



Handle with care

Can a change of climate save
the mountain pygmy-possum?

Smooth operator

Doors open on new light rail
serving campus commuters

Meet the Dean

Vlado Perkovic's unexpected
path to Medicine

The future is micro

Why 2020 is the year we
define the war on waste

From the Vice-Chancellor

Welcome to the second edition of *UNSW Magazine* for 2019.



The much-anticipated light rail service heralds a new era of connectivity between UNSW and the heart of Sydney. The now familiar red carriages running past Gate 9 are a far cry from the old trams that served the eastern suburbs when UNSW was in its infancy. An advantage of the light rail is the decreased dependence on cars and buses which will equate to an estimated 663,000-tonne reduction in emissions over 30 years. You'll find more interesting facts and practical information on our newest mode of public transport in the magazine.

There's also an article on Professor Veena Sahajwalla and her UNSW Centre for Sustainable Materials Research and Technology. Many countries, including Australia, face bans on shipping waste material offshore. Veena has grasped the opportunity to ramp up the commercialisation of Microfactorie technology to turn waste into valuable materials, while creating jobs and enhancing social and economic outcomes – often in rural and regional communities that need it most.

In this edition we also learn more about our new Dean of UNSW Medicine, Professor Vlado Perkovic. Vlado's story is fascinating, having left Croatia with his family in the late 1960s as a refugee and working his way up through a career in medicine to become one of Australia's top kidney disease researchers. And now, luckily for us, leading UNSW Medicine through an exciting new chapter.

UNSW Magazine gives us a snapshot of the talented people and diverse work that make our University the educational, research and social success that it is. I hope reading it brings you the same sense of pride in our achievements as it does me.

Professor Ian Jacobs



The way we get to and from Kensington campus is about to undergo its biggest change in decades. The arrival of trams on Anzac Parade and High Street brings a new era in public transport, where the traditions of the past inform a smooth gliding future. Now all you have to do is pick your stops ...

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**UNSW
SYDNEY**

**GROUP
OF EIGHT
AUSTRALIA**

Cover image: The mountain pygmy-possum, a little battler facing a brighter future. Photo: Lachlan Gilbert

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Designer: Bill Farr/MediaXpress

Contributors: Emi Berry, Lucy Carroll, Isabelle Dubach, Richard Freeman, Jane Garcia, Lachlan Gilbert, James Gorman, Lee Henderson, Belinda Henwood, Anna Kucera, Megan Maurice, Larissa Mavros, Val McFarlane, Rebecca Riley, Ivy Shih, Bridget Spinks, Stuart Snell, Christian Tietz



"Language and communication are the absolute basis of democracy": Magda Szubanski.



"Another way of doing things": Adriana Vergés is connecting with people to talk about real solutions for problems.

Szubanski's high honour 'up there' with a Logie

Award-winning actor, author and human rights campaigner Magda Szubanski has been awarded UNSW Sydney's highest honour – an honorary doctorate in recognition of outstanding achievements in the performing arts, and eminent service to society by advancing important causes.

Ms Szubanski said the Doctor of Letters, honoris causa, was "up there" with her acting accolades, including AACTAs, Logies and literary awards. She said it would mean an exciting ongoing association with the University.

"I am enormously honoured to receive this doctorate," said Ms Szubanski, who serves as an advisory committee member for the Australian Human Rights Institute at UNSW. "I am really looking forward to working with this eclectic group of people, this interdisciplinary approach."

UNSW President and Vice-Chancellor Professor Ian Jacobs said: "Magda is an exceptional Australian who has led as a TV and film actress, author, comedian and human rights campaigner. Her dedication to humility and courage are an inspiration."

Ms Szubanski said two actions rooted in the disciplines during her youth – working at a women's refuge and completing an arts degree – had been the perfect grounding for a career in comedy as well as the more serious writing and advocacy she had done recently.

A marine ecologist using rigorous science and innovative public engagement techniques has won UNSW Sydney's inaugural Emerging Thought Leader prize.

Associate Professor Adriana Vergés was selected by a prestigious panel of judges for her ability to merge science, the arts and powerful storytelling to inspire the community to respond to environmental crises, and to share this success story globally.

Her ability to turn ideas into action has been proven by the success of Operation Crayweed, a project to restore lost seaweeds to Sydney's coastal waters. She engaged artists, producers and academics to create an awareness campaign and take the science to the public.

"For me, thought leadership is increasingly about stepping outside of your comfort zone and actually trying to look at the world through the universal perspectives of other people. Academics like me would previously have spent most of our lives just documenting how much seaweed and seagrass we are losing," said Associate Professor Vergés, who won \$8000.

"Nowadays, I think the best universities in the world are really encouraging another way of doing things that involves stepping out of that ivory tower and actually connecting with people about problems that concern them – and also actually doing something about it."

PARTNERSHIP ANOTHER KEY STEP IN INDIA GROWTH STRATEGY

- UNSW Sydney has underpinned its partnership with India's leading Manipal Academy of Higher Education (MAHE) with the signing of an agreement that will boost academic and educational exchange and research collaborations between the two universities. The two institutions have jointly committed \$5 million in seed funding up to 2025 to deliver tangible outcomes and ensure the partnership's success. Announcing the agreement, Pro-Vice Chancellor International at UNSW, Mr Laurie Pearcey, and Dr H Vinod Bhat, Vice-Chancellor of MAHE, said it would enhance Australia-India relations. Under the University's India Growth Strategy, UNSW has made a series of targeted and strategic investments in developing transformative partnerships in India, designed to take advantage of the forecast rise of India as Asia's next superpower and the accompanying growth of the middle class.

FORMIDABLE ADVOCATE: GONSKI RE-APPOINTED AS CHANCELLOR

- The UNSW Council, by unanimous decision, has reappointed David Gonski as Chancellor of UNSW Sydney for another four-year term. Mr Gonski has been a formidable advocate for education, the University and its mission since his appointment in 2005. He is one of Australia's most prominent business leaders and philanthropists, with board-level roles for Australia and New Zealand Banking Group, the Art Gallery of NSW Trust, Sydney Airport Corporation and the Lowy Institute for International Policy. Mr Gonski is also a Patron of the Australian Indigenous Education Foundation and Raise Foundation, and a Founding Panel Member of Adara Partners. He chaired the Australian Government's Review of Funding for Schooling producing the important and influential 'Gonski Report'.



In service of UNSW for more than half a century: Roger Covell.

Vale Roger Covell, music visionary, patron and critic

The University community has paid tribute to highly respected Emeritus Professor Roger Covell AM after his death this year at the age of 88.

An Emeritus Professor in the Faculty of Arts and Social Sciences, he was also a leading musicologist, author, performer, patron, visionary, and critic. His contribution to Australian music was immeasurable, including his professorship at UNSW, co-founding the Australia Ensemble, and decades as a music critic of *The Sydney Morning Herald*.

Professor Covell established UNSW Opera in 1968, commissioned dozens of Australian works for opera and chamber ensemble performance, and championed works unknown to Sydney audiences.

He joined UNSW as a senior lecturer in 1966 to establish classical music programs on the University's Kensington campus. He became Associate Professor in 1973, growing the School of Music and Music Education.

He retired from teaching in 1996, and from the role of Artistic Chair of the Australia Ensemble in 2013. He was an energetic educator, and his 1967 scholarly book *Australia's Music: Themes of a New Society* remained a principal resource for generations of musicologists and composers.

He was appointed as a Member of the Order of Australia in 1986 in recognition of service to music, awarded the Pascall Prize for Critical Writing in 1993, the Long-Term Contribution to the Advancement of Australian Music Award at the 2006 Classical Music Awards, and the Sir Bernard Heinze Memorial Award in 2013.



Better ways to communicate science: Darren Saunders and Jodi Rawley.

Eureka prize winners take science to the people

Associate Professor Darren Saunders has won a prestigious 2019 Australian Museum Eureka Prize for his outstanding contribution to public science communication.

Associate Professor Saunders was among five UNSW Sydney and UNSW-affiliated medical and science researchers recognised at Australia's most high-profile science awards for achievements in areas of research and innovation, leadership, science engagement and school science.

Associate Professor Saunders, who won the 2019 Celestino Eureka Prize for Promoting Understanding of Science, was recognised for going beyond the usual channels of science communication to make evidence-based science accessible to the general public.

He engages with public debate through mainstream, online and social media, moving outside his speciality of cancer biology to tackle some of the most complex science issues including climate change and vaccination.

The Australian Museum's Frog ID Team, led by UNSW's Dr Jodi Rowley, won the Eureka Prize for Citizen Science.

As the Curator of Amphibian and Reptile Conservation Biology, a joint appointment between the Australian Museum and the UNSW Centre for Ecosystems Science, Dr Rowley co-developed Frog ID, a citizen science project aimed at understanding and conserving frogs, one of the most threatened groups of animals on the planet.

Frog ID uses a free smartphone app for participants to record and submit information on calling frogs.

UNSW ROCKETS UP WORLD RANKINGS

- UNSW has jumped 25 spots to 71st in the 2020 Times Higher Education (THE) World University Rankings. UNSW was one of six Australian universities to make the top 100. The rise means UNSW will finish the year ranked 69th based on the average across the three main global league tables UNSW benchmarks itself on – the THE, the Academic Ranking of World Universities (ARWU, 94th) and the QS World University Rankings (43rd). This aggregate will see UNSW break into the world's top 70 universities for the first time. UNSW President and Vice-Chancellor Professor Ian Jacobs said research and teaching excellence was a key factor in UNSW's improved performance, adding: "In our 70th year, our students, staff, alumni and supporters can take pride in the progress and trajectory of our University."

NEW DIRECTOR AT WORLD-FIRST DISABILITY INITIATIVE



- Bioethicist and disability advocate Professor Jackie Leach Scully (pictured) has arrived as director of the Disability Innovation Institute at UNSW (DIIU), a world-first initiative partnering interdisciplinary researchers with people with disability. Professor Scully was most recently the Executive Director of the Policy, Ethics and Life Sciences (PEALS) Research Centre at Newcastle University in the UK, which focuses on the social and ethical debates in contemporary life sciences. Established in 2017, the DIIU connects UNSW scholars, community, industry, services, government and practitioners to promote equality for people with disability by creating and sharing knowledge that is interdisciplinary, innovative and inclusive. Linking over 100 leading researchers currently engaged in disability-related scholarship across UNSW, the Institute will be central to the University's profile as a global leader in disability research.



Justine Nolan's win was the third in three years in the category for UNSW Law.

Nolan triumphs at the nexus of business and humanity

Associate Professor Justine Nolan has been named Academic of the Year at the annual Lawyers Weekly Australian Law Awards. The Academic of the Year Award "recognises the academic who is most effectively shaping legal undergraduate and JD students, instilling a passion for the law, professional excellence and expertise".

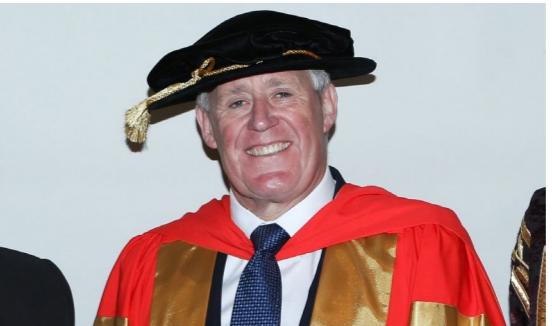
Associate Professor Nolan studies the intersection of business and human rights, particularly corporate responsibility for human rights and modern slavery. Her book *Addressing Modern Slavery*, co-authored with Martijn Boersma from UTS, examines how consumers, business and government are part of both the problem and the solution in curbing modern slavery in global supply chains (see page 22).

The 2018 recipient of the UNSW Vice-Chancellor's Award for Teaching Excellence, Associate Professor Nolan has pioneered new technologies in the classroom and introduced one of the faculty's most popular courses, a human rights elective taught in New York.

She has worked in public interest and private legal practices and in various expert advisory roles.

Tomoyuki Hachigo, who graduated from UNSW with a Bachelor of Arts/Law in 2013, is co-founder of the legal startup Sprintlaw, which won the Innovator of the Year Award. The firm aims to provide faster, simpler and more affordable legal services for small business owners and entrepreneurs.

UNSW Law is a partner for the Awards, which celebrate the year's best law-related work.



More than 200 research papers leading to more than 10,000 citations of his work: John Myburgh.

Intensive care specialist receives top honour

UNSW has awarded a Doctor of Science to John Myburgh AO, Professor of Intensive Care Medicine and Director of the Division of Critical Care at The George Institute, for his outstanding contribution to the field of critical care and trauma.

Professor Myburgh has published more than 200 research papers and has contributed to changing intensive care policy and practices all over the world.

He is a senior intensive care physician at the St George Hospital, Sydney, an honorary Professor at the Monash University School of Public Health and Preventive Medicine, and a Foundation Member and Past-Chairman of the Australian and New Zealand Intensive Care Society Clinical Trials Group.

He was instrumental in establishing the Australian and New Zealand Intensive Care Research Centre at the Monash University School of Public Health and Preventive Medicine, as well as the College of Intensive Care Medicine. He has received more than \$77 million in research funding and made a substantial contribution to education in intensive care medicine. He is a current Council Member and Secretary-General for the World Federation of Societies of Intensive and Critical Care Medicine and Fellow of the Australian Academy of Health and Medical Science.

In 2014 he was made an Officer of the Order of Australia (AO) for distinguished service to medicine as an intensive care medical practitioner, educator and researcher, and as an international innovator in patient management.

CLIMATE SCIENTIST AWARDED TOP RESEARCH MEDAL



• Professor Andy Pitman is the recipient of the Royal Society of Victoria's prestigious Medal for Excellence in Scientific Research. Now in its 60th year, the Medal recognises the top research achievements and leadership strengths of Australian scientists. As Director of the ARC Centre of Excellence for Climate Extremes, based out of UNSW, Professor Pitman works to understand the behaviour of climate extremes, such as heatwaves, cold snaps, extreme rainfall, cyclones and drought, and how these directly affect Australian natural and economic systems. Members of the assessment panel for the award praised Professor Pitman as "an outstanding scientist, and a significant science leader" with a strong record of spreading knowledge beyond the scientific community. He has been the Director of the ARC Centre of Excellence for Climate Extremes since it was established in 2017 and is also a Professor of Climate Science at UNSW.

PIONEERING PARTNERSHIP WELCOMES NEW CEO



- Matt Gijselman has been appointed CEO of the NUW Alliance, a first-of-its-kind partnership between the University of Newcastle, UNSW Sydney and the University of Wollongong. The Alliance was launched in 2017 and is dedicated to delivering solutions to the biggest challenges facing NSW and generating opportunities for its citizens. Mr Gijselman, who takes over from previous CEO Bran Black, is an experienced external relations executive. He has served as a government adviser and in senior roles with the NRMA, Equifax and the Australian Retail Credit Association.



Scientia Professor Andrew Dzurak is working on "one of the great challenges of the century".

Leading the charge on ageing, energy and computing

UNSW academics have been awarded three of the 17 prestigious 2019 Australian Laureate Fellowships from the Australian Research Council.

Scientia Professor Kaarin Anstey, Director of the UNSW Ageing Futures Institute and Professor of Psychology at UNSW Science, will receive \$3.2m to advance our understanding of cognitive ageing. She will evaluate the impact of technology, lifestyle and experience on cognitive resilience and function.

Scientia Professor Andrew Dzurak, from UNSW Engineering, was awarded \$2.9m to develop a new quantum computer processor based on a new "silicon CMOS qubit" technology. This will resolve issues to commercially market the technology, previously developed by Professor Dzurak and his team.

Professor Liming Dai, from UNSW Engineering, will use \$3.5m to develop new approaches to carbon-based catalysis without using metals, which are expensive and scarce. Such advances in processing will create new applications for clean, renewable energy and environmental technologies.

Deputy Vice-Chancellor, Research, Professor Nicholas Fisk congratulated UNSW's new Fellows.

"Australian Laureate Fellowships are highly coveted in the research sector and are justifiably regarded as the pinnacle of achievement," Professor Fisk said.

The 17 Fellows will share \$53.8 million for research over five years.



Exploration of the endless potential of nanoparticles: Martina Stenzel.

First women honoured with chemistry prize

Scientia Professor Martina Stenzel is the first woman to receive the Royal Society of NSW's Liversidge Medal. The prize, which has been running since 1931, recognises Australian scientists who have made an outstanding contribution to chemistry research.

Professor Stenzel, from the School of Chemistry, is a global pioneer in the application of novel polymer architectures. She is creating 'smart' nanoparticles for drug delivery that are revolutionising the way disease is targeted and treated.

Her work focuses on the fundamental processes that underpin nanoparticle design to make them suitable for the delivery of proteins, DNA or metal-based drugs to treat cancer – specifically ovarian and pancreatic cancer.

"It is truly wonderful to be recognised by this enduring and respected scientific academy," Professor Stenzel said. "I hope it will encourage more women to enter the fields of chemistry and physics, two natural sciences where female scientists have traditionally been very few and far between."

As Co-Director at UNSW's Centre for Advanced Macromolecular Design, Professor Stenzel leads a team of 20 researchers working to combine synthetic polymers with nature's building blocks such as carbohydrates, peptides and proteins to facilitate new treatments for challenging cancers and other disease.

UNSW Scientia Professor Justin Gooding was the last recipient of the Liversidge award, presented every two years, in 2016.

Professor Stenzel will give the Liversidge Lecture in February.

UNSW A GREAT PLACE TO WORK, SAYS SURVEY

- UNSW Sydney has been rated one of the top 20 most attractive places to work in Australia, based on global recruitment agency Randstad's 2019 Employer Brand Research Report. Randstad placed UNSW in 15th position overall, with Qantas soaring above the competition to be named Australia's most desirable place to work. The rankings are based on the perceptions of more than 10,000 members of the public, designed to uncover how employers are perceived in the eyes of jobseekers and potential employees. David Ward, Vice-President of Human Resources at UNSW Sydney, said: "This achievement reflects the University's talented community of academics, professionals and researchers who we are fortunate to work with. They are the ones who make up the diverse, welcoming and open culture that is ultimately what makes UNSW such a great place to work."

APPRENTICE OF THE YEAR AWARD FOR STUDENT



- UNSW student Ganur Maynard has been named NAIDOC 2019 Apprentice of the Year following a series of apprenticeships at prestigious law firms. The Gamarlari man is in his final year of a Bachelor of Law/Arts degree and has become a role model for many Aboriginal and Torres Strait Islander students. He is a student representative on the UNSW Law Reconciliation committee and helps organise work experience for other students through the CareerTrackers Indigenous Internship program. He will join Herbert Smith Freehills in 2020 and wants to use his law career to protect native title and work in property and litigation. He hopes to also spend time working for an Aboriginal-run organisation. "I want to learn more about how to solve the problems our peoples are facing today," he says.

"It's always a great honour to be recognised by your community, but I hope that more than anything else, others see that anyone can do what I have done and that this inspires our community to academic and professional success."



Premier Gladys Berejiklian presents Scientia Professor Rose Amal with 2019 Scientist of the Year Award.

Premier names Amal as NSW Scientist of the Year

UNSW researchers won half of the awards announced at the annual NSW Premier's Prizes for Science & Engineering, including the top prize of NSW Scientist of the Year for Scientia Professor Rose Amal.

Professor Amal was honoured for her world-leading research in fine particle technology, photocatalysis and functional nanomaterials, which have implications for solar and chemical energy conversion applications such as treating water and generating renewable hydrogen.

Other UNSW winners were:

Professor David Keith, from UNSW Science, won the award for Excellence in Biological Sciences. His research is producing the first global overview of risks to the world's ecosystems, dependent plants and animals, and the services they provide to sustain societies and economies.

Professor Susan Clark, Garvan Institute of Medical Research and St Vincent's Clinical School at UNSW Medicine, won the award for Excellence in Medical Biological Sciences. Professor Clark has helped revolutionise the understanding of how epigenetics influences early development and diseases such as cancer.

Dr Angelica Merlot, UNSW Scientia Fellow at the Children's Cancer Institute and UNSW Medicine, won the NSW Early Career Researcher of the Year (Biological Sciences) for developing safer and more effective drugs and strategies to combat cancers.

Dr Neeraj Sharma, UNSW Science, won the Early Career Researcher of the Year (Physical Sciences). Dr Sharma is a global leader in the use of neutron and X-ray scattering methods to study materials for next-generation batteries.



Energy efficiency upgrades will save enough electricity to power 400 homes by 2022: Ian Jacobs.

Environmental plan aims for zero emissions

The University will switch to 100% renewable electricity and its buildings will be greenhouse gas emissions-free by 2020 as part of a new three-year plan to build on its commitment to environmental sustainability.

Launching the University's Environmental Sustainability Plan 2019-21, UNSW President and Vice-Chancellor Professor Ian Jacobs noted the University had the scale of a small city.

"Our planet is currently facing a series of complex environmental challenges, from pollution of land and oceans to biodiversity loss and climate change. UNSW is a major investor, consumer and landholder and our Sydney campuses form part of the daily lives of some 62,000 students and more than 6700 staff. It is right that we grow and invest like any sustainable city would, with a responsible and clear plan."

Under the new plan, UNSW will increase its on-site solar energy generation through the University's world-first solar energy agreement, design new buildings to operate emissions-free and introduce centralised waste collection in offices to save an estimated 1 million plastic liners annually.

UNSW Head of Environmental Sustainability William Syddall said the University would achieve net zero emissions in the future.

"Once UNSW has eliminated greenhouse gas emissions from building energy use by 2020, our focus will turn to indirect sources of emissions such as travel, embodied emissions and purchased goods and services," Mr Syddall said.

MUSICIAN AND COMPOSER JOINS HALL OF FAME



- UNSW School of the Arts & Media lecturer Dr Sandy Evans has received a highly regarded award named after the late Australian jazz pioneer Graeme Bell AO. The saxophonist and composer said she was "honoured and humbled" to be inducted into the Bell Awards Hall of Fame. The Hall of Fame award recognises outstanding artistic achievement and contribution to Australian jazz by a living artist. Dr Evans has played with and written for some of the most important groups in Australian jazz since the early 1980s. She has toured extensively in Australia, Europe, Canada and Asia, and been featured on over 40 albums. She leads the Sandy Evans Trio and Sextet, and co-leads Clarion Fracture Zone and GEST8. She began teaching at UNSW in 2013 and has won many awards and honours.

FELLOWSHIP HONOURS REAL-WORLD WORK



- Professor Emma Johnston is among 25 leading Australian scientists and engineers announced as the 2019 Australian Academy of Technology and Engineering (ATSE) Fellows. This year, Professor Johnston is one of a record 12 women elected to ATSE – the highest proportion since the organisation started more than 40 years ago. The new Fellows have been recognised for their application of science, technology and engineering to solve real-world problems. "It is an incredible honour to be elected as a Fellow and a privilege to join this community of scientists and engineers tackling global challenges," Professor Johnston said. "The complex problems ATSE addresses, including the challenges of gender equality, automation, social cohesion and the human impact on our environment are crucial issues facing our scientists, and real opportunities for Australia to provide leadership."



BACK ON TRACKS

Photo: Richard Freeman

The arrival of light rail provides an efficient and environmental option for people bound for Kensington campus, writes Megan Maurice.

When crowds of people chased the last tram to La Perouse down the road in 1961, waving goodbye to a Sydney institution, nobody imagined that in a distant future they would again see trams carrying crowds of people through the eastern suburbs.

Things are a little different now – the faded green and yellow carriages have been replaced by sleek red machines, conductors no longer perch at the back door and the routes have changed somewhat. But the romance and excitement around light rail has remained and with the first branch of the new CBD and South East Light Rail opening in December, all eyes are on Randwick.

Like its predecessor, the new light rail begins its journey from Circular Quay, linking with the ferry services to deliver commuters to the eastern suburbs. The 12km route makes its way through the city, stopping at Bridge Street, Wynyard, QVB, Town Hall, Chinatown and Haymarket before reaching Central station, where many UNSW staff and students will board.

The new light rail platforms are located on Chalmers Street, just outside the entrance to the train station, and is known as Central Chalmers Street to ensure there is no confusion with

the stop on the Inner West line, which departs just outside the intercity platforms. It consists of a side platform closest to the train station and an island platform, each 90 metres in length.

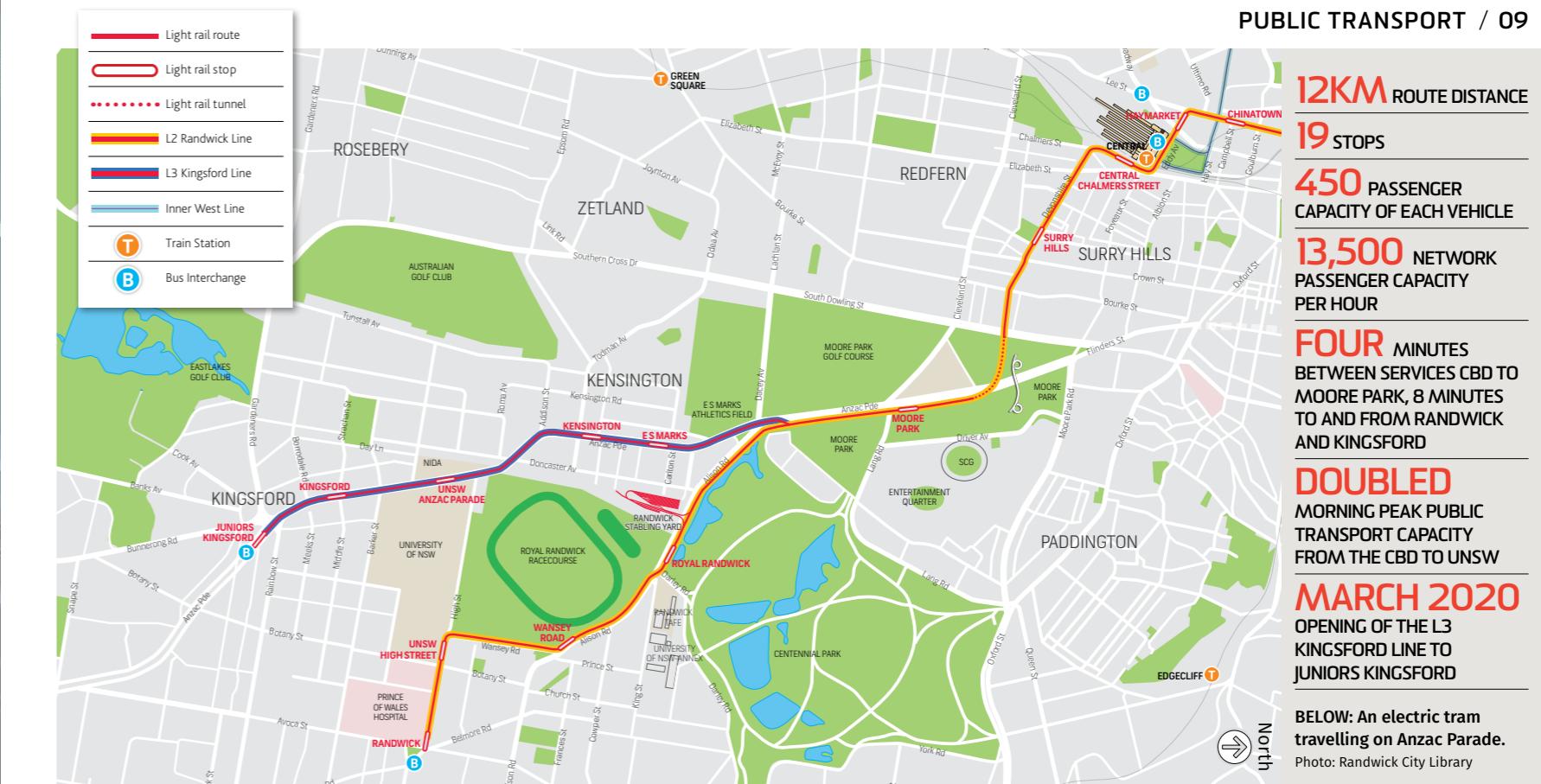
From there the tracks head down Devonshire Street and through Surry Hills to Anzac Parade before splitting at Alison Road. The Randwick branch heads down Alison Road, past Randwick Racecourse and UNSW's High Street entrance, near Gate 9, before continuing on to Randwick. The Kingsford branch – which is due to open in 2020 – takes in ES Marks Athletics Field, the Anzac Parade entrance to UNSW and finishes up at The Juniors Kingsford.

Each tram is 67 metres long and capable of carrying up to 450 passengers, which is roughly equivalent to nine standard buses, making them among the longest passenger trams in the world. The light rail is a frequency-based service, rather than running to a timetable, and trams are to depart every four minutes between the CBD and Moore Park and every eight minutes to Randwick and Kingsford from 7am to 7pm, light rail's 'peak period'.

The environmental benefits are significant, with a 663,000-tonne reduction in greenhouse gas emissions over 30 years through the reduced dependence on cars and buses. Light rail also uses 10 times less energy than a car per passenger per kilometre.

The South East bus network changes to accompany the introduction of light rail. The light rail has been designed to complement bus services, not replace them, and some express, all-stops and cross-city services continue to operate.

Testing and driver training have been taking place over the past months, with the red trams quickly becoming a familiar part of



the landscape around campus. Transport for NSW has awareness campaigns in place to educate drivers, cyclists and pedestrians on safety around light rail.

Pedestrians have been urged to be vigilant and to keep their eyes up while walking around light rail tracks. An NRMA report from July this year noted that more than one-third of pedestrians crossed busy roads while looking down at their phones or wearing headphones. With the increasing frequency of trams around the UNSW campus coming into summer, new safety campaigns aim to ensure everyone is vigilant while walking, riding or driving near tracks.



Once beloved, then left in the slow lane

Trams were an everyday part of getting around Sydney until the motor car got right of way, writes Megan Maurice.

Since the Sydney trams stopped their operations almost 60 years ago, a lot has changed at UNSW. When the last tram pulled into the sheds, the university was a fledgling institution with a small contingent of students. Today there are almost 60,000 students and more than 6000 staff. The addition of light rail as a transport option is a significant step in the connection of the campus to the wider Sydney community.

While they may not look much like the trams that trundled down Anzac Parade in the first half of the 20th century, the new light rail is sure to have just as big an impact on the culture and the psyche of the city.

were seen to be blocking progress – and traffic – of the new kid on the block in transport, the motor car.

With car ownership skyrocketing, motorist groups lobbied the government, who soon began the move to close down the trams – a process that was finalised on 25 February 1961 when the gates of the Randwick Workshops closed for the final time.

The move from public to private transport was part of the zeitgeist of the post-war era. As the environmental impacts of these decisions are now being better understood and more acutely felt, a return to light rail in the CBD and eastern suburbs is less a nostalgic nod to the past than a vital look to the future.

The new Dean of Medicine's road to UNSW almost took a very different turn, writes Lucy Carroll.

It was an eleventh-hour change of university preference that led Vlado Perkovic to a career in medicine. That change would eventually see him become one of Australia's top kidney disease specialists, leading some of the world's largest clinical trials in the treatment and prevention of kidney failure and its many complications.

The pivotal application switch to study medicine led to a quick succession of achievements: a bachelor's degree; specialist training and a PhD from the University of Melbourne; positions as a nephrologist and general physician at some of Australia's leading hospitals; and leader of large-scale clinical trials at major medical institutes.

Now, after more than two decades in research and leadership positions at The George Institute for Global Health, Professor Perkovic has started as Dean of Medicine.

He succeeds Professor Rodney Phillips, who moves to the new role of Pro Vice-Chancellor, Health within the Division of Enterprise, after four and a half years leading the faculty.

SHAPING THE FUTURE OF MEDICINE

"I've been taking opportunities as they appear through my career, but I never thought I'd be a doctor; never thought I'd specialise. I never thought I'd do research. I certainly never thought I'd be in the position of Dean," says Professor Perkovic.

UNSW Medicine is ready to shape not only the future of medicine in Australia but also the healthcare system and professionals that provide it, he says.

The faculty seeks to answer some big questions, including what doctors will be doing 10, 20, 30 years from now, what sort of skills will they need and what expertise will they need.

Professor Perkovic says the course being delivered at UNSW is extraordinary, but there are opportunities to more keenly anticipate the changes ahead.

"This is a challenging and exciting time to take on the role of Dean," he says. "The role will offer many opportunities to make a difference to people's health and how we train the doctors of the future. Some of the massive global challenges that we're facing in health and in education – from the epidemic of obesity to the need to manage comorbidities as people live longer – create enormous possibilities to make a real impact."

Central to that objective is the development of UNSW's partner hospitals in the south-east and south-west of Sydney. Professor Perkovic says the hospitals are critical in allowing universities and researchers to connect with community. With these developments, the University will be uniquely placed with the largest co-located health, innovation and education zone in NSW.

"Medical schools have a mandate to help society move forward



"This is a challenging and exciting time":
Vlado Perkovic.
Photo: Richard Freeman

and tackle our collective challenges – to be progressive, address inherent disadvantages in the health system, harness underused technology, improve health care in remote areas and be a part of a global community that helps people wherever they live," he says.

EARLY YEARS

Professor Perkovic was born in Brinje, Croatia and his family left Europe in the late 1960s, moving to Australia before he turned one.

"My parents left Croatia as refugees and eventually ended up in the north-western suburbs of Melbourne. I lived and went to school in St Albans and Sydenham, which were very rough places in many ways back then, but extremely diverse as well. At the local schools, people born in Australia were a minority and I didn't speak English until I started kindergarten. I spent a couple of years at a local high school before my parents moved me to a regional Catholic college that was more academically focused. It really helped me understand the importance of environment to the ability to learn."

By the time he reached the HSC, Professor Perkovic had improved his marks and he started to think about what he wanted to study at university. His strongest subjects were science and maths. After graduating high school, he applied to do a combined Science/Law degree.

But at the last-minute, he changed his mind.

"I didn't know anyone who was in medicine, and the only contact I had with the medical profession was occasional trips to the local GP," he says. "I've always loved science, but I also enjoy the human

element, the personal connection. How science affects people's lives. And I realised that a career in medicine would give me a combination of the two."

THE TREATMENT OF KIDNEY DISEASE

After training as a general physician in internal medicine and specialising in nephrology at Royal Melbourne Hospital – "I loved hospital pace, but it was long hours and constant on call" – Professor Perkovic was pulled toward a career in medical research. He has since published more than 200 peer-reviewed papers, which have produced major findings identifying better ways to prevent and treat kidney disease, including multiple clinical trials and meta-analyses.

"Specialising in kidney disease gave me a chance to make a real difference to patients' lives. It is a rare area of medicine where people can be incredibly sick, with terrible quality of life, and after a kidney transplant, they just come alive. It's incredible to be part of, and something I still really enjoy."

After his PhD in 2005, he moved from Melbourne to Sydney to take a senior position at The George Institute and lead international trials that have made fundamental advances in the field and changed global treatment guidelines for kidney disease. He was appointed Executive Director of The George Institute and Professor of Medicine at the University of Sydney in 2012, Professor of Medicine at UNSW in 2017 and played a central role in developing an affordable dialysis system, which was a Eureka Prize finalist in 2017. Leading the 2019 CREDENCE trial, an international study that discovered

The road to UNSW Medicine

LEADERSHIP

The George Institute for Global Health Australia:

- Executive Director (2012-2019)
- Acting Executive Director (2011)
- Executive Director, George Clinical (2009-2014)
- Head of Clinical Research, Renal Division (2008-2010)
- Associate Principal Director (2005-2007)

ROYAL MELBOURNE HOSPITAL

- Head of Haemodialysis, North West Dialysis Service (2003-2005)

PUBLICATIONS

- 10 book chapters; 187 peer-reviewed journal articles

FELLOWSHIPS

- Fellow, Australian Academy of Health and Medical Sciences (AAHMS), 2016
- Fellow, Royal Australasian College of Physicians, 1999
- Fellow, American Society of Nephrology, 2008

a treatment that reduced kidney failure rates by a third, was one of the highlights of his career, he says.

"Clinical trials are the best way of proving what works in medicine. Being a part of a trial that is lifesaving for millions of people around the world has been a privilege. It really helped me develop a leadership role globally – suddenly we could achieve benefits that were beyond my wildest hopes."

IMPROVING HEALTH GLOBALLY

President and Vice-Chancellor of UNSW Sydney, Professor Ian Jacobs, congratulated Professor Perkovic on the new appointment and highlighted his breadth of experience in leadership roles.

"Professor Perkovic is one of the nation's top kidney disease experts and a leader in translating high impact research into outcomes for patients that have had a major effect on the lives of people around the world," Professor Jacobs said.

"Having successfully led the Sydney hub of our partner The George Institute, which is one of Australia's largest medical research institutes, Professor Perkovic will bring enormous experience to his role as faculty Dean. We have exciting and ambitious plans for the faculty during Professor Perkovic's time as Dean as we shape the faculty and University to play a prominent role in addressing global, national and local healthcare challenges."

Professor Jacobs acknowledged the quality of the work of former dean Professor Phillips in leading the faculty for almost five years.

"UNSW Medicine is one of the world's top medical faculties and our students, clinicians and researchers have prospered under Professor Phillips' leadership. I am grateful to Professor Phillips for his stellar contribution which includes bringing the George to UNSW and assisting with plans for our Randwick Health and Education Precinct. I am delighted that he will continue at UNSW in the role of PVC Health with particular responsibility for the new precinct."

THE YEAR WE CHOOSE OUR FUTURE

Microrecycling trailblazer Veena Sahajwalla says 2020 will be a defining time in our battle to reduce waste, writes Stuart Snell.

The year 2019 has been a hectic and successful one for Professor Veena Sahajwalla and her UNSW Centre for Sustainable Materials Technology and Research (SMaRT).

But that doesn't mean 2020 is going to be an easy one. In fact, the successes this year point to an even busier year to come. And the opportunity is significant not just for UNSW, but society more broadly.

Professor Sahajwalla and her SMaRT Centre team are pioneering what they call 'microrecycling science', and are aiming for real-world, commercial results. They have developed Microfactory technology which, in the simplest description, converts complex waste items into valuable products and materials for re-use (see breakout box).

This year Professor Sahajwalla and UNSW SMaRT Centre have:

- been awarded \$2 million from the NSW government to set up and run the new NSW Circular Economy Innovation Network (see box) and established new industry partnerships including with Mirvac and many councils across NSW
- been awarded their second Australian Research Council (ARC) Industrial Transformation Research Hub grant, this time \$3.3 million, with similar contributions from industry to develop microrecycling of battery and consumer wastes
- had federal Environment Minister Sussan Ley in September launch the new, commercial-scale Microfactory built at UNSW
- done dozens of media interviews, columns and engagements with over 240 media items published about UNSW SMaRT centre and NSW Circular work
- spoken at dozens of events and conferences across the world including at some of the biggest companies. Why does all of this matter?

Professor Sahajwalla's ambition is to ensure a greater level of sustainability in society and she sees 2020 as a tipping point.

"The focus on waste and recycling kicked up earlier this year after China banned countries from sending their unwanted materials there," Professor Sahajwalla says.

"Suddenly, other countries across South-East Asia started these bans too this year, because they realised the materials often just ended up rotting in piles and creating a mess."

"Policymakers here at home started to realise we were claiming a lot more recycling than was actually happening and that something urgently needed to be done."

Professor Sahajwalla says we need innovative, new ways to deal with our unwanted materials. And she is not talking about burning them for energy, because this merely destroys the materials and their value forever.

All Australian governments signed an agreement recently to ban the exportation of four key waste streams: plastics, glass, paper and rubber tyres. This has spurred all levels of government to think hard about how to shift from offshoring much of our non-perishable waste without creating more and more landfill.

Professor Sahajwalla sees greater commercialisation of existing Microfactory technology as key to helping address the waste crisis and boost manufacturing.

Current Microfactory capability can convert the materials from electronic waste into valuable filament for 3D printing and into valuable metal alloys. It can also turn

Veena Sahajwalla and federal Environment Minister Sussan Ley at the Microfactory launch.

discarded textiles, glass and plastics into engineered, hybrid ceramic materials.

"We are doubling down on developing our microrecycling science and advanced manufacturing technology and capability so more waste materials can be reformed into value-added materials and kept out of landfill," Professor Sahajwalla says.

"Microfactories can be located wherever waste is stockpiled, including in rural and regional areas. Ultimately, apart from the environmental benefits, this scientifically developed technology helps develop the emerging circular economy."

"The ultimate aim with this technology is to create jobs and enhance social and economic outcomes not just for local communities but more broadly as a nation because it contributes to new supply chains, in addition to helping to solve our immediate waste challenges."

Veena Sahajwalla and federal Environment Minister Sussan Ley at the Microfactory launch.



Based on the foundation of microrecycling science, Microfactories are created to transform waste into sustainable materials and products, including where waste is not recycled in the traditional manner.

The future of global manufacturing lies in small-scale, decentralised Microfactories that will enable communities to produce many of the products, materials and resources they need locally by using resources largely derived from waste.

This emerging industrial revolution will profoundly disrupt today's centralised, vertically integrated model of production. For example, silica from e-waste and carbon from end-of-life car tyres can make industrial grade nanoscale silicon carbide for industry use through microrecycling.

With new technology to transform waste into sustainable materials and products creating new local manufacturing capabilities,

NSW Circular

Veena Sahajwalla is directing the new NSW Circular Economy Innovation Network at the request of the state government.

Hosted by UNSW, the Network has been developing and running a series of stakeholder events and workshops to support the transition to a circular economy.

NSW Circular Economy Innovation Network

A circular economy values resources by keeping products and materials in use for as long as possible. It is 'circular' because unwanted materials and items get repurposed, reused or reformed in some way.

In a linear economy, things get made, used and disposed of.

In partnership with researchers, industry, and governments, NSW Circular aims to help create pathways to markets, and foster innovation through a more sustainable approach to design and production, use of resources and recycling of unwanted materials.



The Microfactory converts waste into engineered materials that can be used to make items such as this dining table and side table.



STUART SNELL

Between a rock and a hot place

Plans for a new home in a more friendly climate are a lifeline for the critically endangered mountain pygmy-possum, writes Lachlan Gilbert.



Photo: Lee Henderson/UNSW

A plan to save the mountain pygmy-possum by taking them from their alpine habitat to a warmer, lowland rainforest environment is inspired by fossil evidence up to 25 million years old.

In a study published in Royal Society's *Philosophical Transactions B*, researchers argue that the mountain pygmy-possum (*Burramys parvus*) is a species living on the fringes of what its biological ancestors would have enjoyed as a more temperate, less extreme environment.

And with the clock ticking on *Burramys'* future, the authors, including scientists from UNSW's School of Biological, Earth and Environmental Sciences (BEES), have started a breeding program in Lithgow, NSW, in a bid to acclimatise the diminutive possums to more hospitable, lowland surroundings.

UNSW Professor Mike Archer, a palaeontologist who has led research into the Riversleigh fossil deposits since 1976, says the mountain pygmy-possum is one of the species most vulnerable to climate change in Australia, and faces extinction if alpine snowfalls continue to decline as climate modelling predicts.

"These possums are one of the few mammals in Australia that hibernate during the winter," he says. "They hibernate deep within humid rock piles. Snow cover on these rock piles provides critically important insulation from the sub-zero air above. The rockpiles also provide shelter in summer."

Field research into how these possums have survived the extreme alpine conditions

was long carried out by Dr Linda Broome and more recently Dr Hayley Bates, co-authors on the published paper.

"To hibernate successfully, they need temperatures to hover between 1.5 and 2.5 degrees Celsius," says Dr Bates, Associate Lecturer at BEES. "But if there isn't enough snowfall, or snow melts early because of a warming or drying event, the outside cold air will penetrate the rocks. Anything less than 0.6 degrees will wake them from their hibernation and they can shiver and starve to death. You just need two bad winters like this and the species could collapse."

It is estimated there are no more than 2500 *Burramys* living in alpine regions of NSW and Victoria.

But rather than be gloomy about the future for the *Burramys*, Professor Archer is inspired by the fossil record to suggest a way to avoid extinction.

"The fossil record for all other species in the genus *Burramys* indicates that their current habitat is a far cry from their comfort zone for the last 25 million years," he says. "All previous populations thrived in cool temperate lowland rainforest communities—not the alpine one."

Professor Archer thinks that the mountain pygmy-possum, which was first discovered as a living animal in 1966, has been marooned in a less-than-ideal alpine environment where it has been forced to use strategies such as hibernation to survive.

"Understanding former distributions, even way back in time, can provide new insights into translocation strategies that might work for species otherwise threatened in the extreme edges of their once much wider distribution."

which invaded the alpine areas during a period of relatively warmer, lush conditions. After these conditions deteriorated with further climate change, they were stranded in an environment that was at the extreme end of their adaptability."

Professor Archer and his colleagues from UNSW, University of Sydney, University of New England and various local and international environmental organisations hatched the plan to establish a colony in lowland areas of dense forest. There are now two breeding pairs in Secret Creek Sanctuary at Lithgow which are being maintained in temperatures commensurate to the forest.

The group is aiming to start the colony

with about 25 individuals. Other threatened animals including the Corroboree frog and swamp tortoise (*Pseudemysdura umbrina*) could be rescued in the same way.

More attention needs to be paid to fossil evidence when developing conservation strategies, Professor Archer says.

"It's not unusual for endangered species to be occupying the 'extreme' edges of a once much wider habitat. Giant pandas, for example, were once widespread over lowland areas but, because of agriculture, have long since been confined to mountainous areas."

Understanding former distributions, even way back in time, can provide new insights into translocation strategies that might work for species otherwise threatened in the extreme edges of their once much wider distribution."

REBEL WITH A CAUSE

The comedy star, who graduated from UNSW in 2009 with a double degree in law and arts, returned to campus to a keen audience, writes Larissa Mavros.



We've got your back: Rebel Wilson with the Dean of UNSW Law, George Williams.

Professional commitments stopped actress, writer and producer Rebel Wilson from attending the UNSW Alumni Awards in May. At the time she accepted the 2019 Chancellor's Award for Exceptional Alumni Achievement award in a video message and acknowledged the recognition via social media.

But she made good on her promise to visit the campus when she returned to Australia, participating in a Q&A in front of about 120 students from UNSW Law and the Faculty of Arts & Social Sciences.

During her conversation with UNSW Law Dean Professor George Williams AO, the star of *Pitch Perfect* and *Bridesmaids* reminisced about commuting two-and-a-half hours by bus from her family home in north-western Sydney and sleeping in class.

Although she was an accomplished stage and television actress before she arrived at UNSW, Ms Wilson said she was determined to complete her double degree in law and arts.

"People would say, 'why are you still doing this? You're on TV,'" she said. "The television industry is very volatile, and you don't know what's going to happen. And I worked [really hard] in high school to get into the degree. I couldn't just waste that."

Ms Wilson encouraged students to "create a vision for what you want to do and go after it".

"If you are well-educated, you can have the most opportunity," she said. "Even though it was very difficult for me to finish my degree over a long period of time, it is good because in some ways you don't know how it is going to come back and help you. But if you finish, it can be really invaluable."

Since graduating in 2009, Ms Wilson has become one of Hollywood's most sought-after entertainers. Still, she has used her

Ms Wilson was among 13 star alumni honoured at the 47th UNSW Alumni Awards, including pioneering medical and engineering minds, human rights advocates, stars of sport and film, leaders of urban innovation, and champions of diversity in business, art and STEM.

The awards celebrate the incredible achievements of outstanding alumni who are utilising their education to help transform communities and improve the lives of others.

Ms Wilson won the Chancellor's Award for Exceptional Alumni Achievement, established in 2018 to celebrate alumni with demonstrable success across a broad range of fields and interests. NSW Premier Gladys Berejiklian was the recipient of the inaugural award.

For more on the 2019 Alumni Award winners, see alumni.unsw.edu.au/unsw-alumni-award-winners-2019.

law degree on several occasions to negotiate contracts (she said the deal for *Pitch Perfect 3* was "very good"), claim ownership of characters she has played on film and television and contract directly with a television network.

Most recently, she starred opposite Anne Hathaway in *The Hustle*, which the Motion Picture Association of America (MPAA) initially gave an "R" rating. She used her legal skills to take the matter to arbitration and won, securing a "PG-13" rating and making the film more accessible to a wider audience.

"I've saved a lot on lawyer fees," she joked.

Ms Wilson has regularly praised UNSW and the education she received. Last year, she wore a UNSW T-shirt to a US College Signing Day hosted by Michelle Obama to celebrate the pursuit of a university education.

Ms Wilson recently starred as the lead in *Isn't It Romantic*, which she produced under her production banner, Camp Sugar. She also stars in Taika Waititi's dark comedy *Jojo Rabbit*, and in Tom Hooper's big screen adaptation of Andrew Lloyd Webber's acclaimed musical *Cats*.

Off screen, Ms Wilson has her own clothing line, Rebel Wilson X Angels, and is a long-term supporter of the School of St Jude in Tanzania, which fights poverty through education.

The thoughts that count

An unexpected notion put Kaarin Anstey on the path to a new career researching how our minds age, writes Ivy Shih.

Many years ago, when Scientia Professor Kaarin Anstey was working at a publishing company, she was struck by the sudden realisation that she no longer wanted to be a bystander in cognitive ageing research.

Instead, she wanted to be the one writing the book on the topic. That pivotal moment propelled her into the world of research.

Professor Anstey changed path, choosing to study psychology as she felt it offered well-rounded training for future researchers.

"I then discovered a fairly new area called psychology of ageing, in particular cognitive ageing. It soon became clear that there were many unanswered questions, which fascinated me," says Professor Anstey.

She set out to examine why people age differently. For instance, why does one person's memory decline with old age, but another person's cognitive abilities stay sharp?

"Cognition is really at the core of who we are as people," says Professor Anstey.

"Our memories, how we process information and make decisions, our capacity to manage everyday finances, and the ability to follow instructions at home and in the workplace – it all comes down to cognition."

World Health Organisation estimates show by 2020, the number of people aged 60 years and older will outnumber children younger than five. Between 2015 and 2050,



the proportion of the world's population over 60 will nearly double from 12% to 22%.

Professor Anstey says countries need to adjust to this demographic shift. "All populations across the world are ageing and it is going to create dramatic changes in the need for health and care services," she says.

"I think good, productive collaboration requires communication that forces you to set aside your own discipline and ways of thinking."

KAARIN ANSTEY.

"When you do a survey, usually there is a box that says 70 years and older. But with an ageing population, there are more people that live into their 90s and actually we don't know a lot about that – that's the new frontier."

Professor Anstey is Director of the UNSW Ageing Futures Institute. She also leads an NHMRC Centre of Research Excellence in Cognitive Health, is a director of the NHMRC Dementia Centre for Research Collaboration and Co-Deputy Director of the ARC Centre of Excellence in Population Ageing Research.

Her current focus is the epidemiology of cognition and dementia, including working with the World Health Organisation to

develop international guidelines and the global action plan for dementia care and service delivery.

Teamwork and collaboration are core to Professor Anstey's research philosophy.

"It is impossible to do my research without collaboration and input from all disciplines," she says. "I think good, productive collaboration requires communication that forces you to set aside your own discipline and ways of thinking."

The shared knowledge can help address more complex questions when interpreting results and designing more effective studies.

"By working with people in different fields it gives you new ideas and ways of tackling a problem in ways you hadn't even thought of," she says. "For example, for a study on how to improve driver safety in aged population, you could be involving an occupational therapist, optometrists, psychologists, designers for road safety signs, IT teams and statisticians."

"I love working with my team and I'm still constantly fascinated by the research I want to do, and I also want to make a difference.

"It gives you a sense of purpose."

Scientia Professor Kaarin Anstey joined the University in 2018 under its Strategic Hires and Retention Pathways (SHARP) scheme, an initiative of the UNSW 2025 Strategy to recruit world-class researchers to the University, and the NeuRA Discovery Fund.

Medicine for the soul

For Hudson Berry, sport and medicine is the perfect combination, writes Megan Maurice.

Hudson Berry is all about keeping his options open. The teenager is currently pursuing pathways in both the Sevens and 15s formats of rugby, while also in his first year of Medicine at UNSW Sydney.

While any one of these career paths would be time-consuming on their own, Mr Berry has been relishing the challenge of combining sport and study.

"In a sport where so many things can go wrong, injuries or even one coach who doesn't select you, you need something to fall back on," he says.

"But it's also such an important thing to have something else to do. I think a lot of people play footy or they follow their degree and they lose track of other things in life.

"I think it's really important to have an outlet of some sort. And in a way, medicine and rugby have been an outlet for each other."

Mr Berry's breakthrough moment this year was his inclusion in the Dream Big Time program run by Rugby Australia for talented young Indigenous players.

The three-day camp in Sydney in August was attended by 133 scouted players from across the country, from which two squads of 20 were picked. Mr Berry was excited to be one of the selected players.

"I was playing at Randwick this season – which was also through UNSW," he says.

"And one of my mates there was also doing it. I just thought, why not go down there and give it a shot? It's all worked out pretty well."

UNSW Sports Advisory Council and Randwick Rugby Council member Simon Poidevin has been extremely impressed with the youngster this year.

"Hudson was recruited to join the Randwick Rugby Colts program earlier this year and has grabbed the opportunity with gusto," Mr Poidevin says.

"He began as a rookie in our Third Grade Colts, learning the game and the club



"It's such an important thing to have something else to do": Hudson Berry is working hard on and off the field.

Photo: Randwick Rugby

quickly realised his amazing talent, moving him onto the wing of our highly successful First Grade Colts team. Along the way Hudson was invited to join our Rohrig Elite Development Program at Randwick."

As for his ambitions in medicine, Mr Berry is aware that he is only at the beginning of a very long journey with his studies.

"Obviously I have a long time to go, so my goals will change as I go on," he says.

"But I think for me, a really good option will be doing some kind of sports medicine. It merges two of the things that I love most and I couldn't think of a much better way to pick a profession."

Mr Berry credits UNSW's Nura Gili's Pre-Program for giving him the opportunity to

study Medicine. "Medicine is something I've always dreamt of, but I didn't get the ATAR," he says.

"So I was planning on doing Medical Science and then doing post-grad afterwards, but UNSW gave me a pathway to do it straight away."

While the path Mr Berry has chosen to take won't be easy, his determination and drive will go a long way to ensuring his success in all his chosen fields. Balancing high-level sport with a degree in Medicine isn't for the faint-hearted but Mr Berry is up to the challenge.

"It's difficult, but I really enjoy it," he says. "It just comes down to managing my time really effectively."

Social media offers elite athletes a shortcut to celebrity, but the price of a public persona can be too high for rising stars still finding their feet, writes *Megan Maurice*.

Thousands of people across the world have experienced the phenomenon of “going viral” on social media.

But while fame is generally considered desirable, having a high – or even moderate – public profile can be extremely unsettling for many people, says Senior Lecturer in the School of the Arts and Media at UNSW Sydney, Dr Emma Jane.

“This has a lot to do with the fact that many people think that directing vitriol at celebrities is ethically acceptable behaviour – or at least very different behaviour to attacking ‘ordinary’ people,” Dr Jane says.

She says there is assumption high-profile public figures deserve to be attacked online because they choose to play the ‘fame game’.

BEWARE THE FAME GAME

“This dynamic is complicated, however, by unprecedented rises in the celebritisation of ‘ordinary’ people via the internet and media genres such as reality television,” she says.

“Directing vitriol at these sorts of ‘amateur’ or ‘accidental’ celebrities raises different ethical issues because it is likely that such people are more psychologically, physically and financially vulnerable to hate campaigns than seasoned celebrities.”

Risks for young athletes

For athletes, social media can open doors – but it also brings risks. UNSW Law and Psychology student Matilda McDonell, who plays for the Giants in the Suncorp Super Netball, says players get social media lessons and take advice from senior players on what is appropriate to post.

“We have lots of young girls following us, so it’s important that we’re good role models for them and it’s also super-important that we uphold the club values of respect and



Tayla Harris' kicking action attracted the trolls.
Inset: Dr Emma Jane.
Main photo: Twitter

dedication to our codes. So that means no photos of drinking and [making sure we wear] appropriate clothing,” she says.

The (even) darker side of social media fame

Potentially the biggest danger comes from the skulkers of social media known as trolls.

When Channel 7 posted a photo of AFLW star Tayla Harris and her famous kicking action on Facebook, the trolls came out in force. From sexually explicit comments, to ones degrading her ability, to those masking their misogyny with concern for her welfare, the photo was flooded with comments.

The Harris furore highlighted a particular kind of criticism levelled at female athletes.

“Women are attacked online for being either too normatively ‘sexy’ or not normatively ‘sexy’ enough,” Dr Jane says.

“Consider, too, the fact that the most common insult aimed a woman online is to call her some variation of fat, ugly and

slutty. Men simply aren’t judged by their appearances and sexual activity the way women are.”

Finding a solution

Dr Jane says tech giants aren’t helping the situation, and policy makers are making matters worse by rushing through poorly considered measures.

Ms McDonell believes the easiest way to arm herself against potential abuse is not to engage with it.

“We just get told not to read it all,” she says. “There’s no point in getting into stuff that isn’t even accurate and makes you feel down about yourself or teammates.

“Social media can be really negative sometimes if we lose a match, because people are trying to analyse what and where it went wrong. Unfortunately, some players do read it, especially younger ones, and it really affects self-esteem. Best advice is to just not even go there.”

Naked truths

Society still struggles with the idea of women paying for sex, writes *Emi Berry*.

Sex workers say the number of Australian women buying sex is on the rise, but is society okay with this concept? Possibly not, says a new study.

The research by Dr Hilary Caldwell, UNSW Visiting Fellow at the Centre for Social Research in Health, reveals that there’s still a collective reluctance to accept that women visit escorts.

Dr Caldwell says that, until now, there has been very little empirical evidence of women buying sex outside of female sex tourism. It is only recently that journalists and researchers have inquired about women buying sex, raising questions about female sexual agency (a woman’s ability to act on her sexual needs, desires and wishes) and what it means to be a woman in a postfeminist era.

“Prior to the 1950s, buying sex was an expected male pastime and has since been systematically demonised by campaigners who consider female sex workers to be degraded, damaged goods, and exploited victims of men. A basic idea that sex diminishes a woman is profoundly sexist and is harmful to sex workers and all women,” Dr Caldwell says.

Dr Caldwell interviewed 21 women who bought sex in Australia, and 17 sex workers. No particular characteristic was found in those who bought sex: although all were Caucasian, they were of wide-ranging ages, educational and economic groups and were aged 18–69 the first time they bought sex.

Most bought sex multiple times, including heterosexual sex, same-sex attracted sex, threesomes with all genders, bondage and discipline (BDSM) and body-work therapy. Of the seven women seeking

The women overwhelmingly felt the services received were beneficial, boosting self-esteem and mental health.

Half said they most commonly bought sex as ‘therapy’ for underlying conditions including healing from abuse, depression and stress, and vaginismus (which causes spasms in the pelvic floor). Other reasons included wanting ‘to get off’, ‘to be indulged’, and to feel safe with a professional who would respect boundaries and consent.

The women overwhelmingly felt the services received were beneficial, boosting self-esteem and mental health. “They spoke about learning about specific acts, their bodies, and their sexuality which they felt gave them more power to negotiate future sexual encounters,” says Dr Caldwell.

Participants did extensive research before buying sex and felt safer buying sexual services than ‘hooking up’, but they recognised the potential for male escorts to prey on naive female customers.

The sex workers interviewed said the female market was increasing, but felt society wished to silence women who bought sex to control female sexuality and desire, and to maintain the status quo regarding dominant narratives of male clients as violent.

Some stressed that buying sex was not necessarily an indulgence and that “women’s mental and physical health is well served by being able to access sex workers”.

Participants in Dr Caldwell’s study called for clients to be consulted during public inquiries into sex laws, and expressed concern about their activities becoming criminalised.

Dr Caldwell says: “One sex buyer said she feels ‘like a really strong feminist but there are other women out there who are going to shame me around this. They are pushing my story underground’. Decriminalisation of buying and selling sex would be an appropriate outcome to acknowledge the benefits of sexual services to society.”

She says that we need to broaden the debate about the sex industry beyond a singular view of immorality or entitlement and include women as consumers to move towards gendered equality and acknowledge female sexual agency.

Don't box me in

Robotic furniture can transform a room in seconds, but how connected will we be with homes that change around us?

By Christian Tietz.

With two-thirds of a global population of 9.4 billion people expected to live in urban areas by 2050, our domestic living arrangements will have to change.

In high-density cities, static apartment layouts with one function per room will become a luxury. The dedicated living room, bedroom or kitchen will no longer be economically or environmentally sustainable. Building stock will need to work harder.

These changes will reframe our idea of what home means and what we do there. So how will these flexible spaces work?

Sidewalk Labs and IKEA are collaborating with Ori, a robotic furniture startup that emerged from the Massachusetts Institute of Technology. They have developed ways to use pre-manufactured standardised products to make living spaces flexible.

Designers have created tantalising concepts of how these new products could work where space is at a premium. One example is based on a floor plan measuring just 3m by 3.5m.

A more intensive use of building space will impact on circulation spaces. It will require more services in tighter spaces and a vigilant eye on emergency evacuation pathways. Public space will be much more crowded and play a more important role in our wellbeing.

We have always tried to make rooms adaptable, using Japanese screens or room dividers, and space-saving IKEA furniture such as hallway tables that extend into dining tables.



The Ori Cloud Bed is lifted and lowered from a ceiling recess to create space that doubles as bedroom and living room. Photo: Ori/YouTube

And mobile furniture is not a new idea. The late 1980s and early 1990s spawned a whole range, from tables on wheels to sideboards with castors.

The idea of being able to transform our living space made these mobile furnishings enticing. But the manual actions required meant that, after a few initial experiments, they ended up in one static position – integrated and firmly located within the accumulations of things that make up our private sphere and who we are.

Industrial designers such as the late Luigi Colani designed pre-manufactured dwellings with rotating interiors – but the ease of transformation is what really makes a difference now. Rooms will transform from bedroom into living room or from study into entertainment space at the touch of a button, a gesture, or a voice command?

How will these new flexible spaces affect our sense of belonging and feeling at home, when everything can change with a voice command?

Robotically optimised homes might change culture, just as digital communications altered our conversations, social conduct, personal relationships and behaviour.

Currently, these ideas are just initial (if well-developed) concepts. But this heralds the beginning of an entirely new way of conceiving and inhabiting space. The time it takes for the transformation to be completed plays a big role. Too slow and we think twice about it, too fast and it might knock a few things about. Looking ahead, the way our cupboards store and provide access to our things might be next in line for robotic optimisation.

This article is reproduced from [The Conversation \(theconversation.com\)](https://theconversation.com).
Christian Tietz is a Senior Lecturer in Industrial Design at UNSW Built Environment.

UNSW scientists have shown Mars specialists the secrets of the Pilbara's ancient rocks – all in preparation for NASA's and ESA's Mars 2020 missions. By Isabelle Dubach and Jane Garcia.

The remote outback of Australia has become an unusual training ground for scientists preparing for missions to Mars.

NASA and European Space Agency (ESA) scientists have spent a week at a secret site in the Pilbara region of Western Australia, joining UNSW Sydney's Australian Centre for Astrobiology Director Martin Van Kranendonk for specialist training in identifying signs of life in ancient rocks.

The trip was preparation for NASA's and ESA's Mars 2020 missions, which will search for past life in rocks that are roughly the same age as those found in the Pilbara: three-and-a-half billion years. The oldest, best-preserved evidence of life is contained in these rocks – a perfect stand-in for the desolate landscapes of the red planet.

"It's remarkable that the history hidden in the fossil record of ancient rocks from Australia's Pilbara region will be vital for answering the question – is there life on Mars?" says Professor Van Kranendonk.

The trip helped the scientists understand the importance of geological context in searching for signs of ancient life.

"We were able to investigate signs of life's earliest footholds in a variety of geological environments and then had extensive group conversations about not only what to sample, but how to sample to maximise the possibility of mission success," says Professor Van Kranendonk.

Being able to do this investigation directly on the ancient rocks, with scientists from both missions, was a unique opportunity.

"A really exciting outcome was the enthusiasm that the Mars scientists had coming away from the outcrops and

RED ROVERS



NASA and European Space Agency scientists in remote Australia. Below: the scientists' camp in the outback.

thinking of how the textures they had seen would apply to their own missions," he says.

"Even more important was the collective realisation that life got started early on our planet, under similar conditions as what we know was happening on Mars at that time, enhancing the prospect for major discoveries during these two upcoming missions."

The team of UNSW and other Australian and international scientists, led by Professor Van Kranendonk, have conducted research in the area for decades, after ancient life traces were found there in 1980.

This is the first time that Professor Van Kranendonk has shared the region's insights with a dedicated team of Mars specialists – a group including the Heads of NASA's and ESA's Mars 2020 missions and many of the leads of the science instruments being flown on the missions.



ESA's ExoMars mission will sample a vast plain with sedimentary rocks for signs of microbial life. NASA's rover mission will visit a previously unexplored region thought to have favourable conditions for a search for signs of past life. It will also collect and cache samples for potential return to Earth, where they will be analysed in the laboratory.

NASA's Mars Exploration Program Director, James Watzin, saw his first stromatolite on this trip.

"After this experience, I now understand the importance of geological context in the search for life on Mars," he says.

"Seeing the ancient stromatolites of Western Australia, and discussing with NASA and ESA colleagues how we might look for and sample possibly similar rocks on Mars, was tremendously useful as we prepare for our rovers' arrival on Mars," says Ken Farley, project scientist, Mars 2020 from Caltech.

ExoMars2020 Principal Investigator for CLUPI (the Close-up Imager), Jean-Luc Josset, says the trip was a wonderful experience.

"It was great to see these ancient rocks of Earth and to view the early traces of life with the perspective of how to use my instrument on ExoMars."

The slaves we keep

Addressing Modern Slavery examines how we all can help eradicate one of the big challenges of our time, writes Emi Berry.

Most Australians believe slavery is an outdated concept. But it's estimated that 40.3 million people are enslaved around the world, more than ever before in human history.

And it is not only a problem overseas. The Global Slavery Index estimates 15,000 people were living in modern slavery in Australia in 2018.

"Almost everything that you would use in a day is linked to modern slavery," Associate Professor Justine Nolan from UNSW Law says.

"The coffee you have, the chocolate you eat, the fish you buy for dinner, the clothes you wear and the carpet in your house. All of these products are made in what we'd call high-risk modern slavery areas."

WHAT IS MODERN SLAVERY?

Modern slavery can include several exploitative practices such as forced labour, deceptive recruiting for labour, servitude, trafficking in persons, bonded or indebted labour, forced marriage, child slavery and organ trafficking.

In their new book *Addressing Modern Slavery*, Associate Professor Nolan and co-author Dr Martijn Boersma (UTS) explore the problem and examine how consumers, business and government – who all play a part – can help eradicate it.

They say it's crucial to realise that everyone has a slavery footprint, depending on your lifestyle, and what you own, wear and eat.

Closer to home, Associate Professor Nolan says, visa restrictions and lack of rights leave some workers in Australia,



It's estimated that 40.3 million people are enslaved around the world. Photo: Shutterstock

particularly migrant workers and international students, vulnerable to exploitation. This has led to documented cases of modern slavery in the Australian agricultural, construction and meat processing industries.

In 2017, a Sydney-based cleaning firm provided services to Bunnings, Wilson Parking and NSW Ambulance and was fined \$370,000 for exploiting 49 cleaners. The firm was also ordered to backpay more than \$220,000. Sadly, this is not an isolated case.

DOES CORPORATE AUSTRALIA UNDERSTAND MODERN SLAVERY?

Dr Boersma questions if Australian businesses are aware of modern slavery and understand what it looks like.

"The key to understanding modern slavery is that it occurs on a spectrum of exploitation," he says.

"Poor working conditions including wage theft and excessive working hours often coincide with threats and coercion which can

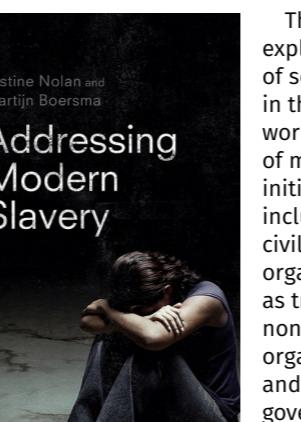
amount to modern slavery."

He says migrant workers are more vulnerable to falling victim to modern slavery because they often have limited English skills and lack knowledge of labour rights.

"If they find themselves in a precarious situation – for example, because they breach visa conditions – it is often hard for them to speak out or complain, as they fear being sacked or even deported."

THE LEGAL AND CORPORATE RESPONSE

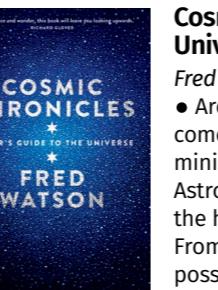
Addressing Modern Slavery finds existing anti-slavery laws around the world focus more on requiring companies to report on their commitments to tackle the issue, rather than assessing actual performance.



The book also explores the growth of self-regulation in the corporate world and the rise of multi-stakeholder initiatives, which include companies, civil society organisations such as trade unions, non-government organisations and sometimes governments.

Although these initiatives can sometimes help address exploitation, their capacity to hold companies to account is often limited compared to enforcement by the state.

The authors caution there is no magic bullet to end modern slavery, saying: "If we make the mistake of looking for a single cure and neglect to confront modern slavery on multiple fronts, we end up treating the symptoms of modern slavery rather than dealing with its root causes."



Cosmic Chronicles – A User's Guide to the Universe

Fred Watson (NewSouth Publishing)

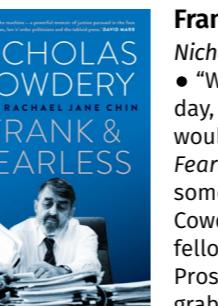
- Are we alone in the universe? Where did the moon come from? Could there really be a future in asteroid mining? In *Cosmic Chronicles*, Fred Watson – Australia's Astronomer-at-Large and bestselling author – explores the hottest topics in space science and astronomy. From the burgeoning space economy, to discussing the possibility of a ninth planet in the far reaches of the solar system, and sharing the power of citizen science, he has long been a champion of making stories of ground-breaking science accessible. In this book he shares the less well-known stories from the frontiers of astronomy and space science.



The Memory Pool

Therese Spruhan (NewSouth Publishing)

- Smell the chlorine, taste the hot chips and feel the burning concrete underfoot as you read these stories of Australian childhoods at the pool. This delightful, nostalgic anthology brings together reflections and recollections about the swimming pools of childhood from Australians including Trent Dalton, Leah Purcell, Shane Gould, Bryan Brown and Merrick Watts. Everyone who has ever dived into their local Olympic pool, bush waterhole or saltwater baths will want to submerge themselves in this beautiful book. Author Therese Spruhan is a Sydney-based photographer, journalist, freelance writer and swimmer.



Frank & Fearless

Nicholas Cowdery (NewSouth Publishing)

- "When I walked through the office door each day, I knew that almost every decision I made would make someone unhappy ..." *Frank & Fearless* is a gripping and forthright account of some of the toughest cases faced by Nicholas Cowdery AM QC, now a UNSW visiting professorial fellow, during his time as Director of Public Prosecutions for New South Wales. The headline-grabbing criminal trials of Gordon Wood, Keli Lane and Jeffrey Gilham are examined with forensic precision, along with the DPP's contentious decision not to prosecute artist Bill Henson and members of *The Chaser*.



The Best Australian Science Writing 2019

Edited by Bianca Nogrady, foreword by Lisa Harvey-Smith (NewSouth Publishing)

- Good science writing makes you feel. It makes you delight in the discovery of a black hole munching on a star, laugh at the image of aliens puzzling over golf balls on the Moon, wonder at the mystery of the Spanish influenza's deadly rampage, grieve for baby shearwater chicks dying with plastic-filled stomachs, rage at the loss of the Great Barrier Reef and cheer for the clitoris' long-overdue scientific debut. This ninth edition of *The Best Australian Science Writing* showcases the most powerful, colourful, insightful and brilliant news, feature, essay and poetry writing from Australian writers and scientists.



The Cure For Hate: A Former White Supremacist's Journey From Violent Extremism To Radical Compassion

Tony McAleer (NewSouth Books)

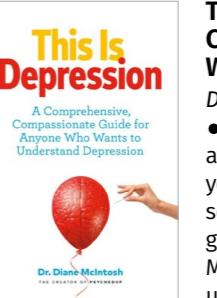
- *The Cure for Hate* demonstrates that in a society divided by hate and in need of healing, atonement, forgiveness and radical compassion are the cure. Tony McAleer found an outlet for his teenage rage in the street violence of the skinhead scene and was deeply involved in the White Aryan Resistance until the outpouring of love he felt at the birth of his children inspired him to start questioning his hateful beliefs. He is co-founder and chair of Life After Hate, a US non-profit that offers a place of refuge and support for those who wish to leave hate groups.



Australia: Modern Architectures In History

Harry Margalit (NewSouth Books)

- Federation in 1901 marked the beginning of a search for city forms and better buildings to accommodate the realities of Australian life and express an emerging Australian identity. This highly illustrated book covers the flowering of these many variants, from the bid to create a model city in Canberra, through the stylistic battles that opened a space for modernism, to the idealism of postwar reconstruction and beyond. It reveals a vibrant and influential culture, at its best when it matches a civic idealism with the sensuality of a country of stunning light and landscapes. Harry Margalit is an associate professor at UNSW Sydney.



This Is Depression: A Comprehensive, Compassionate Guide For Anyone Who Wants To Understand Depression

Dr Diane McIntosh (NewSouth Books)

- Depression sucks. It's a debilitating illness that affects the mind and the body – and chances are that you or someone you love will battle depression at some point in your lifetime. *This Is Depression* is your guide through the darkness. Psychiatrist Dr Diane McIntosh provides all the information you need to understand and combat this serious and isolating disorder. This accessible book, filled with compassion and humour, outlines the causes, impact and treatment of depression, and provides encouragement that it can be overcome.



Cooking With The Oldest Foods On Earth: Australian Native Foods, Recipes And Sources

John Newton (NewSouth Publishing)

- Australian native produce is booming. Native ingredients are beginning to turn up in growers' markets and even local supermarkets. From Warrigal greens and saltbush, to kangaroo and yabbies – food writer John Newton will inspire you to grab some and take it home. This short companion book to the award-winning *The Oldest Foods on Earth* shows you how to cook with Australian ingredients, where to find them and how to grow them. Organised by ingredient, each chapter includes a brief history, a practical guide, and recipes that promise to broaden Australians' culinary horizons in every way.

“I think we need more voices in the public square when something sexist happens to a female leader, and I think it’s important that a number of those voices are male.”

Julia Gillard

Former Prime Minister of Australia

Speaking at the UNSW Centre for Ideas event, *Women & Leadership*.



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