unlike the Doppler wobble method, they allow measurement of the precise mass and radius of exoplanets and low mass stars."

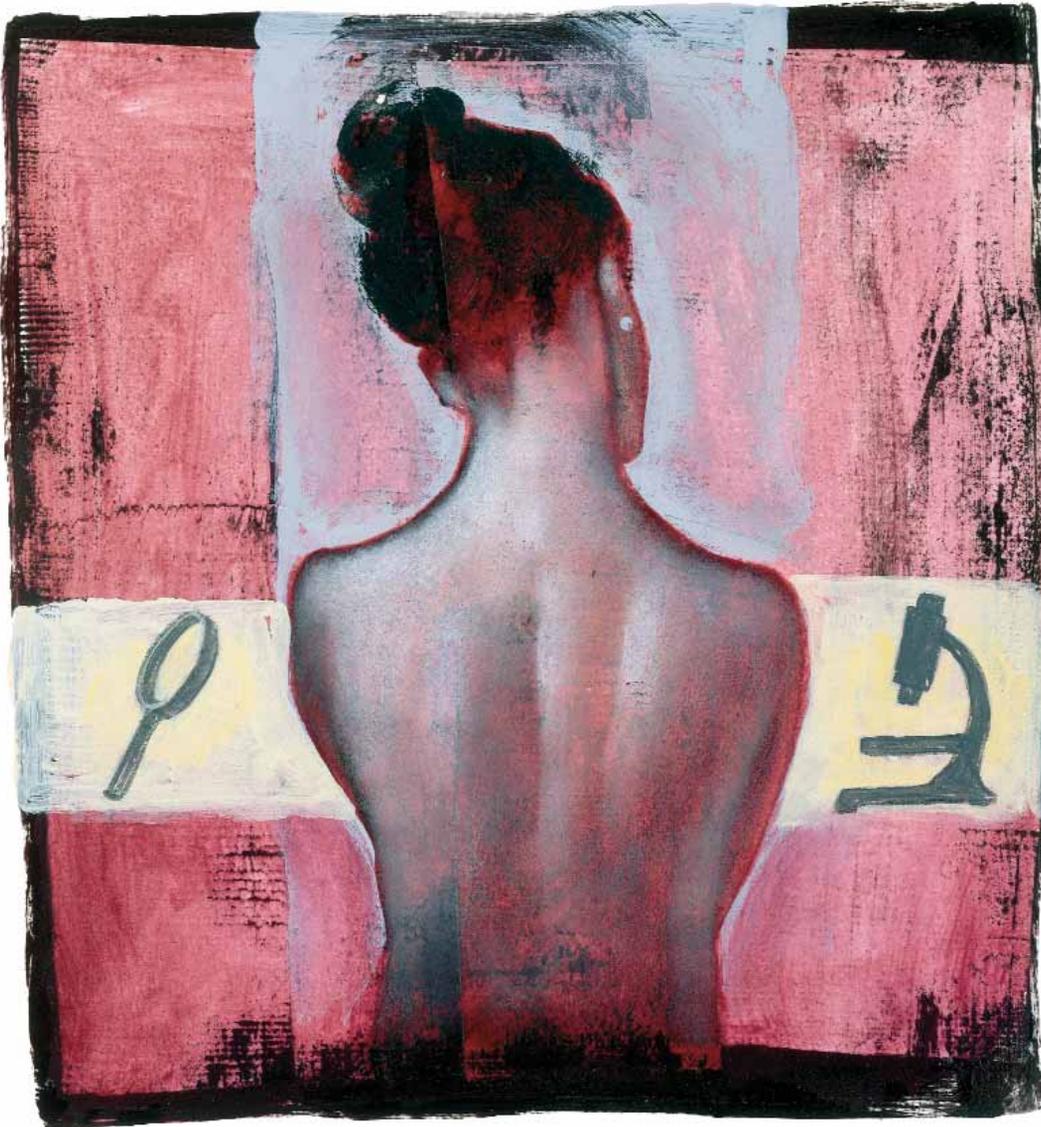
The Anglo-Australian Planet Search led by Dr Tinney is monitoring the 240 nearest and brightest Sun-like stars visible from the Anglo-Australian Telescope on 32 nights per year.

"We have been operating since 1998, and expect to run until 2010, at which point we will have observed for long enough to detect Jupiter-like planets in Jupiter-like orbits around other stars," he says.

While he admits that astronomers haven't found a solar system just like our own yet, Dr Tinney doubts that ours is the only one of its kind. "I think it's hard to see how it could be unique with so many billions of stars out there in the galaxy. I believe that as our techniques improve, we will eventually find systems like our own." ■

Lowy family's gift to cancer research

The largest donation in UNSW's history will result in the one of biggest dedicated cancer research centres in the southern hemisphere.



begin in October this year, with a scheduled completion date of late 2009. It will be constructed at the northern (Randwick) end of the UNSW campus.

Professor Hilmer said the Centre is the first stage of a major redevelopment of the University's medical facilities. It is also a significant addition to the Randwick medical precinct, being closely linked with Prince of Wales Hospital, the Royal Hospital for Women and the Sydney Children's Hospital.

"UNSW is a leader in the field of adult cancer research, with internationally recognised medical scientists such as Professors Philip Hogg, Robyn Ward and Levon Khachigian, while CCIA has renowned researchers of childhood cancer including Professors Michelle Haber, Murray Norris and Glenn Marshall. Bringing the two areas together will lead to new insights and discoveries," he said.

"I believe this will take cancer research in this country to a new level. It will be a world-class facility which will enable us to attract more of the best and brightest people from around Australia and overseas.

"We are enormously grateful to Frank Lowy and his family for his very generous donation, which will allow the construction of the Centre to proceed this year. We also gratefully acknowledge the support of the State and Federal Governments, and of other donors who are contributing to the project," Professor Hilmer added.

The University's Chancellor Mr David Gonski said it was important that such significant support had been forthcoming from the private sector.

"We need to move further towards a culture of giving in Australia, to support our universities and other institutions that contribute to the public good," said Mr Gonski. "Philanthropic leadership from individuals, as well as from the business community, is particularly significant if that culture is to be fostered."

Dean of UNSW's Faculty of Medicine, Professor Peter Smith, said the new Centre would make a major contribution to cancer research and through its translational programs to better health outcomes in prevention and treatment of cancer.

"It will be the first centre in Australia to have a dedicated cancer bioinformatics and data-management facility which will link research

A major new research facility, to be known as the Lowy Cancer Research Centre, is to be built on Kensington Campus.

The \$100 million-plus facility, announced last month by Vice-Chancellor Professor Fred Hilmer, will house up to 400 cancer researchers, from UNSW and Children's Cancer Institute Australia (CCIA). It will be one of the largest dedicated cancer research centres in the southern hemisphere and Australia's only fully integrated childhood and adult cancer research centre.

Prominent businessman and philanthropist Mr Frank Lowy, and family, have agreed to donate \$10 million towards the cost of the new building.

This is the largest single philanthropic donation ever received by the University.

In addition to the Lowy gift and University resources, other funding has come from individual donors, trusts, foundations and grants awarded to CCIA by the NSW State Government (\$18.3m), the Commonwealth Government (\$13.3m), and most recently the Australian Cancer Research Foundation (\$3.1m).

NSW Premier Morris Iemma said that he was extremely pleased that the NSW Government's commitment to cancer research was coming to fruition in this new integrated facility.

Construction of the building is expected to

activities in the Centre with cancer registries, clinical trials centres and overseas networks," he said.

"This will improve the treatment and survival of people with cancer, by providing a nexus between these areas. It will also help to train the next generation of research leaders, with postgraduate students able to work with many of the top scientists in the field."

World-class researchers converge

Philip Hogg modestly refers to himself as simply a 'biochemist'. In reality, Professor Hogg is a world-renowned cancer researcher who has developed two anti-cancer drugs, won dozens of awards and has an enviable track-record with funding and publications. Along with Professor Robyn Ward, he will be co-director of adult cancer research at the new Lowy Centre.

Professor Hogg's latest achievement is in winning \$3.75 million in state government funding for his work on anti-mitochondrial cancer drugs. These drugs will be tested in Australia on patients with bowel cancer as soon as 2008. Clinical trials for the earlier version of the drug were carried out in the UK; the new Centre will allow the work to be carried out here.

Once developed, the drugs could target and kill the cells that supply the cancer with the blood it needs to survive.

"This would make cancer a manageable condition in the long-term, rather than being a 'cure,'" says Professor Hogg. "It would mean that patients would receive ongoing treatment, in the same way that diabetes is managed. It would remain a serious - but manageable - condition."

The drug would also be able to be used in the treatment of other types of tumours - including those in the breast, prostate, colon, lung and brain. The human trials would be managed by Robyn Ward, who is Professor of Medicine at the Prince of Wales Hospital and will be Director of Clinical Trials at the Centre.

"This building is much more than just doing the same research in a new location," said Professor Hogg. "It takes us to a whole new level. Only one in a thousand scientists has a chance to do something that will really change lives. The new centre will enable us to get a critical mass of people that can generate some fantastic stuff."

Already three award-winning cancer researchers have announced they will return to Australia to work in the new facility. They are haematologist John Pimanda; cell biologist Anthony Don, and breast cancer specialist Carolyn Ford.

Professor Ward's work focuses on the other key area in cancer research - genes. Just this



"This building is much more than just doing the same research in a new location. It takes us to a whole new level."

Professor Philip Hogg

year Professor Ward and her team at St Vincent's Hospital discovered an entirely new pattern of disease inheritance which already has implications for people with a family history of bowel, ovarian and uterine cancers. The team found that the presence of a chemical marker, or tag, on a critical gene can also be passed from the parent who is predisposed to cancer to their offspring. The inheritance of the marker greatly increases the offspring's risk of cancer.

Professor Ward also has developed a cancer vaccine that is currently being trialled in patients with prostate cancer.

"What makes the Centre so important is not only the research, but its strong clinical focus," says Professor Ward. "It is close to the Prince of Wales Hospital, which treats adults, kids and womens' cancer. Not all hospitals do that."

"It's also significant that it's based on the University campus, because then you can draw upon that depth of research capacity. If you can build up the strength of the hospital and the University, you can move above and beyond."

One of the other key collaborators within the Centre will be Professor Levon Khachigian. He and his team have developed a new class of experimental drug, which shows promise for certain types of skin cancer, among other health problems.

He has just been awarded a grant of almost \$3 million from the State Government to further

develop the gene-targeted therapy for Basal Cell Carcinoma, one of two non-melanoma skin types which are the most frequently occurring cancer in Australia.

"If such a trial were successful, it would be a significant development given the high rates of skin cancer and because the main treatment currently is surgical excision, which can cause scarring," says Professor Khachigian.

"Conventional anti-inflammatory drugs are associated with a whole host of side-effects. Our therapeutic may potentially avert some of these."

Professor Michelle Haber, the Executive Director of CCIA, will be the director of childhood cancer research at the Centre. She is known internationally for her research on delineating mechanisms of resistance to anti-cancer drugs in the treatment of neuroblastoma. Professor Haber has also been a key contributor in developing new approaches to improving the outcomes of children diagnosed with acute lymphoblastic leukaemia.

"The wonderful support we have received is a testament to the importance the community and Government place on the role of world-class medical research in finding answers that will go a long way towards saving the lives of all children with cancer and eliminating their suffering," says Professor Haber. ■

- Susi Hamilton

The honourable Dr Lowy

The Doctor of Letters bestowed on Frank Lowy in 1999 recognised a remarkable life and a generous spirit.

As a young man Frank Lowy arrived in Australia with no worldly possessions. His rise to prominence is now part of Australian business folklore. Frank Lowy became one of the country's most distinguished business leaders and eminent philanthropists, an outstanding example of post-war migrant achievement.

Born into a family of modest means in Czechoslovakia, he spent the war years in Budapest using false papers to hide from Nazi persecution. During this period, he escaped death on more than one occasion and by the age of 14 had developed a sense of vigilance and a respect for detail that would serve him for the rest of his life.

After the war he attempted to get to Palestine but his ship was intercepted by the British who were then restricting the flow of Jews into that country. The British interned him and the others from the ship in a detention camp on Cyprus.

In late 1946 he finally arrived in Palestine and the following year volunteered for the Zionist army, the Haganah. He went on to join an elite commando unit in the Israeli army and fought behind enemy lines in the War of Independence. In 1952, he left Israel to join the members of his family who had survived the Holocaust and who had found their way to Australia.

His fluency then in Hebrew, Hungarian and German provided little advantage as he trudged through the industrial areas of Sydney seeking employment. Following an undemanding stint as a process worker and then as storeman in a tool-making factory, he found work as a sandwich hand in a city arcade where, one morning, he was threatened with dismissal for putting too much butter on the bread.

Through his next job as a smallgoods delivery man, he came into regular contact with one of his customers - John Saunders, a Hungarian émigré who owned a delicatessen at Sydney's Town Hall. These two East European



“ He is highly cognisant of the value of education and the duty of society to provide it. ”

men recognised the commercial potential in each other and within six months had begun a new business together in Blacktown, on the western outskirts of Sydney. They opened a delicatessen which supplied much sought-after continental foods to the new immigrants living in the area and to migrant workers on the Snowy River Scheme.

Forming productive partnerships is one of the keys to Frank Lowy's success and this partnership thrived. The pair went on to open a string of shops and to buy local farmland which they subdivided for housing. In 1959 they opened their first shopping centre in Blacktown. A year later in March 1960, the partners floated a public company, Westfield Development Corporation Ltd, listed on the Sydney Stock Exchange.

Today, more than 40 years later, Frank Lowy remains at the head of Westfield as its chairman. Under his direction the company has grown into a multi-billion dollar shopping centre empire which leads the industry in Australia. Westfield is also acclaimed as the most successful Australian-based company

operating in the United States.

Bound into his passion for business is a sense of social obligation which he meets through generous support of the arts, sport, medical research and education. As the Holocaust allowed Frank Lowy only six years of formal schooling he is highly cognisant of the value of education and the duty of society to provide it. Given that business benefits from the employment of graduates, he believes it should be prepared to contribute to the cost of education.

While serving on the AGSM's Advisory Council, he arranged an endowment from his company. These funds saw the expansion and naming of the Frank Lowy Library at the School.

Frank Lowy also knows first-hand the benefits of employing capable graduates. His three sons, David, Peter and Steven, all have commerce degrees from UNSW and each is a managing director of Westfield. Their wives, Margo, Janine and Judy hold UNSW degrees too, as does Frank's wife Shirley, who graduated as a mature-aged student. ■

The matter of mind

Neuroscience is set to become a flagship area of research at UNSW. By **Susi Hamilton**

A yellow crane is poised for action, a symbol of what soon will become a world-class Neuroscience Research Precinct. It sits on the coffee table in Professor Peter Schofield's office at the Prince of Wales Medical Research Institute as a reminder of good things to come.

"I wanted a crane because a crane on site meant that something was happening. You only get to the point of having a crane when you have the money," says the POWMRI director.

Since the recent handing down of the Federal Budget, he has money: \$30 million towards a \$70 million research hub involving POWMRI, UNSW, the South Eastern Sydney and Illawarra Area Health Service and the Black Dog Institute.

"My dream is to have everyone who is involved in UNSW Brain Sciences housed here at POWMRI," says Professor Schofield, poring over the master plan.

Construction should start within six months on stage one. This involves building two wings - one onto Barker Street, the other linking the existing POWMRI building with the Black Dog Institute - "a practical and symbolic link".

The building will act like a catalyst, says Professor Schofield. The proximity between researchers will bring about further collaborations, increasing the reputation of the precinct and allowing it to attract further top-class researchers.

One of the new guard of top-level researchers is clinical neuroscientist Professor John Hodges, who will leave his current position as Professor of Behavioural Neurology at Cambridge University to come to Australia in November.

Professor Hodges' appointment is another joint initiative between UNSW and POWMRI. His research program in dementia will aim to develop improved methods for rehabilitation and health outcomes in patients.

Other successful joint appointments include Professor Cyndi Shannon Weickert (see page 13) and Professor Lindy Rae, who was appointed to the position of Professor of Brain Sciences just over two years ago. ■



Professor Lindy Rae

Adam Taylor

The Einstein Factor

Albert Einstein, Richard Branson and Auguste Rodin's names pepper Professor Lindy Rae's conversation.

"Dyslexics like these people tend to have very creative brains," she says. "It is probably a developmental problem in that it is associated with mixed-handedness.

"This gets us to the question about true creativity. Where does a true creative thought come from? Does it build on a previous thought or fizz out of nowhere? If you get to think up something weird like the theory of relativity, does that mean you need an interesting brain circuit to do that?"

Professor Rae theorises that if a dyslexic is not using all the brain for language and developing the same way as the rest of us, then it allows the brain to do other things.

While she is interested in the bigger question of creativity, she's currently working on how to improve reading ability for children

with different types of dyslexia.

She's enrolling children between the ages of 8 and 10 in a study which will research the neural pathways at work when they are reading.

"If you think of it like telephone cabling running down the street, dyslexics have altered cabling to the part of the brain which is involved in reading tasks," she says.

She plans to study the "cabling" by giving the children reading tasks when they are in an MRI scanner, which will show which parts of their brain are activated when they are reading.

She will involve 30 average readers, 20 children who have phonological dyslexia (those who have a preference for spelling words phonetically) and 20 lexical dyslexics (those who have a preference for the written word and have difficulty with phonetics).

Most dyslexics have the phonological

variety, which means that the lexical dyslexics have often missed out on proper remediation, according to Professor Rae.

"Children's brains are more plastic than those of adults and it's already been proven that if we remediate them before they turn 10, the 'cabling' of the brain can be improved," she says.

"The current tests are fairly broad - they just say you have dyslexia. But that makes it difficult to remediate because dyslexia is caused by a number of things. The test that we administer makes that distinction," she says. "Ultimately we would like to say that children should be screened at a certain age and then get remediated accordingly."

Professor Rae will be using the new MRI scanner at the Symbion Clinical Research Imaging Centre, which has just been opened by Vice-Chancellor Professor Fred Hilmer. ■

- Susi Hamilton

Fighting fear

A breakthrough discovery by UNSW scientists could be good news for millions of people who struggle with anxiety disorders and phobias.

By **Dan Gaffney**

Researchers at the UNSW School of Psychology have revealed that a drug commonly used to treat tuberculosis enhances psychological treatment of fears and phobias. The drug, antibiotic D-cycloserine (DCS), is sold commercially under the brand name Seromycin and has been approved by the Therapeutic Goods Administration Australia.

The study, involving 56 people diagnosed with social anxiety disorder, found that those who took 50 mg of DCS orally before a clinical therapy session reported a greater reduction in anxiety symptoms, dysfunctional thoughts and life impairment one month after treatment compared to a control group.

The study is the first of its kind in Australia and the largest and most comprehensive of its type worldwide. Study participants took the medication an hour before receiving "exposure therapy" in which they learnt to confront their fear in a safe environment. The control group also received exposure therapy but were given a non-active placebo.

An anxiety disorder is a catch-all term covering different kinds of pathological anxiety, fears and phobias that may impair people's normal daily routines. People with social anxiety disorder, which is also known as social phobia, experience an intense fear of being negatively evaluated by others or of being publicly embarrassed in social situations.

The Australian actor and comedian, Garry McDonald, has spoken frankly about his long history of social anxiety, stemming from a panic attack he had at the age of 22: "The anxiety would paralyse me with fear. I started to get extremely fearful and I found it difficult to push through that - it was like a sort of wall, almost like a strait jacket - I was so

frightened. Suddenly there was this thing sapping me of all energy and all sorts of cognitive skills - it was terrifying - and the next thing is, you start to get suicidal."

The breakthrough follows the UNSW team's earlier research revealing that DCS is a successful adjunct in the psychological treatment of public speaking and a fear of heights.

Therapy involved five 90-minute sessions in which participants gave videotaped speeches in front of other study participants. Recorded speeches were played back to the group and

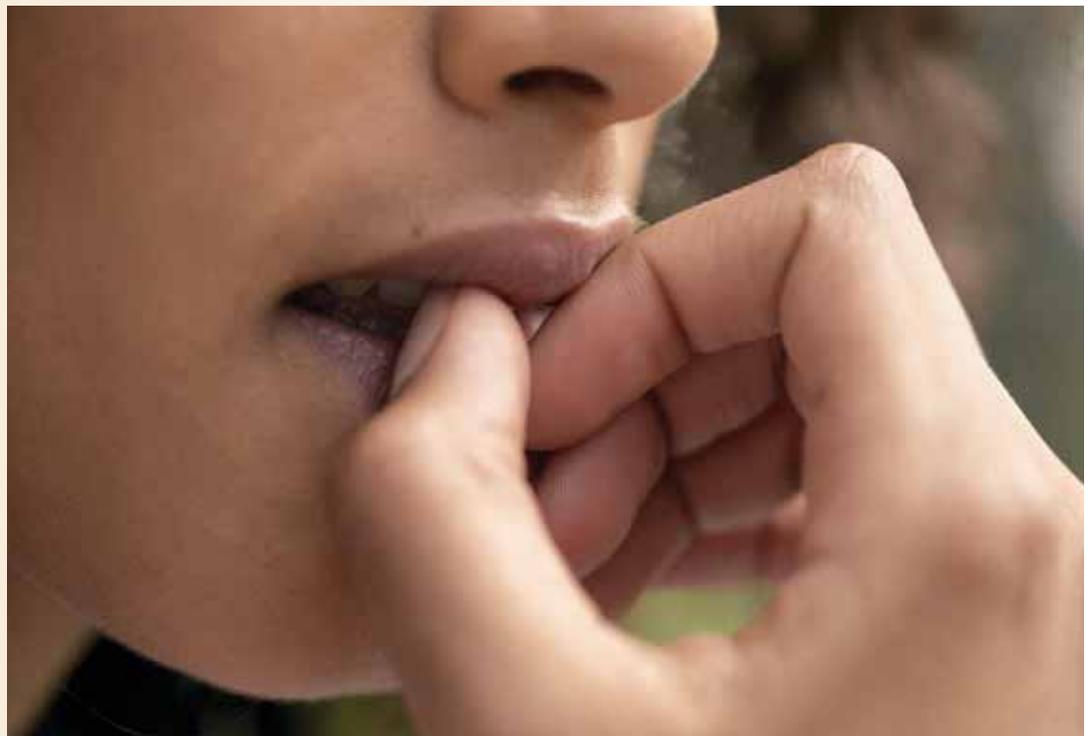
It opens up learning centres of the emotional brain.

reviewed, and participants were encouraged to do homework involving giving practice speeches in front of a mirror.

"DCS isn't usually prescribed for mental health issues but our research confirms other studies that have revealed that DCS has a handy side-effect: it opens up the learning centres of the emotional brain," says UNSW psychologist and study author, Dr Adam Guastella.

The team included such leading researchers from the School of Psychology as Professor Mark Dadds and Professor Phil Mitchell from the School of Psychiatry.

The researchers stress that the drug has no independent anti-anxiety effects on its own. "DCS isn't a magic pill that can take away people's fears," says Guastella. "Its effect is to enhance what happens in therapy." ■



© LWA-Dann Tardif/zefa/Corbis

Sex, teens and schizophrenia

Is a breast cancer drug the next hope for this devastating disorder? By **Susi Hamilton**

Professor Cyndi Shannon-Weickert:
inspired by a twin.

“It was like an alien was living in my house,” says Professor Cyndi Shannon-Weickert, of her twin brother David’s descent into schizophrenia.

She recalls how the pair used to compete for top marks in algebra and geometry in the middle years of high school in rural upstate New York. Yet within two years her brother showed complete disinterest in study, withdrawing to the point where he suffered what she calls a “break from reality”.

In one sense or another, she has been trying to find him ever since. For it is David’s experience which has led her to become the first Professor of Schizophrenia Research in Australia.

“I wanted to be a doctor because I wanted to help people and I fell in love with biology and medicine. But then I thought there’s not much they can do for people who suffer from schizophrenia, because I realised that doctors are limited by the drugs they have available to them,” says Professor Shannon-Weickert, who recalls how the medications did not return her twin to normal and some even made him “zombified”.

She went into research to help determine the cause of schizophrenia and to develop new drugs to treat this devastating disease. Her focus is on molecular human brain development, in particular how the surge of

sex hormones in puberty may affect gene expression and brain growth. She believes that it is this final maturation process that becomes “derailed” in schizophrenics.

Professor Shannon-Weickert recently published a paper in the journal, *Neuroscience*, about the developmental changes in dopamine in the prefrontal cortex of the brain, which is associated with reasoning, planning and problem-solving. She showed there were significant changes in the ability of the prefrontal cortex to respond to dopamine – a key neurotransmitter implicated in schizophrenia – during adolescence and young adulthood.

Since schizophrenia does not develop until adolescence or young adulthood, this implicates changes in the cortical dopamine receptors as being part of the trigger.

Professor Shannon-Weickert’s research aims to find out how sex steroids interact with these types of changes in gene expression around adolescence.

The action of oestrogen and testosterone at puberty are not clearly understood. It is known that females get schizophrenia four to five years later than males, and the symptoms are not as severe. Symptoms are exacerbated around times of low oestrogen and in remission in times of high oestrogen.

Her research team therefore has turned its sights on a drug which involves oestrogen, the female sex hormone.

A trial involving a drug which can inhibit oestrogen actions in the body, but stimulate them in the brain could be a way to override a dysfunctional sex hormone occurring in the brains of patients with schizophrenia.

Although this drug was originally used to fight breast cancer it can lead to an improvement in cognition and memory, and trials with this drug are just a couple of months away.

“What I have found is that people with schizophrenia have an altered form of oestrogen receptor and if you look in their brains, they have either less oestrogen receptor message - or they have an altered form of oestrogen receptor that is somewhat dysfunctional,” says Professor Shannon-Weickert.

“We think that only patients with certain genotypes are going to be responsive to this drug - the Selective Oestrogen Receptor Modulator - but that for some of these patients we could see improvements in verbal fluency and memory.”

The hope is that within five to 10 years psychiatrists will be able to establish a patient’s genotype, predict who will respond to which therapies, and tailor treatments accordingly. ■

Adding dimension to design

Architects and engineers from UNSW are being taught a unique design method that takes the guess work out of construction.

By **Victoria Collins**

The Faculty of the Built Environment is leading the world in the teaching and development of a 3D design tool that tells architects and designers all they need to know about a building before a brick is laid.

Called building information modelling (BIM), the technology will mean fewer errors in building construction, more environmentally sustainable buildings, and greater efficiencies across the whole industry.

"2D drawings are simply inadequate for representing a design," says Jim Plume, head of the School of the Built Environment in FBE. "They are hard for lay people to read, and are a major factor in misunderstandings and mistakes on building sites."

Jim and his colleague John Mitchell, a designer with a background in health architecture, are teaching senior students from FBE and Engineering to use an information-rich 3D model to collaborate on building designs.

Although there are specialised BIM courses at Stanford and Berkeley in the US and in the Nordic countries such as at Tampere, Finland, the FBE course is unique in the world for its focus on multidisciplinary collaboration based on the Industry Foundation Classes open-model sharing protocol.

"We are genuinely innovating," says John. "UNSW is at the very forefront of understanding these systems. We are providing a combination of groundbreaking technology and practical experience for future construction industry professionals."

Jim agrees: "The construction sector is slightly medieval. We haven't really changed our technique since paper was invented and we started sketching. Now we are starting to adopt digital technologies to innovate



processes and services as most industry sectors did long ago.

"Traditionally an architect draws a building layout then a structural engineer interprets the drawing and composes a structural design. They then give their 2D drawing back to the architect who overlays the two to make sure the structure fits the design.

"There is a lot of room for error and misunderstanding. Especially as architects aren't necessarily experts in structural, mechanical and electrical engineering, and many engineers are unable to understand the full implications from the architect's 2D plans."

“The construction sector is slightly medieval. We haven't really changed our technique since paper was invented and we started sketching.”

The information-rich modelling system the students are learning potentially includes every piece of information about the building in a single integrated database, from the type of powerpoint sockets to the colour of the walls. And the data is easy to access.

"The sophisticated graphics created by most 3D visualisation programs don't solve the fundamental communication problem between architects, engineers, builders, electricians and plumbers," Jim says. "The kind of modelling we are teaching will be more predictable, less risky and a more efficient design technique for the future."

According to Jim, model-based software provides much better design visualisation for the entire team and immediately shows any problems.

"Current plans show you whether there is enough space to get a wheelchair down the corridor but new software based on BIM will also allow you to see whether there is enough space to navigate the wheelchair around the corners. It will show if a column is hitting ducting, if the glass in the windows provides adequate sound protection and whether the design matches government building code specifications," he says.

The system can also be used to quickly and accurately assess the environmental impact of the building, before construction even starts.

"The environmental impact of buildings has traditionally been very hard to work out because it requires very specific and detailed product information; it needs to include things like the impact of excavating the gravel that went into the cement, the embodied energy of the aluminium and the thermal imprint created by the glass.

"Using the old technique it would take months to work out the environmental performance of say our building, the Red Centre, but now a design student could do it in a matter of days using new sustainability and life cycle cost tools based on the 3D model.

"We can also teach the students to assess a building's sustainability and make improvements to the materials or design before the building process has begun. For the first time we are able to measure the holistic performance before construction." ■

Residents take 3D view of public housing

3D imaging is being used to create a greater sense of safety and community for the residents of public housing complexes in NSW.

Jack Barton, from the City Futures Research Centre in the Faculty of the Built Environment, is working with the NSW Department of Housing to optimise the redevelopment of existing estates that are currently undergoing community regeneration programs.

"It can be very hard for residents to understand architectural plans, especially when they are looking at large estates which can have up to 3000 apartments in them," Jack says.

"But everyone has an expert knowledge of their own space so we are using this technology to help residents convey their feelings about their local areas. The same technology could also be used to inform larger urban design decisions."

This process was used in the "Stickybricks" performance put on at the Northcott estate by Big hArt as part of the Sydney Festival last year. Spatial community surveys were conducted - maps of perception. Residents were asked about areas within their complex that they associate with love, loss/death, solitude, children and dancing. Jack then mapped the resident's responses on a 3D diagram of their area. Where a number of residents have the same response to the same area the colour becomes more intense.

Some of the results from Jack's work have

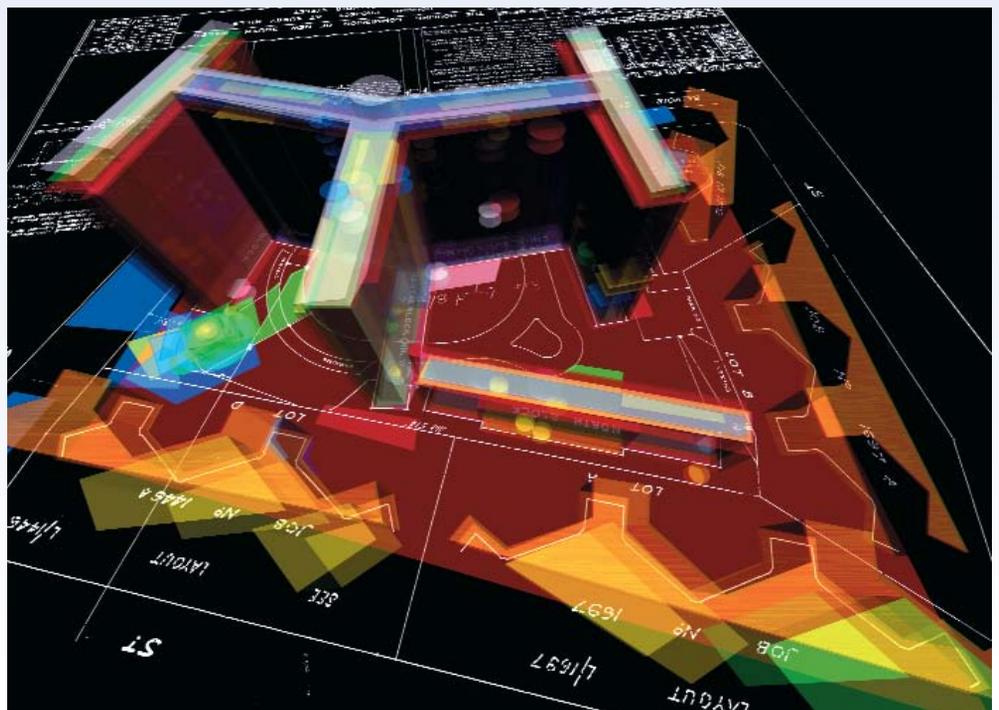
been surprising. For example, residents associated very specific areas with death, like lift shafts. Other results were more predictable, with the playground and community centre associated with children, love and dancing.

"This technology allows us to map perceptions against reality," Jack says. "Tenants might say that the park is an important part of their community but if you look deeper they might also associate it with rubbish or crime. Using this 3D imaging system we are able to then sit down and say 'We know it is important to you but the reality of your local park is this, so what can we change?' and the solution might be as simple as adding a fence and a couple of rubbish bins. Because we can show tenants the proposed changes in 3D they feel more comfortable."

Although the technology, in different forms, is widely available, the kind of research that Jack is conducting is very uncommon. "It's unusual to be looking at government housing in this way," he says. "With this kind of project people can get lost in the technology so I have tried to keep the human side guiding our work.

"When you show people the 3D images you always get a 'gee whiz' but for me the biggest surprise with this project has been the number of people who can push past that initial excitement and really utilise the technology as a tool." ■

- Victoria Collins





Britta Campion

Research on a roll

Kick-starting your research career can be difficult. For Dr Michelle Langford the pressure of being a new lecturer meant finding the time and support necessary to conduct her research was almost impossible.

That was before she came to UNSW. "The stability and support I have had at UNSW over the past two years has really helped me to chart the direction of my research," says Michelle, who joined the School of English, Media and Performing Arts in 2005.

Since coming to UNSW Michelle has joined Women in Research (WIR), a pilot program for UNSW women researchers, who are in the early phases of their research careers or in the process of re-establishing them.

The feedback from participants such as Michelle was so positive it has led to the establishment of Early Career Research@UNSW, a new program designed for those researchers launching their research career, returning to research after leave or shifting their focus from teaching to research.

Participants will attend seminars and workshops on topics including grant writing, ethics, time management, publishing and research collaboration.

Describing the skills she gained through the WIR program Michelle says: "It changed my

writing habits. I now write for shorter periods more frequently, especially when I have a deadline to meet. It also taught me how to be more strategic about my research and to think about different ways of networking and being in touch with scholars in my field."

Michelle's research looks at Iranian cinema as both a public medium and a private, effective mode of expression and experience. She is specifically examining the participation and representation of women in Iranian film, with an emphasis on allegory as a means of negotiating the contradictions between public face and private, intimate experience. "With heavy censorship in Iran, filmmakers often find indirect ways to express forbidden topics. I am attempting to decipher some of these cinematic codes," she says.

In 2006 Michelle received an Early Career Research/Faculty Research Grant which enabled her to attend the Fajr International Film Festival in Iran. She has recently published several articles and spoken on Iranian cinema at the Brisbane International Film Festival and at conferences in Canberra and Melbourne.

For more information or to apply to the Early Career Research@UNSW program, contact Dr Gro Frolund, ph 9385 5429, g.frolund@unsw.edu.au. ■

- Victoria Collins

Computer whizzes among Smart 100

UNSW scientist Professor Michelle Simmons and two UNSW Business IT graduates have been named among the *Bulletin* magazine's Smart 100.

Professor Simmons of the Centre for Quantum Computer Technology was a finalist in the Science section. She was recognised for solving two problems that defied a consortium of Europe's best physicists for a decade: how to fabricate devices smaller than 10 nanometres, and the scale at which the orderly flow of electrons through the ever-finer nanocircuits is disrupted.

Scott Darquhar and Mike Cannon-Brookes, the brains behind Atlassian Confluence Technology, won the IT and Communications category of the Smart 100, an annual salute to the best and brightest Australians. Seven years ago the pair accurately predicted the internet would usher in a new type of software that would work over a network and let users share knowledge in a way PCs can't. They now name NASA among their clients, having supplied an information-sharing system for its Kennedy Space Station.

Included in the Business and Manufacturing category is Leighton Holdings' Wal King, alumnus and UNSW Council member. Mr King has guided Leighton Holdings into leading positions in building and engineering construction and contract mining. ■

Project X revealed

Students negotiate the twists and turns of multidisciplinary design with a project dubbed The Snake. By **Victoria Collins**

Britta Campion



Engineering student Daniel Jones and COFA's Alia Parker found plenty of common ground in designing The Snake.

A massive multidisciplinary project involving students from the Faculty of the Built Environment (FBE), the College of Fine Arts (COFA) and the Faculty of Engineering is giving design and construction students the skills they will need to work together in the real world.

The project began at COFA in February when 60 students from the three faculties took part in an intensive design project, named Project X, and will conclude this month when international delegates on campus for the ConnectED design education conference witness the opening of Project X aka The Snake.

According to Graham Bell, the Project X course coordinator, the project was initiated because "we wanted to develop a better response from students to teaching. We wanted to develop a course where students would work together."

During the first course Project X students were briefed by the client, in this case by NSG Professor Richard Hough representing the ConnectED organising committee. Divided into teams with at least one representative from each of the participating faculties, the students were asked to come up with designs that met the client's brief and budget.

The Snake, a design consisting of a series of five cardboard-and-wood arches that wind their way up the Scientia steps, was chosen as the winner. "As a client we imagined a project to celebrate multidisciplinary design education in

real terms. The Snake met those needs," says Richard.

The second part of the project, known as Project X, was a first semester subject where 38 students from FBE, COFA and Engineering worked together to fabricate and erect the original Project X design.

Project X is a student-led project where Carol Longbottom from COFA, Mario Attard and Zora Vrcelj from Engineering and Graham Bell from FBE act as facilitators, and Richard as the client. "We are there to advise and assist the students but they ultimately control the project," Graham explains.

"It has been interesting to watch the different working styles. On the first day the engineers sat down and worked out how to make the frame structurally sound and nothing has changed for them since then. The other designers have been continuously refining their designs and will be until the day that the structure is installed. This is a huge area where they can learn from each other."

Alia Parker, a fourth-year design student at COFA who was on the team that conceived The Snake and is now taking part in Project X, agrees.

"This has been a challenging and unique course that has taught me so much about designing and building," she says. "Nothing that you think will work out does. The materials are different from our initial plans because we were

able to get help from sponsors hence the structure has changed. In many ways it is amazing that the end product looks as much like the initial design as it does."

Overall the student experience has been a positive one, Graham says. "There were some philosophical differences as they developed the frame and tried to make it structurally sound while maintaining the integrity of the design but overall we are finding that the students like working together."

The student team project manager, Engineering student Daniel Jones, agrees. "All engineers can design but we would never come up with something like this. Here the discussion about looks and how it works all happens together at the start. Everyone is working to their own strengths and everyone is learning."

Discussing the project's learning curve Carol Longbottom says: "It has been an interesting project as much for the staff as for the students. It is one thing to get students to work together but four members of staff with different strengths, different teaching styles and different backgrounds had to interact, and I must say that has been a positive experience, one that we have learnt a lot from and hope to continue into the future."

The Snake has been sponsored by Boral Timber, Visy Board, OneSteel, and the Ove Arup Foundation. ■



Jilda Simpson

One Earth

A UNSW documentary, which has aired nationally on the ABC, captures a touching cultural exchange between African and Australian Indigenous people. By **Victoria Collins**

Two years ago a group of Tanzanian villagers spoke to Bill Buckley, Nura Gili Indigenous Program academic coordinator and a long-time supporter of the Tanzanian people, about the possibility of having a cultural exchange with Aboriginal Australians.

That discussion resulted in a group of 11 Indigenous and non-Indigenous Australians – including six from UNSW – forming *One Earth Many Voices* and touring Kenya, Tanzania, Uganda and the United Arab Emirates to demonstrate Australia's Indigenous culture.

Documentary makers from UNSW's EDTeC accompanied the male dancers and female singers, deputy director of Nura Gili Jilda Simpson and Bill on the trip. They filmed not only the performances but the interaction between the Indigenous Australians and their African audiences. The result, *One Earth Many Voices*, will be shown on ABC TV on 8 July.

Producer Mark Foster says this is the first time an in-house UNSW documentary has been sold to a national broadcaster. "We are so excited to see the ABC screening this work," he says. "It is wonderful for UNSW to be recognised for our cultural involvement and also for so many people to be able to share such an amazing experience."

Bill is confident that the success of the tour, and the documentary, was due to the variety of

people that the group were able to meet. "At one level we were performing in the National Theatre of Uganda but we were also visiting the smallest villages in very remote parts of Tanzania," he explains.

"The locals were taken aback that we had bothered to come to their village, and were incredibly supportive of us. We heard of people who had walked for 20 kilometres to see the performance."

Jilda was also overwhelmed by the success of the tour. "At the time I knew there was a cultural, creative and artistic exchange happening but it wasn't until I got home and watched the documentary that I realised the extent of the exchange," she says.

"One of the amazing things was the familiarity of the landscape - they have gum trees like we do. They also have an element of cultural performance in every facet of their life which is how Indigenous people do things in Australia. That familiarity meant that we could contribute to their projects easily.

"Even the language was familiar, we would sing in an Indigenous language and by the end of the song the African villagers would be singing along with the chorus."

One of the performances was at the Australian High Commission in Nairobi where the reception was such that the Australian Ambassador suggested a return visit to Uganda

in the lead-up to the Commonwealth Heads of Government Meeting in Nairobi later this year.

Last month a second *One Earth Many Voices* tour left Australia for a two-week tour of Tanzania and Uganda, funded by the Department of Foreign Affairs and Trade. This time four of the seven performers and supporters are from UNSW. They are Bill Buckley and Jilda Simpson from Nura Gili, and Indigenous COFA students Dorsey Smith and Lucy Simpson.

A number of the Indigenous performers currently in Africa also went on the 2005 trip but a new component is the inclusion of a visual artist.

Dorsey is a third-year Indigenous art student from COFA. He will run workshops with artists in the African towns and villages and hopes that the art works he completes will be included in an Indigenous exhibition to be held at COFA at the end of the year.

"I'm going to leave myself open to the different influences of the places that we visit," says Dorsey of his creative process. "I want to see what kind of materials they have got, what they use for their art. I won't know what art to do until I get there and sit down with them."

Jilda believes there is a growing sense of importance for the issue of cultural identity emerging at UNSW. "This tour is very reflective of that," she says. ■

Micro-masters of the universe

Tiny, single cell creatures known as diatoms are inspiring scientists, engineers and even artists. By **Dan Gaffney**

Nineteenth century biologists were struck with curiosity and wonder when they first peered at tiny plant-like diatoms under a microscope. The intricate exoskeletons of these creatures inspired gentlemen scientists of that era to produce hundreds of painstaking hand-illustrated monographs that later influenced artists from the Art Nouveau movement. More than a century and a half later, diatoms' ornate designs are causing renewed interest in the scientific, engineering and arts circles.

Diatoms are the commonest micro-algae in the world. The tiny photosynthesising creatures live in salty and freshwater environments and form a valuable part of the food chain for small grazing animals.

Globally, the 100,000 or so species of diatoms help to maintain Earth's atmosphere and temperature by locking away carbon dioxide through a natural bio-sequestration process. They do this by absorbing CO² into their cells during photosynthesis, effectively locking it away for good by then sinking to the bottom of the ocean. Together with the dinoflagellates, it has been calculated that diatoms probably lock up more CO² in the ocean than all the rainforests on Earth.

"Diatom shells come in a stunning array of forms," says UNSW mechanical engineer, Gary Rosengarten, who is studying the applications of these tiny creatures. "Their basic structure is similar, however. They're comprised of a single cell, which is contained within a silica shell or frustule made of two overlapping halves or valves joined by girdle bands."

Dr Rosengarten says diatoms are causing interest for a host of reasons. "Material scientists are fascinated by the design principles inherent in diatom exoskeletons because they are beyond today's design capabilities. If we could understand and copy nature's way of assembling these incredibly strong but lightweight designs, we could potentially apply them in industries such as design, architecture, construction and transport."

Diatoms could also inform the design of nano-scale structures in the semiconductor



Andrew Syred/Science Photo Library

“The shells contain tiny pores so fine they could filter out viruses and bacteria.”

industry, where microfabrication engineers are searching for new ways to etch tiny features onto computer chips and circuit boards. Replicating the way that diatoms lay down three-dimensional silica to form their exoskeletons could hasten microprocessors' speeds and manufacturing times.

Dr Rosengarten has recently taken a closer look at the shell structures of two diatom species (*Coscinodiscus sp.* and *Thalassiosira eccentrica*), using scanning electron and atomic force microscopy. His findings reveal that both species possess tiny pores smaller than one-millionth of a metre in diameter that might be applicable in wastewater recycling, saltwater desalination and preventive healthcare.

"The shells of these creatures contain tiny pores so fine that they could filter out viruses and bacteria yet still absorb the nutrients that they require to supply their energy needs," he says.

Scanning electron images published in the *Journal of Nanoscience and Nanotechnology* by Dr Rosengarten and others reveal the detailed morphological features of both species,

including their pore size, shape and pore organisation. They have documented pores in the frustules of both species as small as 40 nanometres - 1000 times narrower than a human hair.

Dr Rosengarten and Associate Professor Greg Leslie are members of a UNSW research team recently awarded nearly \$1m by the Federal Government to develop and evaluate energy efficient membranes that could become new generation technologies for water desalination and water recycling.

Diatoms are one of several promising membranes that could be used in desalination and recycling programs that rely on a "reverse osmosis" process that forces water through a semi-permeable membrane to remove salts and other contaminants.

In what is thought to be the first experiment of its kind, Dr Rosengarten and colleagues recently made a breakthrough in this new area by successfully mounting the shell of the diatom *Coscinodiscus sp.* on a microcapillary tube to assess its filtering properties.

"Mother nature has spent billions of years perfecting biological and mechanical processes that underpin life and other natural processes," says Dr Rosengarten. "If we can learn from and apply these, we could provide intelligent, sustainable solutions to untold challenges."

Two British artists draw strongly upon diatoms' designs to inspire their stunning works, which have been dubbed "Plankton Art". Visit www.louiseandsarah.com for more details.



Australia in the Age of Terrorism

How much of our way of life have we traded in the rush to protect ourselves against attacks?

The century began with the September 11 attacks on innocent civilians, and fear of terrorism remains the distinguishing feature of our times. This is due not just to the subsequent attacks - Bali, Madrid, London and Mumbai - or foiled plots, but also our own efforts to protect ourselves. The actions by Western governments, perhaps even more than those of terrorists themselves, have defined the era.

In the United States, the fiasco of the Iraq war, the detention of foreign nationals at Guantanamo Bay, the policy of extraordinary rendition and the scandal of Abu Ghraib have all been hugely controversial responses to the "war on terror" and ones which will dominate future discussion of the decade.

The Australian experience has not been entirely disconnected from these events. Our troops remain in Iraq and two of our citizens languished for several years in the "legal black hole" of Guantanamo Bay. One of them insists he was brutally tortured in an Egyptian prison with the connivance of our American allies.

But what of the domestic responses to terrorism - is Australia a changed country?

Inevitably the answer to this must be yes. Prior to September 11, neither the Commonwealth nor any Australian state had laws criminalising terrorism. Since then, we have rapidly caught up with overseas jurisdictions by the passage of laws which do not just make terrorism a crime but seek to prevent such attacks occurring. The Commonwealth alone has passed over 40 separate new Acts to respond to the problem. Many of these make very sensible improvements to the security of important infrastructure, transport systems and dangerous substances.

But other laws are more contentious as a means of keeping the community safe. A good example is the revamped offence of sedition which the Attorney-General, Philip Ruddock, insisted on retaining in his major package of new anti-terrorism laws at the end of 2005



over objections from members of his own government and a unanimous Senate Committee recommendation against the new law. The sedition offence went ahead but was referred to the Australian Law Reform Commission for immediate review - a decidedly poor way to make laws affecting free speech. Despite the ALRC recommending several major changes to the new law, the Attorney-General has declined to act on the report.

An earlier law which provoked much debate was the expansion of the powers of the Australian Security Intelligence Organisation. While allowing ASIO to question and detain suspected terrorists and monitor their activities are entirely reasonable steps which might prevent an attack, the organisation can now also monitor, question and detain Australian citizens *not* suspected of any involvement with terrorism but who merely might have information of use to the government. The detention may last one week, with questioning

being allowed for a total of 24 hours or 48 hours if an interpreter is required.

These powers have been used sparingly and, by all accounts, responsibly. But their very existence marks an important alteration in the relationship between the state and its citizens. It is debatable whether the detention of non-suspects by a secret intelligence organisation for information-gathering purposes is justified, and there is no comparable power of detention in other jurisdictions. For example, while the United Kingdom presently permits detention for up to 28 days, this is for suspects only.

The introduction in late 2005 of orders for control and preventative detention of citizens represents another major departure from traditional notions of criminal justice. Add to this picture the existence of new "status" offences whereby people may serve significant jail time merely for being members of an organisation which the Attorney-General has banned - perhaps simply because someone

connected to it has "praised" terrorism, or even for just associating with members of such an organisation - and it is clear that Australian law has undergone a major upheaval in our rush to respond to the terrorist threat.

In a major survey of the public commissioned by Amnesty last year, only 28 percent of respondents expressed no concern about the impact of terrorism laws upon human rights. Once some basic information about the laws was given, those surveyed expressed far greater anxiety about getting the right balance between rights and security.

That is the ongoing challenge of our age. It is one thing to live with the threat of terrorism but it is another to lose sight of the essential freedoms and checks on government power which define us as a modern democracy. ■

Andrew Lynch is Director of the Terrorism and Law Project, Gilbert + Tobin Centre of Public Law, UNSW