

UNSW

UNIKEN SPRING 2015

magazine

Great minds

Meet psychology's new generation of research leaders



SKY'S THE LIMIT

UNSW joins forces with Matraville Sports High School

LOVE AND MEMORY

One artist's journey of self-discovery in the shadow of the Stolen Generations



UNSW
AUSTRALIA



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Cover photo: Quentin Jones.

The *UNSW magazine* is published by UNSW's Media

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From the President and Vice-Chancellor

Welcome to the Spring Issue of *UNSW magazine – Uniken*. On the cover are six of our rising stars in the School of Psychology. These early career researchers, who include Young Tall Poppy winners, DECRA recipients and ARC Future Fellows, are making waves internationally with their work to unlock the secrets of the mind – one of the last frontiers of medicine.



People like these emerging leaders are central to UNSW's future success. For this reason, they are also central to the UNSW White Paper that sets out an ambitious agenda for the next decade. The White Paper outlines an innovative, aspirational and altruistic agenda, reflecting a conviction across our University community that UNSW has the potential to achieve great things. Our goal is to establish UNSW as Australia's global university – among the top 50 in the world. We aspire to this in the belief that a great university, which is a global leader in discovery, innovation, impact, education and thought leadership, can make an enormous difference to the lives of people in Australia and around the world.

Getting to this point follows an extensive consultation process, which defined three strategic priorities. First, a drive for academic excellence in research and education.

Universities are often classified as 'research intensive' or 'teaching intensive'. UNSW is proud to be an exemplar of both, capable of delivering research excellence alongside the highest quality education on a large scale.

Second, a passion for social engagement that improves lives through advancing

equality, diversity, open debate and economic progress. Third, a commitment to achieving global impact through sharing our capability in research and education in the highest quality partnerships with institutions in both developed and emerging societies. We regard the interplay of academic excellence, social engagement and global impact as the hallmarks of a great forward-looking 21st century university.

In the next months we will develop the White Paper into a full strategic plan, which by the start of the next academic year will be supported by the development of a detailed implementation plan.

My thanks to everyone involved in developing the White Paper – it has been a great team effort. I look forward to working with you on completing and implementing our Strategic Plan.

Professor Ian Jacobs



The magazine of The University of New South Wales

UNSW magazine is the University's flagship publication. Published quarterly, it reports on issues affecting the tertiary education sector and the latest developments in UNSW's research and teaching. The magazine is distributed primarily to staff, students and visitors to the University.

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Video



Audio



Slideshow

Star power shines at Oscars of Science

UNSW scientists working on quantum computing, marine science and threatened ecosystems have won three prestigious Australian Museum Eureka Prizes.

Knowledge is all around us – and knowledge is power, UNSW Dean of Science Merlin Crossley told the audience at the recent Australian Museum Eureka Prizes in Sydney. “All we need are the tools to harvest that power.”

And we don’t have to look far to find those tools. They are pure science and curiosity driven research – mechanisms all “for harvesting the power of knowledge from thin air,” Professor Crossley said.

Australia’s best and brightest of these “harvesters” were feted at the prize-giving event – dubbed the Oscars of Science – at Sydney’s Town Hall in August.

More than 650 members of the scientific community were on hand to watch UNSW researchers walk away with three of the prestigious awards – for leadership, science communication, and environmental research.

Scientia Professor Michelle Simmons was awarded the CSIRO Eureka Prize for Leadership in Science for the energy, passion and commitment she has devoted to advancing the field of quantum computing in Australia.

As Director of the ARC Centre of Excellence for Quantum Computation and Communication Technology and head of a multidisciplinary, cross-institutional team of 180 researchers, Simmons has helped position Australia at the forefront of an international race to build a large-scale quantum computer based in silicon.

She told the audience she hoped to inspire those around her to achieve the best they could. She also thanked taxpayers for funding science. “Without them we wouldn’t be able to do this research. I hope that by doing something that is wonderful and inspiring we can actually make Australia proud,” she said.

Simmons has developed the world’s smallest transistor, built of one single atom, as well as the world’s narrowest conducting wires in silicon. She was named NSW Scientist of the



Year in 2012 and was awarded an Australian Research Council Laureate Fellowship in 2013.

Last year, she joined the likes of Stephen Hawking and Albert Einstein as an elected member of the American Academy of Arts and Science. She was made the inaugural editor-in-chief of the first Nature Partner Journal based in Australia, *npj Quantum Information*, and also helped secure a \$5 million investment in quantum computing from the Commonwealth Bank of Australia.

Executive Director and CEO of the Australian Museum, Kim McKay, congratulated Simmons and her team for “ensuring Australia’s success in what will become a multi-billion dollar industry”.

For her work educating the public about Australian marine science, Professor Emma Johnston was awarded the Department of Industry and Science Eureka Prize for Promoting Understanding of Australian Science Research.

She has used a variety of outreach approaches – from grass-roots community activities including the Run Off and Reach Out program on storm-water pollution, to regular appearances on TV and radio and in print – to ensure policy makers and the public understand the effects of their actions on the marine environment.

This included being a co-presenter on the

^ Power players ... Richard Kingsford, David Keith, Michelle Simmons and Emma Johnston.
PHOTO Deborah Smith

successful BBC/Foxtel History series *Coast Australia*, where she helped take Australian marine science to an international audience.

In her acceptance speech Johnston, who is Director of the Sydney Harbour Research Program at the Sydney Institute of Marine Science, gave a heart-felt “salute” to her two fellow finalists – UNSW’s Associate-Professor Darren Curnoe and CSIRO’s Dr Lisa Harvey-Smith. “It’s wonderful to have such great competition,” she said.

For their establishment of a universal standard for assessing ecosystem risks Professor David Keith and his IUCN Red List of Ecosystems team were awarded the NSW Office of Environment and Heritage Eureka Prize for Environmental Research.

Similar to the influential Red List for the world’s threatened species, it allows environmental threats to different ecosystems to be compared, making it easier to persuade politicians or the public of the need for policy change.

Keith’s team includes UNSW’s Professor Richard Kingsford and Dr Nick Murray, and Dr Tony Auld of the NSW Office of Environment and Heritage. □

– Deborah Smith



JUDITH NEILSON CHAIR NAMED

Architect and international disaster risk-reduction expert Professor David Sanderson has been appointed the inaugural Judith Neilson Chair in Architecture.

The Chair, the first of its kind in Australia, was established earlier this year with a \$10 million endowment from philanthropist and White Rabbit Gallery founder Judith Neilson. It aims to lead research and education to support disadvantaged communities displaced by natural disasters, geopolitical conflicts, socioeconomic exclusion and environmental factors.

“Architecture can play a central role in meaningfully engaging in these issues, through social action, critical engagement, building evidence of what works, and above all, prioritising affected people,” says Sanderson, who will lead the new specialisation in the Master of Architecture program, Architecture and Social Agency.

Currently based at the Norwegian University of Science and Technology where he specialises in urban disaster resilience and humanitarian aid, Sanderson has 20 years’ experience working with international aid agencies in development and disaster risk reduction.



VALE BRIEN HOLDEN

UNSW was deeply saddened to learn of the sudden death of Professor Brien Holden, an international giant of vision science.

Holden was CEO of the Brien Holden Vision Institute and CEO of the Vision Cooperative Research Centre and was a professor within the UNSW School of Optometry and Vision Science. He was a global leader in research and innovation in his field, described by one US university as “the most influential optometrist of our generation”.

He led the development of new contact lenses and surgical vision technologies, investigated the causes and solutions to blindness and impaired vision from refractive error, and helped to combat the global epidemic of myopia. His pioneering breakthroughs had real world impact and transformed lives. Some 60 million people now wear safer, more breathable ‘soft’ silicone hydrogel contact lenses manufactured using a scientific formula designed by Holden and his colleagues at UNSW more than three decades ago.

An outspoken advocate for government investment in science, innovation and humanitarian aid, his many national and international honours – most recently receiving the American Academy of Optometry’s highest award – attest to his lifetime commitment to the advancement of knowledge.

Exhibition

Luminocity showcases design

A habitable timber bridge incorporating a pool and café is just one design showcasing the work of Built Environment students, graduates and alumni in UNSW’s annual *Luminocity* exhibition, which is open until 2 October at UNSW’s Red Centre.

Graduate Alexander Galego’s inspired design, *Tidal*, developed during a studio led by UNSW Professor of Practice Glenn Murcutt, was recognised with an Australian Institute of Architects student design award.

Galego designed the habitable bridge to incorporate the existing footbridge at South West Rocks in NSW.



Briefs

ALL HAIL OUR ROBOT WORLD CHAMPIONS

UNSW’s triumphant robot soccer team returned home from the RoboCup world soccer championship in China, with the winner’s trophy in their grasp for the second year in a row. The UNSW student team smashed its way to beat the elite German squad by 3–1 in a tense grand final. Topping off the incredible effort was the announcement that Sydney would host the RoboCup competition in 2019.

RoboCup is an international competition that fosters advances in robotics and artificial intelligence.

AUSTRALIA’S BIGGEST WAVE SIMULATOR GOES LIVE

A new wave flume facility – essential to model coastal and inland water behaviour – has been opened at UNSW’s Water Research Lab in Manly Vale. “Flumes are essential in fluid dynamics research, allowing engineers to understand coastal and offshore structures, sediment transport and other water transport phenomena,” said Professor Ian Turner, the newly appointed director of the laboratory. The new facility will expand UNSW’s coastal research programs, which are seeking to improve fundamental understanding of the forces that are shaping coastlines now and in the future.

UNSW JOINS FUTURELEARN

UNSW has become FutureLearn’s newest member in the Asia–Pacific and one of five new global partners of the leading massive open online courses (MOOC) social learning platform. FutureLearn joins Coursera and OpenLearning as the University’s MOOC partners. UNSW’s first FutureLearn course, ‘Maths for Humans: Linear, Quadratic & Inverse Relations’, is now available for registration to commence in October 2015. Upcoming free courses include ‘WW1: Lessons and Legacy of the Great War’, ‘Environmental Humanities: Remaking Nature’ and ‘Military Ethics: An Introduction’.

Spotlight on Social Policy

The fallout from the Global Financial Crisis and its impact on the welfare sector is the focus of the country's pre-eminent social policy conference, to be held at UNSW on 30 September.

The biennial Australian Social Policy Conference, which is hosted by the Social Policy Research Centre (SPRC), brings together researchers, practitioners and policy makers from across disciplines with a view to influencing debate and practice.

While Australia has managed to retain and even expand social provision, particularly with the introduction of the National Disability Insurance Scheme, conference organisers believe this could be threatened, as it is in other countries.

"Austerity could force the development of new ways to harness social resources to address poverty, marginalisation and exclusion," says SPRC Director Lyn Craig. "It's important to learn from the global experience."

Digital dome

New student innovation hub debuts

Visitors to UNSW's Michael Crouch Innovation Centre (MCIC) can experience this dramatic view of Mumbai's Jain Temple by standing under a six metre-wide immersive dome in a project led by UNSW Art & Design Professor Sarah Kenderdine. *Look Up Bombay!* is a 4K (4096 x 4096 pixels) algorithmically driven artwork developed by Kenderdine and her collaborators comprised of 160 gigapixel spherical images shot on location. DomeLab, the highest resolution digital dome environment in Australia, will premiere at the launch of the MCIC in September and will be on display until late November.

It features 14 art and science movies, many showcasing UNSW-based innovations. DomeLab is supported by an ARC LIEF Grant in collaboration with 10 organisations and will tour partner venues across Australia and internationally over the next five years. The MCIC, which is housed in the new Materials Science Building, was established with support from Australian businessman Michael Crouch.



Download the *Uniken* app to watch the slideshow



Look up Bombay!
PHOTO DomeLab 2015

UNSW climbs five spots in global research rankings

UNSW has continued its upward trajectory in the prestigious Academic Ranking of World Universities (ARWU), climbing to 125, up five spots from last year. For the second consecutive year, UNSW leads all Australian universities in the field of Engineering/Technology and Computer Sciences, moving up to 41 in the world. UNSW also fared well in specific subject rankings: it ranked first in the country in Mathematics, and is ranked in the top 100 in the world in Clinical Medicine and Pharmacy, Economics/Business, and Computer Science.

"This is an excellent result for UNSW, highlighting the calibre of our research and the strong international standing of our academics," says Professor Les Field, Deputy Vice-Chancellor (Research) at UNSW. "We are committed to improving our performance internationally, and are working to ensure that we continue our upward trend of recent years in this important global ranking."

International climate scientist in residence at UNSW

Professor Stefan Rahmstorf, one of the world's foremost climate scientists and climate science communicators, will work with Professor Matthew England at UNSW's Climate Change Research Centre until February 2016.

Rahmstorf is one of the founders of the internationally awarded *Real Climate* blog described by *Nature* as one of the top five science blogs in 2006 and was named one of the world's top 10 climate scientists in 2009 by the *Financial Times*. He is also the co-author of four books including *Our Threatened Oceans* and *The Climate Crisis*. He has been a lead IPCC author and was a member of the German Advisory Council on Climate Change from 2004–2013.





Red gums tell story of a drying wetland

One of the Murray–Darling Basin’s most important wetlands, the Macquarie Marshes, has become drier during the past 20 years, leading to severe loss of ancient red gum trees and invasion of terrestrial plants, two UNSW studies have revealed.

The current drought, the development of dams, and the diversion of water for agricultural irrigation are the main causes of the drying, which will be further exacerbated by climate change.

“The Macquarie Marshes is a Wetland of International Importance under the Ramsar Convention. But our research shows the marshes, which provide vital habitat for millions of waterbirds, are progressively drying out,” said Director of the UNSW

Centre for Ecosystem Science Professor Richard Kingsford, an author on both papers.

“The plants tell the story: river red gums have died in large numbers in some areas and the reeds and other aquatic plants that used to be wet most of the time are not receiving as much flood water as before.”

In one of the studies, researchers led by Ms Katherine Catelotti investigated changes in the condition of 212 river red gums, which were repeatedly monitored from 1993 until 2012.

“We found nearly half – 44% – of the river red gums that were alive and healthy in 1993 were dead by 2012, despite the widespread flooding at the end of this period,” she said.

\$13 MILLION TO FIGHT DEMENTIA

Dementia research has been given a major boost with UNSW researchers receiving \$13 million from the National Health and Medical Research Council.

The grants will allow teams of researchers to collaborate on dementia research and focus on the effective translation of research over the next five years.

Professor of Neuroscience Glenda Halliday received \$6.5 million to improve diagnostic detection of non-Alzheimer’s disease forms of dementia, which are commonly under-recognised or misdiagnosed. The research will focus on new detection methods and pilot novel treatments for frontotemporal dementia and dementia with Lewy bodies.

“This will inform both clinicians and families on what they may expect to happen with these different forms of dementia,” professor Halliday said.

Scientia Professor Henry Brodaty, Co-Director of the Centre for Healthy Brain Ageing, received \$6.5 million to conduct the largest dementia clinical trial in the world for people aged 55–75.

The ‘Maintain Your Brain’ trial will recruit 18,000 people to test whether an internet coaching tool can reduce the risk of dementia. Half of the trial participants will be given information on managing dementia risk factors, while the rest will get extra support through online tools connecting them with medical specialists and tailored health interventions.

Brodaty said there remains a lack of understanding in the community regarding dementia risk factors, such as lack of physical activity, obesity, depression, smoking and excess consumption of alcohol.

“If older people increased their efforts to address these risk factors by just 5 or 10%, several million people could keep dementia at bay,” he said. “The real attraction of this program, if it works, is that it could be delivered internationally via the internet.”

Scholarship to balance work and parenthood



Minoti Apte

Balancing parenthood with academia is set to become easier with a UNSW Medicine scholarship that will help early career women focus on research when returning to work after parental leave.

The scholarship – named after the NSW Premier’s Woman of the Year Professor Minoti Apte – will provide eligible staff with relief from teaching and administration to write publications, applications and/or access research assistance. UNSW Medicine Dean Rodney Phillips said the scholarship – the first of its kind in the faculty

– reinforces a long and proud tradition of employing and promoting women.

Apte said she was thrilled to have a scholarship named in her honour: “My path from medical student to senior academic while raising a family was challenging. I was lucky to have received a lot of support but inequality and disadvantage for women returning to work remains a big problem in Australia,” she said. Scholarship applications close 30 September 2015.

For more details go to med.unsw.edu.au.

Keeping it real

Marlene Kong believes you need to experience disadvantage to really understand it. She tells **Dan Wheelahan** that's why it's time for more Indigenous-led medical research.



Marlene Kong remembers many things her grandfather said to her growing up. But one thing stuck with her: “The difference between a white man and a black man is his education.”

Today, as head of the Aboriginal and Torres Strait Islander Health Program at UNSW’s Kirby Institute, Kong is proof of the power of education. She is challenging disadvantage not just as a medical doctor and researcher, but as a role model and advocate for Indigenous Australians.

Kong and her twin sister, Marilyn Clarke, were the first Indigenous medical graduates from the University of Sydney and their younger brother Kelvin graduated from UNSW to become Australia’s first Indigenous surgeon.

“All three of us have a close relationship and are always on hand for each other if we need help or advice – I feel this strengthens each of our individual successes,” says Kong.

The trio’s childhood home, a small, two-bedroom, fibro house in Port Stephens on the NSW mid-north coast, often doubled as a makeshift medical clinic in between their mother’s nursing shifts.

“Mum overcame poverty and discrimination to become one of the first Indigenous registered nurses in Australia,” Kong says. “It was inspiring to see her regularly patching up relatives but I also watched some die young of highly preventable chronic diseases.”

After training in general practice, Kong ventured to South Sudan in 2003 to run a small village hospital, treating patients for sleeping sickness and other tropical diseases.

Kong says this experience, as well as providing medical care to Liberian refugees in Sierra Leone, was an epiphany.

“I experienced major culture shock and saw a completely different world from the ‘West,’” says Kong.

Confronted with extreme poverty and the dire health of thousands of refugees, Kong began to contemplate that making a difference might not only mean treating individuals, but thinking about how population health could improve the lives of entire communities.

After completing an International Master of Public Health at the Hebrew University of Jerusalem, Kong returned home to spend the next eight years working as a GP, focused on improving the health of her Worimi people and other Australians.

Now she is leading a team working to improve the sexual health of Indigenous communities as she completes her Doctor of Public Health at the School of Public Health and Community Medicine and the Kirby Institute. As one of only two Aboriginal researchers at the Kirby Institute, Kong is finding the new role challenging and rewarding.

“People from different socioeconomic and privileged backgrounds can think very differently from a person who has suffered from disadvantage and discrimination most of their lives,” says Kong.

“Stereotypes of Aboriginal people remain entrenched in the research community and I want to change this with increased cultural awareness and training throughout UNSW.”

Kong also wants to use her new role to push for more Indigenous-led research into Aboriginal population health issues.

“There needs to be more Indigenous people interpreting the results of Aboriginal health research studies, because results of research may be misinterpreted through the lens of a non-Indigenous person.”

Stereotypes of Aboriginal people remain entrenched in the research community. I want to change this with increased cultural awareness and training.

– Marlene Kong

Kong recounts a story told to her by an Indigenous psychiatrist, about a group of young Aboriginal boys who went bush to learn about their culture and resilience. When they returned to the school classroom, their non-Indigenous teacher interpreted their newly found confidence as rebelliousness.

While Kong believes one strategy for improving Indigenous health is through increasing the Indigenous medical workforce, she says her success would not have been possible without support.

“Without a supportive, nurturing and culturally safe environment championed here at the Kirby Institute, it would be a very cut-throat existence indeed, particularly in the current competitive research environment,” says Kong.

“As the numbers of Indigenous Australians working in our healthcare system continues to grow, I believe we will see improvements in Indigenous health outcomes and one of the ways this can be achieved is through positive discrimination.” □

PHOTO Grant Turner/Mediakoo

The sky's the limit

UNSW joins forces with Matraville Sports High School



It has turned out football stars and foreign ministers, yet Matraville Sports High School has struggled to attract students. Now, with help from UNSW, it is reclaiming its place in the community, writes **Susi Hamilton.**

It was as a new resident to the gentrifying southeast of Sydney that Chris Davison first noticed Matraville Sports High School and its sprawling sports fields.

But it was as an educator that Davison recognised the crisis the school was facing. It had become known as simply a “sports” school, and the assumption was it must be a bit rough and not very academic. While the surrounding area was growing rapidly, middle-class parents were “bussing their kids out” of the traditionally working-class area to private schools and enrolments had dwindled to around 250.

“There’s such a shortage of schools in the area, yet here is a school built for 1,000 enrolments with few students and resources,” says Professor Davison, the Head of UNSW’s School of Education. “It seemed such a shame for a school with a proud history and with past students that include former NSW Premier and federal Foreign Minister Bob Carr and football stars like Russell Fairfax and the Ella brothers.”

Matraville is one of more than 200 schools that welcome UNSW’s School of Education’s pre-service teachers for in-classroom training. Two years ago, that relationship started to

deepen after a meeting between Davison and the new principal Nerida Walker. The pair recognised much more could be done to strengthen ties that would boost the entire community.

“I said: ‘I want to adopt Matraville and I would love it if Matraville adopted us,’” says Davison of her initial discussion with Walker. The meeting led to a scholarship program for six gifted students to attend UNSW’s renowned GERRIC holiday workshops and music tuition for students who would have otherwise gone without.

But it was a follow-up conversation at the school’s car boot sale that changed everything. Over the bric-a-brac, the pair came up with an Australian first: a commitment to establish a mutually beneficial school-based university education facility, and a partnership that would actively tackle academic and social disadvantage.

Walker explains: “While we have elite sports coaching that we are known for and want to retain, we’re trying to offset our sports branding with wider academic achievement.

“There has always been gifted students at Matraville High, we’ve just never had the resources to assist them.”

< Making the leap – Matraville Sports High School students.
PHOTO Michael Anderson/Paramount Studios

> Matraville Sports High School principal
Nerida Walker (left) with UNSW's Chris Davison.
PHOTO Michael Anderson/Paramount Studios

From UNSW's side, the partnership offers a valuable opportunity to enhance the University's teacher training and its academic applied research. Matraville is one of Sydney's most diverse schools. It has one of the highest concentrations of Indigenous students (31%), and 24% of students are from non-English speaking backgrounds.

"I wanted to send more pre-service teachers and more of our academic staff to the school, but we needed somewhere to put them," Davison says.

As luck had it, there was a school building facing Anzac Parade that was underutilised. It has since been kitted out and after wide community consultation, the UNSW Matraville Education Program has been developed. Its four strategic goals are to extend the student experience, engage the school community, enhance teacher professional learning and enrich teacher education.

The facility, combined with a string of fun, inclusive and community-building initiatives introduced by Walker since she took up the role of principal, is already beginning to deliver results for staff and students.

Enrolments for Year 7 have tripled – from 13 students this year to an expected 40 next year. The numbers have boosted the viability of the school and will attract additional resources from the state government.

As part of the UNSW Matraville Education Program, around 70 student teachers from UNSW will be based at the school for extended periods throughout each semester for in-school and after-school enrichment programs. These include drama and gifted education programs, particularly focusing on the arts and science, as well as literacy and numeracy initiatives for those who need additional support.

UNSW also runs classes at Matraville, utilising the school's science labs and other facilities in teacher training.

Stacey Konstantopoulos is one of the undergraduate students who completed her pre-service training at Matraville. She says the experience was invaluable. "It was the first time for me being in a school with such diverse students. It will hopefully make me a better teacher," she says.

Program coordinator, UNSW's Katherine Thompson, is particularly excited about the parent workshops now being offered. They cover topics including homework supervision, school and child-care choice, and Indigenous languages and culture.

I want to adopt Matraville and I would love it if Matraville adopted us.

– Chris Davison



She believes the school's strong ties with the surrounding area will be one of the greatest assets. "Anyone who's visited this school knows there's a real sense of community here," she says.

A high-level Advisory Board is helping to ensure the program's viability. Members include UNSW's President and Vice-Chancellor Ian Jacobs, the CEO of the Sydney Roosters NRL club, Brian Canavan, and South Sydney Rabbitohs CEO John Lee, as well as some high-profile political heavyweights, including Bob Carr.

Also central to the program is the backing of the Matraville teachers themselves. "There's a healthy educational dialogue," says Thompson. "When UNSW's pre-service teachers are in the class, teachers get extra time to watch, reflect and learn. Teaching is a very personal process, so it's useful to draw on new technologies and techniques that others can offer."

One of those teachers is Linda Holloway. A Matraville High alumna, Holloway has been teaching at the school for 23 years and now lectures UNSW's student teachers in Aboriginal Studies Method on site. "It's great

OPENING THE DOOR TO UNIVERSITY

Matraville Sports High School has a long history with UNSW. The school was one of the first to partner with UNSW ASPIRE, an outreach program that actively promotes higher education to primary and high school students from low socioeconomic backgrounds.

Initiated by the University in 2007, ASPIRE now works with 57 local and regional partner schools across NSW through established in-school workshops, on-campus 'taster days' and residential programs for regional students.

Eight years on, ASPIRE's work is delivering incredible results – since 2010 there has been a 48% increase in the number of university offers to ASPIRE students and a 200% increase in offers to UNSW.

And as ASPIRE grows it continues to offer more tailored initiatives.

A recently launched nine-week Links2Uni program was offered specifically to Indigenous students at Matraville High to increase their awareness of the link between school, university and a career.

"Matraville High is only 7km from UNSW, but many students had never set foot on campus before," says ASPIRE director Ann Jardine. "Links2Uni enabled them to experience university life by engaging with current Indigenous students, academic staff and support services."

to see people so enthusiastic about Aboriginal education," she says.

Another supporter is Parents and Citizens' President Nigel Williams, whose eldest son attends an after-school class for gifted children. His younger son also recently took part in a gifted education holiday program at UNSW, focusing on cinematic sound.

"This is the best thing that has ever happened to the school," Williams says. "One of the key things is it gives the kids skills they wouldn't otherwise get. And it's a gateway to university."

Davison says the partnership is a win-win for everyone. She likens it to "a gigantic dating agency where we match up all the key players".

"We are taking a strategic, holistic approach. It's about pooling resources, knowledge and skills and in the end it's about making a better learning environment for everyone." ■



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RISING STARS

They're young, smart and forging frontiers in the science of the mind. **Myles Gough** meets psychology's exciting new research leaders.

PHOTOS Quentin Jones

After studying at UNSW's then College of Fine Arts in the late 1990s, aspiring filmmaker Joel Pearson changed tack. Interested in human consciousness, Pearson began a journey into psychology and the field of cognitive neuroscience.

"At the time, it wasn't a term that was used a lot," says Pearson of the discipline that investigates the neural circuits responsible for our mental processes.

Today, it's a different story.

"The past five years or so have seen enormous progress on consciousness research," says the 37 year old, now leading a lab in UNSW's School of Psychology focusing on hallucinations, the imagination and Parkinson's disease.

Advanced brain imaging and neural stimulation technologies, coupled with new ways of analysing big data, are helping researchers "measure the full structure of the brain in high definition" and map functions across different regions occurring in unison, says Pearson, a National Health and Medical Research Council (NHMRC) Fellow.

UNSW is at the forefront of this research as well as in more established fields of clinical and social psychology, cognition and perception. "Anything with hard numbers to it, things like citations, grants or publications per person, we tend to come out very clearly at the top in Australia," says school head Professor Simon Killcross.

UNSW's leadership is also lucrative. In the 10 years to 2015, the School of Psychology received \$90 million in research funding, including a combined \$74 million from the Australian Research Council (ARC) and the NHMRC. Over that period, more than 80 UNSW psychologists have won major grants.

Among the recipients are established star researchers and clinicians like Scientia Professors Richard Bryant, who studies post-traumatic stress disorder, Joe Forgas (interpersonal

behaviour) and Barbara Gillam (depth and 3D image perception). There is also Professor Mark Dadds, a world-renowned clinical child psychologist; Associate Professor Lenny Vartanian, who focuses on the psychology of eating and weight; Professor Colin Clifford who researches vision; Associate Professor Jess Grisham, who studies obsessive-compulsive disorder and hoarding; and Professor Skye McDonald, a clinical neuroscientist who leads an NHMRC Centre of Excellence helping people recover from traumatic brain injuries.

Now a new generation is making its mark. Early career researchers, like Pearson, are attracting international attention for their scholarship and developing potential new therapies. Bronwyn Graham and Thomas Whitford are unlocking secrets in the study of anxiety disorders and schizophrenia; Steve Most is turning heads in the field of perception; Lisa A Williams is discovering the hidden benefits of our emotions; and Angela Nickerson is leading research on refugee mental health.

This emerging group is overturning lingering perceptions of psychology as a 'soft' science – a legacy, perhaps, of the field's origins in philosophy.

"People maybe view it in those old Freudian terms, where the client is lying down on the couch, and the psychologist is sort of reading their mind or talking about their dreams," says Graham. "I don't think people realise when they see clinical psychologists they are receiving gold-standard, evidence-based treatments that have been very rigorously tested."

"It's an exciting field, and an exciting time," says Williams. "There are always new questions to be asked and new methodologies to apply."

> Psych superstars ... (L-R) Lisa A Williams, Bronwyn Graham, Joel Pearson, Thomas Whitford, Angela Nickerson and Steve Most (seated)

“IT’S AN EXCITING FIELD,
AND AN EXCITING TIME.
THERE ARE ALWAYS NEW
QUESTIONS TO BE ASKED
AND NEW METHODOLOGIES
TO APPLY.”



Fighting fears

Attaching new questions to old methodologies is central to clinical psychologist **Bronwyn Graham's** next study, funded through an ARC Discovery Early Career Researcher Award.

Timed to coincide with Sydney's spider season, beginning in September, the research aims to help women with arachnophobia overcome their fear – for good – by asking them to put their hand inside a box full of spiders.

It may seem cruel, but exposure therapy – in this case, having huntsman and St Andrew's cross spiders crawl across gloved hands inside a terrarium – is the standard treatment for anxiety disorders and phobias, and is effective 50% of the time, says Graham.

It involves forming a new memory: that something once thought of as distressing is instead safe – what psychologists call a “fear extinction” memory.

Graham is looking at women, who are twice as likely to develop anxiety disorders and phobias compared with men. The 30 year old suspects low levels of sex hormones during therapy are reducing their ability to form and retain these memories.

In 2010, Graham was named an American Australian Association Fellow, and conducted Pavlovian fear-conditioning studies at Harvard University.



^ It's an exciting field and an exciting time ...
Lisa A Williams and Joel Pearson

In subsequent experiments at UNSW, rats and humans were conditioned to associate a stimulus (in this case a light) with a mild shock. Once a fear response was evoked, the participant was repeatedly exposed to the stimuli without the shock – a form of therapy. The human participants returned 24 hours later to test their fear extinction memories.

“We found regardless of whether women were phobic or healthy, they showed fear relapse the next day if they had low levels of oestrogen,” says Graham. “It suggests women

might be less responsive to exposure therapy if they're receiving it during periods of low sex hormones.”

Her upcoming spider study will try to determine whether treatments clustered around periods of high sex hormones are more effective.

“Something as simple as changing the timing of treatment could be very significant,” says Graham, adding her long-term goal is to improve treatment success rates for anxiety disorders, which affect 30% of Australians, and cost the economy upwards of \$6 billion a year.

Regulating emotions

One in three refugees will develop a psychological disorder resulting from the violence and trauma they've endured and this is often exacerbated by the stress of financial difficulties and uncertain visa status.

While that statistic is alarming, clinical psychologist **Angela Nickerson**, 33, is interested in the two out of three refugees who stave off psychological distress.

“They've gone through numerous traumatic events – often including torture – have been displaced from family and friends, and they come out the other side and are functioning well,” says Nickerson, who is an NHMRC Clinical Early Career Research Fellow. “We want to figure out what these people are doing differently internally to adapt.”

Nickerson has an NHMRC Project Grant to study emotion regulation in refugees and says her lab is “one of the first in the world to use experimental methodologies to investigate refugee mental health”. This involves showing volunteers trauma-related images, and having them trial different emotion control strategies to find out what works best.

The NSW Young Tall Poppy Award winner has found evidence that refugees who employ ‘cognitive reappraisal’ in response to the emotions and memories stirred up by the images experience fewer intrusive memories compared with individuals who suppress their emotions altogether – something that people with PTSD tend to do.

“Cognitive reappraisal involves thinking about the images in a realistic and helpful way,” she says. “If it's something that's helping people cope well on a daily basis, we can build it into our interventions.”

Nickerson's research group – the Refugee Trauma and Recovery Program (RTRP) – is also developing and testing an online intervention for refugee men from Arabic-, Farsi- and Tamil-speaking backgrounds. The collaborative study involving RTRP, Settlement Services International and the Black Dog Institute is funded by beyondblue and the Movember Foundation and is aimed at breaking down the self-stigma that prevents refugee men from seeking help.

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Seeing what's not there

For most of us, the world is experienced as we see it. But for people with neurological disorders, the brain can wildly distort reality.

Joel Pearson, is trying to untangle the neurobiological mechanisms that trigger hallucinations by studying people with Parkinson's disease, who suffer hallucinations as the disease progresses.

“Some people might see a snake in their bed, while others might encounter dead loved ones,” says Pearson.

To understand what's happening inside the brain, Pearson is comparing hallucinations with a phenomenon known as mental imagery – the ability to ‘bring to mind’ a vivid visual experience of an object without it being in view.

Pearson and his team have pioneered methods of testing the strength of mental imagery, as well as behavioural tests that can elicit hallucination-like experiences.

In a recent study with colleagues, Pearson measured the frequency of hallucinations and the strength of mental imagery in 19 people with Parkinson's disease and 10 healthy participants.

They found people with hallucinations had more intense mental imagery. After examining their brain activity using functional magnetic resonance imaging, they also discovered both phenomena are characterised by abnormalities in the neural pathways passing through the brain's attention control region.

The results, published in the Royal Society's *Proceedings B* journal, suggest the phenomena could share a common underlying mechanism.

The team will soon begin testing brain stimulation as a possible treatment to control visual hallucinations, using a weak electrical current passed through the brain.

“We can already control visual images in healthy individuals using this same brain stimulation technology – so we are optimistic the same techniques may work to control visual hallucinations,” Pearson says.



Blinded by emotion

We don't see things as they are; we see them as we are. Steve Most demonstrates the truth of this adage, conducting research that sheds light on how our motivations and emotions shape our perception.

Conscious perception depends on more than where you turn your eyes – you also have to pay attention. “If our mind is elsewhere it’s possible to look directly at something and miss it,” says Most, 43, an ARC Future Fellow.

This kind of lapse in perception is known as inattentive blindness, and has been famously demonstrated with a video of two colour-coded basketball teams passing two balls.

While most people succeed in counting the total passes, around half fail to see the most obvious thing – a person in a gorilla suit walking across the screen.

“Eye-tracker studies have shown people who do and don’t see the gorilla actually look directly at it for about the same amount of time,” says Most, who was one of the players in the video as a doctoral student at Harvard University.

About 10 years ago, while a postdoctoral fellow at Yale University, Most showed this temporary blindness could also be caused by emotional responses to our environment – something he termed emotion-induced blindness (EIB).

Although relatively short lived – it lasts about half a second in the lab – lapses like these could be fatal while driving. He’s now working with engineers at UNSW’s Research Centre for Integrated Transport Innovation, using a driving simulator to test whether some billboards might trigger EIB in drivers.

“Advertisers use images designed to evoke emotional responses,” says Most. “We want to know what consequences this has on drivers’ attention and their ability to see brake lights, lane changes or pedestrians.”

Most has also shown moods can influence susceptibility to EIB with one study revealing jealousy between romantic partners can increase

temporary blindness in response to rapidly displayed emotional images.

Staying positive

Lisa A Williams, 33, is interested in the benefits of ‘social’ emotions – those emotions that arise from and shape our social interactions with others.

In the same way that primal emotions like fear help us deal with our physical environment in order to survive, social emotions help us navigate the complexity of social life, says Williams.

She’s specifically interested in positive social emotions and has demonstrated that a simple “thank you” truly can go a long way.

In a recent study, 70 university students were told they were mentoring a high-school student, and were asked to comment on a university admissions essay. Afterwards, the mentors received a handwritten note from their “mentee”. Only half the notes included an expression of thanks.

The mentors were told the study was over, but were given an option to write a note back to their mentees. The mentors who were thanked were more likely to provide their contact details.

The results – published in the journal *Emotion* – suggest gratitude can be an impetus to build new social bonds.

“Our findings represent the first known evidence that expression of gratitude facilitates the initiation of new relationships among previously unacquainted people,” Williams says.

Williams is also the chief investigator on an ARC Linkage Grant with the Australian Red Cross Blood Service, studying the emotions people experience before, during and after donating blood, to encourage repeat donations.

“If we know that people who feel a lot of anxiety are less likely to return, we can try to help them down-regulate that feeling,” she says. Likewise, if a donor is feeling proud, a simple

< We don't see things as they are; we see them as we are ... Steve Most and Bronwyn Graham

message boosting that emotional response may get them back through the door.

Understanding schizophrenia

Anyone who’s tried knows – it’s impossible to tickle yourself. This is because healthy individuals suppress self-generated sensations, says NHMRC Career Development Fellow Tom Whitford, 36.

Similarly, when healthy people speak, their brains exhibit less electrical activity than when they hear their voices played back.

Whitford explains: When we move, our brain generates two signals – one signal produces the intended movement, while a duplicate signal informs the brain about the sensations it expects as a result of the movement.

But people with schizophrenia – who often hear voices and believe external forces control their thoughts and actions – don’t self-suppress the sound of their spoken voice, and some evidence suggests they can also tickle themselves, says Whitford.

It’s suspected their duplicate signal is flawed. This means they can’t predict and suppress the accompanying sensation, which leads to confusion as to what is actually generating the action.

A NSW Young Tall Poppy Award winner, Whitford is examining the neural mechanisms underlying these unusual symptoms to develop new treatments, and potentially stave off the onset of the disorder.

He’s working with people with schizophrenia as well as psychologically healthy individuals, comparing their brain activity in response to self-generated and externally generated sensations, and searching for patterns – particularly in people with a high genetic risk for developing the disorder.

“If we can identify these self-suppression deficits before the transition to psychosis, it could provide a basis on which to treat high-risk individuals prophylactically, before they get ill, which might delay or prevent full-blown schizophrenia.” □



> The past five years have seen enormous progress on consciousness research. ... Tom Whitford and Angela Nickerson

The journalist and the forensic accountant

Something is slowly killing our tax base, but what? UNSW's Jeffrey Knapp and Fairfax's Michael West are on the case. By **Leilah Schubert**.

As our national revenues shrink and our tax system convulses and flails, calls to increase the GST, raise the Medicare levy and tighten access to the pension grow louder.

But what is poisoning our tax base? UNSW accounting academic Jeffrey Knapp has a pretty good clue.

By day, Knapp is a mild-mannered accounting lecturer at UNSW's School of Business, but by night he goes where most of us fear to tread – the financial reports of large multinational companies. "I'm a night owl. I do all my forensic work at night – it's quiet, peaceful," he says.

"Sometimes I'll take a few days to understand the business model. It's a little bit like a jigsaw puzzle. But sometimes it's quite simple."

With files piled high on his desk, and paper trails taped to the walls, Knapp's office could belong to a private investigator. But profit is not his motive.

"I have this wonderful position where I can be a champion for the public interest. I have a freedom to make inquiries, to investigate things, to have opinions, and to point out where things don't add up," he says.

Like every good detective, Knapp has a partner – *Sydney Morning Herald* journalist Michael West – who helps him to shine a light on the sleight of hand that sees profits disappear faster than you can say 'Bermuda tax haven'.

Says Knapp: "We're a good team. I can't tell a story like Michael can but I'm good on the detail."

In return, West says Knapp is "fearless" and has an uncanny knack of spotting irregularities. "He seems to dig up the anomaly every time.

"Busting the Corporate Tax Association – the lobby group which preaches to government on tax policy – for errors in its own tax disclosures was an enjoyable coup," West says.

The partnership began in 2005 when Knapp uncovered some particularly dodgy dealings with administrators and insolvency practitioners.

"I was outraged and went to a couple of journos. Michael was the only one who would look at it. He listened, wrote an article, and he won a Walkley Award for it. He also ended up getting sued. That was the beginning," says Knapp.

The dynamic duo has since perfected a simple but effective technique. They examine the financial reports of companies over a long time frame, say 10 years, and add up how much tax they have paid.

Turns out, it's usually not very much. For example, Knapp and West recently revealed that credit card giant American Express has "in effect paid no income tax on its multi-billion-dollar operation in Australia for seven years".

"That is flair," wrote West at the time, "a global corporate giant paying less income tax than an apprentice salad bar attendant at Burger King."

Knapp and West's crusade has been gaining traction with the Senate Inquiry into Corporate Tax Avoidance. The suspects – Google, Apple, Microsoft, Facebook, and drug companies including Johnson & Johnson, Pfizer, AstraZeneca and Roche – have been lining up to answer questions.

But for Knapp the real villain is lack of transparency. "Bad things happen in the dark, especially companies that keep stakeholders in the dark," he says.

The solution is disclosure. Australian companies that are listed on the stock exchange must prepare full and freely available financial reports, Knapp says. The same applies to multinationals and private companies.

Knapp says what drives him is a strong sense of justice and equity, and the motto of the Institute of Chartered Accountants: 'Nec Timens Nec Favens', without fear, without favour.

"I am not going to turn the other way when I see billion-dollar enterprises thumbing their noses at accounting standards," he says.

Knapp imparts this ethos to students in his accounting standards class. "I want to make students aware that independence is such a key feature of what we are supposed to be about," he says.

"I also want them to know it gets murky out there." □



< True detectives ... Michael West (left) and Jeffrey Knapp.
PHOTO Grant Turner/Mediakoo



CHINA CONNECTION

An initiative of UNSW Law puts it at the forefront of understanding China’s business environment, writes **Susi Hamilton**.

As a 20-year-old law student in China, Weihuan Zhou was fascinated by one of the biggest events in his country’s history: its entry into the World Trade Organization (WTO) in 2001.

“Everyone was talking about it,” says Dr Zhou, who was just a toddler when the protracted deliberations began. “The government spent 15 years working on it, they were not going to back out easily.”

Zhou showed similar tenacity when researching the WTO and anti-dumping legislation, which led to roles advising the Chinese government and industry associations. More recently, he’s taken up a position with UNSW Law’s newly established China International Business and Economic Law (CIBEL) initiative.

The research grouping – the largest of its type outside China – comes at a critical juncture for Australia and China as the ink dries on this year’s free trade agreement. It brings on board five Chinese researchers to boost UNSW Law’s existing strength in international business and economic law, and China-related matters.

Professor Colin Picker, who leads the initiative, says billions of dollars in trade and investment could be at stake unless further work is done to cement the gains of the trade agreement.

“The real concern is that due to misunderstandings and misperceptions, Australian regulators fail to understand some of the unique opportunities being presented, such as the development of the Shanghai Free-Trade Zone,” says Picker, who is also UNSW Law’s Associate Dean (International).

The work of the group will “enhance rather than challenge the relationship with Beijing”, Picker says. “By helping each side to understand the other, the CIBEL initiative will contribute to a better China–Australia economic relationship.”

Picker says the group will focus on business law – a complicated field in a mixed and emerging economy – leaving others in the faculty to concentrate on the more “sensitive” issues such as human rights and constitutional matters.

Other members of the CIBEL initiative include Scientia Professor Ross Buckley, who is the King & Wood Mallesons Chair in International Finance Law at UNSW, Associate Professor Deborah Healey and Dr Lisa Toohey.

Toohey, a Senior Lecturer and Director of Dispute Resolution Programs, cautions that sensational headlines about China, such as those concerning Chinese investment in Australia, have been unhelpful and threaten to “overwhelm our perception of China”.

“In the mainstream media, there is often a lot of nuance lost along the way,” she says. “It is popular to talk about China and Australia being fundamentally different, but really what is at heart for both countries in the economic relationship is trade and mutual benefit.”

^ L-R Wenhua Shan, Colin Picker, Lisa Toohey and Weihuan Zhou. PHOTO Grant Turner/Media Koo

Toohey says many Australian companies have a haphazard approach to China, often driven by individuals, “whereas a strategic approach is what’s needed”.

“This takes knowledge, time and ongoing engagement,” she says.

Another high-level CIBEL recruit from China is Professor Wenhua Shan, who will take up a part-time position at UNSW Law while remaining Dean of Law at the prestigious Xi’an Jiaotong University. He predicts the initiative will “provide important support to decision-makers in China, Australia and beyond on global, regional and bilateral economic matters”.

For international trade scholar Weihuan Zhou, a big attraction of working at UNSW is academic freedom. “It is one of the joys of doing research in Australia,” he says.

Above all, the researchers will draw on their wealth of experience. When he worked in an Australian law firm as a trade law specialist and overseas adviser, Zhou would often contact the Chinese government and Chinese business clients with constructive legal advice – and yes, they paid attention.

As in most dealings with China, Zhou says, a good cultural understanding and a measured approach works best. □

Picker, Toohey and colleague Jonathan Greenacre are co-editors of *China in the International Economic Order – New Directions and Changing Paradigms* (Cambridge University Press). See cibel.unsw.edu.au.



Home to stay

Using state-of-the-art technology, Built Environment's Catherine Bridge is working with industry to develop a new generation of products that will empower older Australians to live in their homes for longer. **Amy Coopes** reports.

An older woman moves around a bathroom, stepping in and out of spaces that we all routinely navigate each day. But this is no ordinary room. Equipped with state-of-the-art biometrics technology, it tracks the woman's every movement via pressure mats and 3D hand scanning.

Part of UNSW Built Environment's Liveability Lab, the 'bathroom' is collecting a vast amount of data about how older bodies interact with objects and fittings such as toilets and handrails, and about what is functional and appealing.

The aim is to create a new generation of products that not only improve useability for older people, but also helps them stay in their homes longer.

"It's important to allow people to remain in their own homes and be mobile and be able to enjoy their life," says Associate Professor Catherine Bridge, of the drive to make house modifications aspirational and elegant for the burgeoning number of older Australians. "It's about having a better quality of life. And being safe."

By 2020, for the first time in human history, there will be more people in the world aged 65 or over, than those under the age of five. Almost one in five of the oldest will have a severe handicap posing a major care burden for governments.

"If we are talking about deinstitutionalisation, if we're talking about social inclusion then we really have to address this," Bridge says. "And if we don't address it for the most vulnerable people in our society on the lowest incomes then we really haven't done the right thing."

As research leader at UNSW's Enabling Built Environments Program, Bridge is responsible for collating and making sense of the data the Liveability Lab collects.

Established with a \$446,000 ARC Linkage Grant, matched with cash and in-kind support from bathroom products firm Caroma and GWA Bathrooms and Kitchens, as well as a \$225,000 major research equipment and

< Former occupational therapist Penny Plumbe with Built Environment's Catherine Bridge.
PHOTO *Quentin Jones*

infrastructure grant from UNSW, the lab's end result will be innovative products.

Demand for such products will only increase with the introduction of the National Disability Insurance Scheme, giving its clients more autonomy and choice, Bridge predicts.

Former occupational therapist, 69-year-old Penny Plumbe is one of six co-designers assisting with the Liveability Lab's research. The group was the first to test the lab's equipment in preparation for the first intake of research participants, as well as playing an integral role in brainstorming how current bathroom products can be modified.

"I get a great deal of satisfaction from being involved in research and education," Plumbe says. "And as an older person I can appreciate how these products will assist people wanting to stay in their own homes for longer."

Making a practical difference is central to Bridge's agenda. More than most architects, she is uniquely qualified to know what modifications need to be made to the built environment as our physical and mental capabilities change.

Originally trained as an occupational therapist, she did a Masters in Cognitive Science, before completing her PhD in Architecture – experiences that shaped her belief that buildings "embody society's values" and are a tool of social agency.

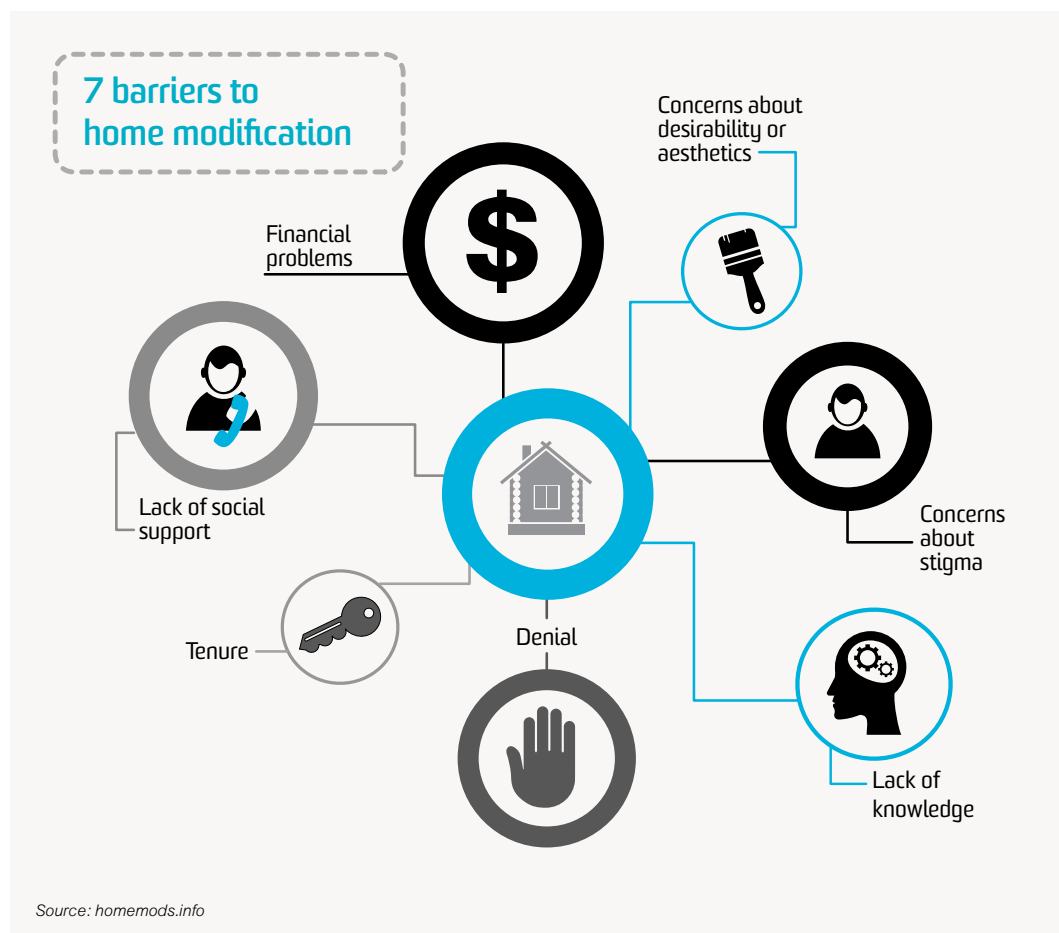
"You can change a person, you can help them to relearn skills or to use assisted technology or to delegate tasks, but if you are really interested in an inclusive society the only way to do that is to change the built infrastructure," she says.

That philosophy has led to another practical service: the world-leading Home Modifications Information Clearinghouse, a web-based, one-stop-shop for consumers, designers and industry. The online service collates evidence-based best practice for home modifications ranging from very simple DIY guidelines to design tools for architects drafting access-friendly homes.

Based within the faculty, and directed by Bridge, the site has been used by more than 200,000 people in 190 countries. The service was nominated for a NSW Premier's Public Service Award in 2006.

"There are other groups in the inclusive design space and we work with them extensively, but there really is no other service of its kind in terms of providing specific home modification information," says Bridge.

Staff at the Clearinghouse comb academic literature and translate new findings into user-friendly fact sheets for consumers and industry and harvest data about real-world problems



It's important to allow people to remain in their homes and be mobile. It's about having a better quality of life and being safe.

– Catherine Bridge

from online forums for occupational therapists, designers and the general public.

The do-it-yourself modifications marketplace is already booming – a recent study for the NSW government conducted by Bridge identified that provision of five product types, including hand showers, can offset health and aged care costs in the order of \$3.75 million per year. The lower costs are a result of all aspects of planning, product selection, purchase and installation or construction being undertaken by privately funded individuals or their family and friends.

For Bridge, the emphasis is on style as much as function, with aesthetics a major barrier and disincentive to renovations that could keep people out of residential care, potentially saving millions of dollars.

"People reject the services because they don't want their home looking like a hospital or an ugly ramp at their front door," says Bridge, pointing to a recent survey in which one respondent said

simply, "I want to have a say in how things are going to be renovated, how they look".

"Housing is the largest asset that most people own, and people are very reluctant for a range of reasons, including inheritance, to reduce the value of their asset," she explains. "If they perceive that modifications are going to make their home less saleable or reduce its value, it becomes problematic."

Apart from significant government savings, work by Bridge and PhD candidate Phillipa Carnemolla at both the Liveability Lab and the Clearinghouse has shown that home modifications also increase quality of life across every measure for older people and those with a disability.

Most importantly, Bridge says, they improve people's relationships, shifting the carer-client dynamic back to one where both parties feel empowered and respected "and that's what it's all about". □

Dog eat cat: the push to re-wild Australia

Scientist filmmaker Daniel Hunter believes “re-wilding” is the best way to battle the invasive predators driving many species to extinction, writes **Brett Evans**.

At sunset the killer comes out to feed. She leaves the safety of her hollow log and pads through the darkening forest. It is late summer and she is pregnant.

Then she sees it: a small marsupial foraging among the leaf litter. She crouches, her tail a silent metronome. Then in a blur of stripes and claws her muscular body hits its target: a southern brown bandicoot.

This brutal encounter between feral cat and native animal is repeated nightly across Australia. Although estimates vary, it’s generally agreed there are millions of feral cats in Australia, and each night they kill at least as many native animals. The carnage wrought by these introduced predators has contributed to the extinction of at least 20 small Australian mammal species.

The roll call of termination is harrowing. Gone forever are the desert bandicoot, the lesser

bilby, the desert bettong, the Nullarbor dwarf bettong, the broad-faced potoroo, the Darling Downs hopping-mouse and Gould’s mouse. The list goes on.

And it’s not just feral cats. There are some seven million red foxes in Australia, which have pushed at least six Australian mammal species to extinction and they’re threatening to drive another 10 over the edge, including the endangered loggerhead turtle, whose eggs and young the fox feasts on.

If you add in the effects of climate change and the destruction of habitat, many of Australia’s iconic animals are in a desperate fight for survival.

So what can be done? Traditionally we have shot and baited invasive species. More recently we have created conservation zones. But a growing tide of scientific opinion argues there’s a bolder way to halt the carnage – re-wilding the Australian landscape with native-born apex

predators. Use the dingo and the Tasmanian devil against these interlopers; and give cats and foxes a taste of their own medicine.

One such advocate is conservation biologist Daniel Hunter, a 29-year-old doctorate student at UNSW whose passions are surfing, filmmaking and conserving Australia’s endangered mammals.

After studying science at Melbourne University, Hunter got the filmmaking bug and made his way to the University of Otago in New Zealand, where he spent two years honing his skills as part of a science communication degree.

When he started his doctorate at the Centre for Ecosystem Science at UNSW about the effect of dingoes on other native fauna and flora, Hunter says the idea of a film leapt out.

“You can write 1000 scientific papers,” Hunter explains, “but are you really going to communicate to the public?”

As he carried out field research in the Greater Blue Mountains World Heritage Area, Hunter lugged his camera along. The result is his documentary, *Battle in the Bush*.

For his doctorate, overseen by UNSW Associate Professor Mike Letnic, Hunter is studying the effects of “trophic cascade”. In a balanced ecosystem, a small number of apex predators, such as dingoes, help regulate the impact of smaller prey animals. Hunter’s hypothesis is dingoes in the Blue Mountains suppress feral predators either by killing them or by creating a “landscape of fear” in which the “feral cat or fox is always looking over its shoulder”.

So let’s encourage dingoes, he argues. More controversially, however, he also wants to reintroduce Tasmanian devils to the mainland. Farmers don’t like dingoes because they eat livestock. The devils will suppress the foxes and cats; the dingoes – living deeper in the bush – will remain there because of poison baiting regimes.

This sort of re-wilding has been tried in other parts of the world – most famously in Yellowstone National Park, where wolves have been reintroduced to control the park’s deer population. And Tasmanian devils were once part of the mainland’s ecosystem: some scientists argue they lived here as recently as 500 years ago.

Hunter thinks this approach must eventually hold sway.

“I love all animals,” says Hunter. “But cats and the Australian bush – they just don’t work together, and that’s the bottom line.” □

Battle in the Bush is now being considered by several film festivals. A longer version of this story first appeared in *Inside Story* (insidestory.org.au).



Download the *Uniken* app to watch the video

< A place for predators ... Daniel Hunter.
PHOTO Ed Sloane



< Animal groups who expose abuse are doing a community service ... Siobhan O'Sullivan with friend.
PHOTO *Quentin Jones*

Shooting the messenger

Australian parliaments are moving to criminalise the undercover work of animal activists. Siobhan O'Sullivan tells **Steve Offner** the laws are bad news for democracy.

The footage was shocking – workers smashing adult pigs on the head with sledgehammers, piglets being thrown and kicked, and sick and injured animals crammed into dirty, dilapidated pens.

Undercover activists filmed the alleged abuse of animals at Wally's Piggery near Yass in southern NSW in 2012.

The covert video evoked disgust in the Australian public and charges were laid against the piggery's owners by the RSPCA, but were later dropped after the prosecutor claimed the video could not be used as evidence.

The abuse shown was not an isolated case, according to groups like Animals Australia. In fact, much of what was captured on the video is not illegal.

For School of Social Sciences' social policy researcher Dr Siobhan O'Sullivan, how we regulate animals is a central interest, that began with her honours thesis and then doctorate on the topic in 2008.

"I'm passionate about challenging injustice and I particularly don't like injustice against the vulnerable. Animals are some of the most vulnerable individuals," says O'Sullivan, who also researches employment services and the welfare state.

The recent UNSW appointee has her eye on a new front opening in the animal-rights struggle,

I'm passionate about challenging injustice and I particularly don't like injustice against the vulnerable.

– Siobhan O'Sullivan

the much-discussed 'political turn' in animal ethics.

"Political scientists are beginning to engage," O'Sullivan explains. "There's a shift away from moral arguments about the rightness or wrongness of exploiting animals, to arguments with roots in political theory and justice.

"It's now an institutional debate about the role the state should play. If we've established that animals do matter and that some kind of moral duty flows from that, what is that duty?"

O'Sullivan says one of the state's roles should be effective regulation of animal industries, including boosting the resources and independence of investigative authorities like the RSPCA.

Another role is to allow free and frank debate about animal welfare.

However Australian governments appear to be trying to stifle both through so-called 'ag-gag' laws. Last year, Australia's first such laws were rejected by the South Australian Parliament, but similar Bills are now making their way through the NSW and federal parliaments.

Ag-gag laws criminalise the work of activists and journalists who expose animal cruelty in situations as diverse as factory farming, the live animal trade and greyhound racing. Versions of the legislation have been introduced in around 11 US states.

They essentially duplicate existing trespass laws, "but with a twist", O'Sullivan explains. "They seriously increase penalties; make it illegal to distribute or broadcast images that have not been surrendered to the police; and create a crime of seeking employment with the aim of exposing animal suffering.

"In other words, ag-gag laws are intentionally designed to ensure animal activists are unable to let the community know about socially invisible animal suffering."

Far from being criminals, members of animal groups who expose abuse are doing the community a service, O'Sullivan believes.

"The proof is the response to Animals Australia's live export story aired on ABC's *Four Corners*," she says. "The community seemed to be very interested in knowing how animals were being treated in Indonesia and had a strong response to it."

O'Sullivan recently analysed trespass laws and concluded breaking them could be morally justified. "As long as certain criteria are met – such as being non-violent, not destroying property and being done with a view to policy change – animal activists are behaving in a way that is consistent with the values of legitimate civil disobedience, something we typically admire."

Even so, O'Sullivan believes Australia's first ag-gag Bill could pass this year. Which is bad news for animals and for policy debate about the human-animal relationship.

"Perhaps it will happen," O'Sullivan says. "But at the same time the community isn't going to cease being interested in animal welfare.

There's a growing realisation that there's something problematic about the way we are treating non-human animals.

"Causing someone else to suffer, in this case an animal, because it is financially beneficial to do so – to me that's a terrible thing to do and a terrible thing for the state to condone." ■



Listen to O'Sullivan's podcast *Knowing Animals*.

Love and memory

With a GoPro camera strapped to her chest, Brenda L Croft is documenting her family history straight from the heart, writes **Fran Strachan**.

Brenda L Croft's father Joe was a Gurindji man and one of the Stolen Generations. Now, many years after his death, Croft is piecing together the fragments of his life in a complex multimedia work *Solid/Shifting Ground*.

For the past three years Croft has been trekking sections of the now heritage listed Wave Hill Walk-Off Route in Gurindji mapping what she calls her "memory-scape" with audio-visual media and photography captured with a camera strapped onto her chest, near her "heart and heartbeat".

"Walking the Wave-Hill Track is a performative act that has helped connect me to my father's birthplace and the strength of our people," says Croft. "When you walk you think differently ... it changes the way you breathe."

The partially overgrown, 22km track is significant to Croft's people who walked the same path from Wave Hill Station in 1967 to strike against the poor conditions and brutality they had experienced as pastoral workers for more than 40 years. It was a strike that eventually led to the passing

of the 1976 *Northern Territory Aboriginal Land Rights Act*, a moment immortalised in the now iconic photo of Gough Whitlam pouring sand through the hands of Vincent Lingiari.

Croft, a Research Fellow with UNSW Art & Design's National Institute for Experimental Arts, has been awarded a prestigious Australia Council National Indigenous Arts Award Fellowship to develop *Solid/Shifting Ground*, a combination of performance, creative narrative, moving and still imagery, and sound.

Like many descendants of the Stolen Generations, Croft grew up far from her customary homelands and is of mixed heritage. "Gurindji/Malngin/Mudpurra on my father's side and Anglo-Australian/Irish/German on my mum's," she says

Her parents, Joe and Dorothy, were keen photographers and Croft says her interest in art and photography was sparked by the "bed-sheet-pinned-to-the-lounge-room-wall slide nights" her mother regularly organised.

Where Croft's childhood was relatively stable, her father's was the opposite.



Joe was removed from his mother aged around four years and grew up in government institutions including Kahlin Compound in Darwin and The Bungalow Half-caste Children's Home in Alice Springs.

One of the first Aboriginal people to attend university, Joe was a surveyor and then public servant with the Department of Aboriginal Affairs and the Aboriginal Development Commission in Canberra. He was a close ally of Indigenous leader Charles Perkins, a childhood friend from Bungalow.

Croft recalls crying in Darwin's National Archives of Australia when she found the original records documenting her father's removal from his community in the Police Station Timber Creek Letterbook, 1926–1928.

"It was dated July 1, 1927. My father was listed as Joe (quadroon), and his (half-caste) mother, Bessie. It was the most significant moment I've experienced in my research."

There have been other unsettling moments.

The artist recounts stumbling upon archival photos of her grandmother that were part of a medical research expedition documenting diseases in Aboriginal communities.

"This was the era when Indigenous people were dehumanised and basically framed as remnants of a dying race – my grandmother was photographed because she had a condition called 'boomerang legs', which is like rickets," she says.

Croft will respond to these medical images using 19th century wet-plate/collodian processing for aspects of *Solid/Shifting Ground*.

"Indigenous history through an Indigenous research paradigm is often denied or denigrated so it's very important to allow different ways of telling stories, in this case visually," she says.

Telling her family's story also creates a lasting record for her nieces and nephew so "they know they are following in the footsteps of those who fought for equal rights for all of us".

"I've discovered things during my research that have taken me on different tracks – that's why the work is called what it is. At times I've felt like I'm in an earthquake and the ground, and what I thought I knew about my family, is literally shifting and changing underneath me."

For Croft the final works, which will be staged in an exhibition in partnership with Karungkarni Art and Culture Aboriginal Corporation at the UNSW Galleries in 2017, are political as well as personal.

"This is part of a bigger, ongoing story, not just my family's, but the history of this country and the ongoing impact of colonisation.

"Ultimately, I want to dispel the fear of difference that's still so inherent in our society, as this is a shared history that affects all of us." ▣

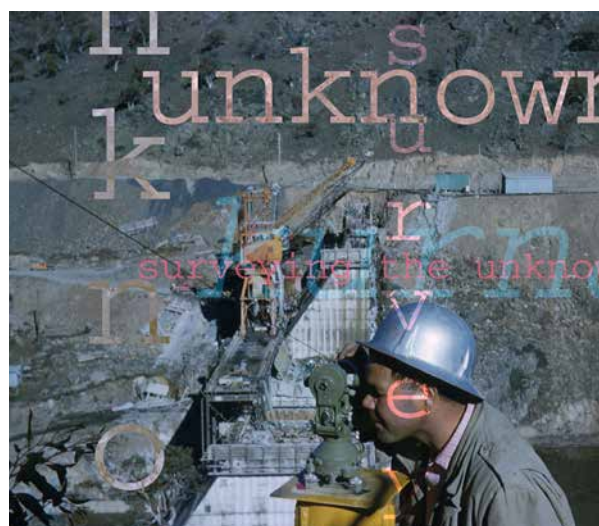


LEFT *Analysis of personal image* (2005) – The original photo was taken by a street photographer in Perth in 1967. Dad and I were on our way to the hospital to meet my new brother. I added the text from a questionnaire that came out the same year surveying public attitudes to Aboriginal people in Perth. It posed: Are Aboriginals 'lazy', 'drunken', 'dirty and slovenly'? Do they 'make good parents'? On occasion my father had been stopped in the street and asked for ID to prove I was his child because I was paler skinned than him.

PHOTO *Brenda L Croft*

BELOW *In my mother's garden* (1998) – This is me with Mum and Dad in our Perth front yard in 1965. We were off to church on Christmas Day. Mum had made our dresses and hats – by the look on my face I didn't want to be wearing mine.

PHOTO *Brenda L Croft*



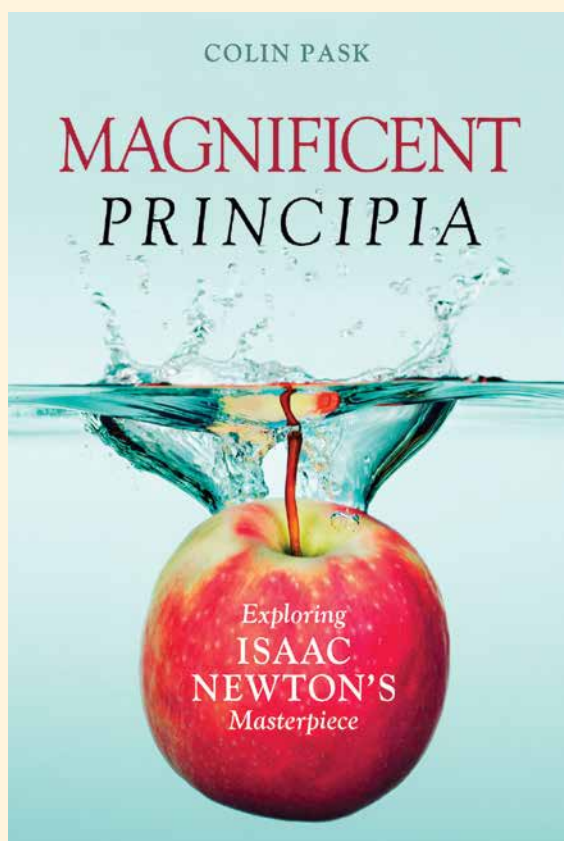
LEFT *Surveying the unknown/Kumai* (1999) – Dad was a surveyor working on the Snowy Mountains Hydro-electric Scheme. It was in the late 1950s and Australia was welcoming migrants, not like the anti-refugee backlash we have now. Even though Dad was possibly the only Indigenous man working there, he said there was never any prejudice on the job. The work's also a comment on how the Snowy Scheme altered the traditional landscape of the original First Nations and overlooked their presence in the region.

PHOTO *Brenda L Croft*

< Brenda L Croft on the Wave Hill Walk-Off Route with (L-R) Michael Paddy, John Leeman and Justin Paddy. Michael and his family were part of the original walk-off. PHOTO *Maurie Japarta Ryan*



Download the *Uniken* app to watch the slideshow



Magnificent Principia: Exploring Isaac Newton's Masterpiece

Colin Pask, UNSW Canberra

"All that has happened since 1687 is a gloss on the *Principia*," Nobel laureate and physicist Steven Weinberg once wrote. Despite its dazzling reputation, Isaac Newton's *Philosophiæ Naturalis Principia Mathematica*, or simply the *Principia*, remains a mystery for many people. Even among the most intellectually curious of readers, including professional scientists and mathematicians, few have actually looked at the *Principia* or appreciated its contents. Pask, author of *Math for the Frightened: Facing Scary Symbols and Everything Else That Freaks You Out About Mathematics*, seeks to remedy this by guiding the reader through Newton's masterpiece, a volume regarded by many as the greatest scientific contribution of all time.

Pask walks the reader through Newton's seminal exposition of science.

Drawing from the final edition of the *Principia*, Pask walks the reader through Newton's seminal exposition of science: establishing the framework of classical mechanics and explaining terrestrial phenomena like the tides and projectile motion as well as the dynamics of the solar system and the paths of comets. It includes scene-setting biographical chapters about Newton and the scientific developments of his time, as well as analysis of the *Principia's* reception and influence to the present day.

Prometheus Books

Basser, Philip Baxter and Goldstein: The Kensington Colleges

Claire Scobie



Universities are mostly large and complex places and new students can feel easily overwhelmed, isolated, even lost – particularly those

from the bush and abroad. College is an essential bridge for many between lectures and exams and the lighter side of study. In this book Claire Scobie explores the history of The Kensington Colleges, a cornerstone of student life at the University of New South Wales. Established more than 65 years ago through generous bequests, Basser, Philip Baxter and Goldstein colleges have touched the lives of more than 10,000 students. Many early residents came to the colleges through the Colombo Plan and have since taken on leadership roles throughout Asia, seeding a vibrant diaspora of UNSW alumni with fond memories of Australia and their time on campus. Scobie recounts the stories behind each college's culture, support network, social life and many achievements, and discovers why past and present residents are so loyal to their college.

UNSW Press

A Revolutionary History of Interwar India



Associate Professor Kama Maclean, UNSW Arts & Social Sciences

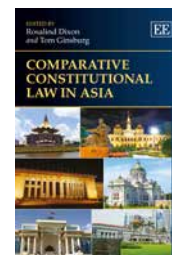
A Revolutionary History delivers a fresh perspective on the ambitions, ideologies and

practices of the anti-imperial Hindustan Socialist Republican Army (HSRA), formed by Chandrashekhar Azad and Bhagat Singh in 1928. Maclean offers a new interpretation of the activities and political impact of these north Indian anti-imperial revolutionaries, long overshadowed by Gandhi, who advocated the use of political violence against the British in the interwar years. Drawing on visual culture studies, the book also considers recently declassified government files, memoirs and interviews to explore HSRA's place in Indian history.

Oxford University Press

Comparative Constitutional Law in Asia

Co-authored and edited by Rosalind Dixon, UNSW Law



Comparative constitutional law is a field of increasing importance around the world, but much of the literature is focused on Europe, North America and

other English-speaking jurisdictions. The importance of Asia for the broader field is demonstrated here in original contributions that look thematically at issues such as freedom of religion, constitutional courts, property rights and emergency regimes, with special attention on how they have been treated in East Asian jurisdictions. Dixon's volume finds a region grappling with complex constitutional issues and global developments, while pursuing distinctive local solutions that deserve close attention.

Edward Elgar

(Sub)Urban Sexscapes: Geographies and Regulation of the Sex Industry



Co-edited by Christine Steinmetz, UNSW Built Environment

Commercial sex premises and products are now part of mainstream city life – from

urban streets to suburbia the aesthetics of sex permeate billboards, newspapers, magazines, television, music videos and online. *(Sub)Urban Sexscapes* examines the spatial and regulatory contours of the sex industry from a range of different perspectives including urban planning, geography, sociology and cultural and media studies, in countries including Australia, the UK, the US and North Africa. It argues that the role of sex in the character of a city cannot be ignored and advocates for evidence-based policy over moral panic.

Routledge



The international law expert tells **Leilah Schubert** about her solitary, often nail-biting treks and why we shouldn't mess with Mother Nature.

I'm a public international lawyer but my research focus is international environmental law and the law of the sea. In particular international fisheries and the protection of the marine environment in the context of climate change.

One of the effects of climate change is that it's opening up the Arctic Ocean, the central portion of which is high seas – an area beyond national jurisdiction, which is essentially unregulated so anybody can go there and basically do anything they want.

My research brought attention to this lacuna, or gap, in international law and the need for international lawyers and policy makers to address it before the fishing and shipping companies get there.

I'm originally from Canada where I practised as a lawyer before pursuing my interest in international law. I was working as a Research Fellow at the Lauterpacht Research Centre for International Law in Cambridge, when two well-known Australian lawyers convinced me to come and work in Australia.

I've climbed, skied, hiked, paddled and dogsledded in some of the wildest, most remote places on Earth, including from the Arctic to the Antarctic and Greenland to Georgia to South Georgia. I love experiencing the richness, the wonder and the power of nature and focusing on the bare essentials of life instead of its distractions.

In 2006 I became the first Australian woman to attempt to ski from the North Pole to Canada. The expedition was meant to take up to 50 days, but after 11 days the ice was so thin we were advised to head to Ward Hunt Island where the Russians were called in to take us off the ice.

It was minus 20, white out, and the wind was howling when the biggest and strongest person in the group went through the ice into the water. We were lucky to get him out. It was a life-threatening situation.

I do a lot of my trips solo. I like the solitude, the challenge and the fact that Mother Nature is in control. You learn to push your limits, but you also learn to respect nature's limits ... if you're not careful and respectful you'll pay the ultimate price.

It was an extraordinary experience being awarded an honorary doctorate from Lund University in Sweden this year in recognition of my contributions to Public International Law and to the Lund Law Faculty. The ceremony, all in Latin, included a canon salute and a gold ring, which signifies you are 'married' to your discipline. My position as Conjoint Professor there has allowed me to develop new research areas and to participate in European and Nordic research networks and projects.

The Earth will survive without us, but we cannot survive without the Earth. I hope I can keep contributing to the development of law and policy for the protection of the oceans and the rest of the Earth's environment. □

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FOREWORD BY ADAM SPENCER

EDITED BY BIANCA NOGRADY

Celebrating the finest Australian science writing of the year

The Bragg UNSW Press Prize for Science Writing is an annual prize, celebrating the best short non-fiction piece on science written for a general audience. The shortlisted entries for the 2015 prize are included in the anthology.

This year, science enthusiasts in high school have been invited to enter the newly created student category. A joint initiative of UNSW Press, UNSW Science and Refraction Media, with support from the Copyright Agency Cultural Fund, the Student Prize is designed to encourage and celebrate the next generation of science writers, researchers and leaders.

The winners of both prizes will be announced on 27 October at an event hosted by UNSW Press and the Faculty of Science, UNSW.

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