EDNA AND ME

Cultural icon Barry Humphries goes back to where it all began.

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Printed by Complete Colour, an ISO14001 environmental management system and ISO9001 quality management system certified printer with FSC Chairman of Committee certification and Sustainability Victoria Weebeiwee Gold certification, on an ecologically rated printing press using a chemical recirculation system and produced with vegetable-based inks made from renewable resources. This publication is fully recyclable — please dispose of it wisely.

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ISSN: 1442-1349
Produced for the University of Melbourne by MEDIAXPRESS mediapress.net.au

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Barry Humphries recalls the night Edna Everage first hit the stage at the University’s Union Theatre.
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Strategy to improve student experience and promote research

The University is leading a nationwide initiative to vastly improve opportunities for Indigenous engineering students and increase the number of Indigenous engineers working in Australia.

The Partners for Pathways project aims to create scholarships and devise strategies to promote entry into engineering for Indigenous and other students who do not have the required background in maths and science.

A former Chief Executive Officer of Sinclair Knight Merz, Professor Paul Dougas (BE(ChemEng) 1971), is leading the program, which is backed by a Commonwealth grant of $900,000.

The first National Indigenous Engineering Summit was held in June and brought together industry, professional bodies, representatives of most of the major Australian university engineering schools and policy leaders to exchange ideas.

Indigenous engineers from around the country also took part.

“We heard from a number of practising Indigenous engineers who agreed that education was the key to a better future for themselves and their families,” Professor Dougas said.

“These engineers can now be mentors to current students coming through the ranks and are able to provide advice on what barriers and experiences they had, to help build a tangible pipeline into the profession.”

A note or two from Dr Who

For the past 20 years one of the world’s rarest synthesizers, the EMI Synthi 100, sat idle in a University storage facility. Now, thanks to the passion of Victorian College of the Arts (VCA) Senior Technician Leslie Graythorn, it has been restored to its former glory and will be available for students.

The Synthi 100 was delivered to the University’s Electronic Music Studio in 1975. Soon after, Leslie was employed as the studio’s technician.

“On my first day at work, the first thing I did was walk through to look at it,” he said. “I remember thinking it was the best day of my life!”

Nearly two metres long, the Synthi 100 is more of a laboratory piece than a musical instrument. And with an overwhelming number of knobs, joysticks and patch pins to navigate, ‘playing’ it is certainly not for the faint-hearted. According to Leslie, you’d need three months to gain a basic understanding; two years to become a master.

The Synthi 100 is most often associated with the Doctor Who theme although, as Leslie points out, “there are about 20 different versions of that tune and only one was ever played on it.”

The restored instrument is housed within the VCA’s new Brian Brown Recording Studio. It joins a number of other remarkable vintage synthesizers in the University collection. To watch the Synthi 100 in full flight visit unmelb.edu.au/3010

A new face at the helm

The University has welcomed a new Vice-Principal (Advancement). Nick Blincos will lead University of Melbourne Advancement, which includes alumni relations and philanthropic campaigns. He was previously Director of Engagement at the University of Birmingham.

Learn more at unmelb.edu.au/3010

One of the world’s most exquisite manuscripts is on display at the University until November 15. The 500-year-old Rothschild Prayer Book is one of the most valuable illuminated manuscripts and is considered one of the most important books of its type in existence.

The 16th century prayer book is at the centre of a free exhibition, An illumination: the Rothschild Prayer Book & other works from the Kerry Stokes Collection c 1280-1685 at the Ian Potter Museum of Art.

On loan from the Kerry Stokes Collection, the exhibition contains rare masterpieces of breathtaking beauty and power including the monumental work of Calvary by the Flemish artist Pieter Brueghel the Younger. The exhibition is accompanied by a series of public lectures and floor talks.

The Rothschild Prayer Book was made in the Belgian cities of Bruges and Ghent in the early 1500s. It is illustrated with gold and contains 67 full-page miniature paintings, each considered a masterpiece.

These types of manuscripts were created in monasteries and used by priests and monks for liturgical purposes. They were often commissioned by people of means such as emperors and princes, and in the 13th and 14th centuries private persons bought and used “books of hours”, which contained prayers to be recited throughout the day. The Rothschild is one of about 30 remaining illuminated manuscripts made as private worship books between 1500 to 1510.

For more information visit events.unimelb.edu.au/rothschild
Shifting ground

As the world’s population soars, millions of people are at risk from earthquakes. University researchers are working to identify the risks and minimise the losses.

David Norrish was getting ready for a costume party when the Earth moved. Resplendent in baggy green hippie pants and a tie-dye shirt, he was on the roof of his four-storey apartment building in Kathmandu, Nepal, when the first jolt sent him staggering. It was April 25, this year, and an earthquake had struck.

"Struck really was the right term for what the earthquake did," says the University of Melbourne genetics researcher, now working with the Nepal Health Research Council. "There was no warning or gradual increase in intensity. One moment the world was sane and stable, and the next the whole building was shuddering back and forth. I stumbled and caught my balance, and my brain needed a few seconds to figure out what was happening and how I should feel about it."

"All the earthquake training we had done was only relevant for being inside a building. I ended up just dropping down where I was and crouching in a ball in the centre of the roof. Right before I hit the ground I caught a glimpse of the city and this surreal image is burnt into my mind: a swarm of black rising. It was thousands of crows taking flight in a wave of panic."

When the shaking stopped, Norrish (BSc 2009, MSc 2011) grabbed a first aid kit from his apartment and rushed out into the street. "I bumped into a nurse friend of mine who was on her motorbike heading to the local hospital, and I gave her the first aid kit. She told me later that the hospital had been so under-resourced that that first aid kit, by being there at that time, ended up saving several lives."

He wore his party costume for the next few days, as he came to terms with a catastrophe that devastated the city and killed more than 8500 in the region.

"Hundreds of thousands of people were left living in the scary uncertainty of a dying city, with no electricity or running water and rapidly dwindling access to food and transport," he recalls.

CONTINUED PAGE 8
Earth’s fault lines put big cities at risk

The thin, solid skin or crust on which we live is only five to 70 kilometres thick, or about 1 per cent of the distance to Earth’s centre. But by the time you reach the mantle underneath, the temperature has risen to more than 1000 degrees, and the material you are passing through is becoming plastic. By the outer core, it has become liquid. The Earth’s core is hot about 6000 degrees at the latest estimate.

The crust and upper mantle is broken into a jigsaw of moving tectonic plates. The movement causes them to push, pull them apart, and forces them to slide past each other. Some are pushed under neighbouring plates in a process known as subduction. These motions are jerky. The friction of huge tectonic plates pressing and rubbing against each other is immense.

Along active plate boundary faults, such as the San Andreas Fault in California, the pressure builds up until it overcomes the strength of the fault and the earth slips rapidly, moving metres in a matter of seconds. In the case of Nepal’s recent earthquake it moved about three metres. That rupture causes an earthquake as it cascades along the fault until the friction becomes too great to overcome and the rupture is terminated. But that concentrates stress on the fault further down the line, which is why earthquakes along fault zones are likely to cluster. About 95 per cent of earthquakes occur at plate boundaries. The people most at risk live in these regions, particularly at the edges of the Pacific Ocean and across Asia, from central China, along the Himalayas and extending through Iran and Turkey into Europe.

The cities where most death and damage is likely to occur are in developing countries – Islamabad, Tehran, Quito, Manila. But 5 per cent of earthquakes occur intraplate. These are the ones that affect Australia, and while neither as frequent nor as big as those at the plate boundaries, they can still be significant and destructive.

The media communication prize and the 2014 Geological Society of America Public Service Award. "My shift to Melbourne is not surprising," Quigley says. "It's building recognition in the field and has a strong engineering school. Many of the world's leading earthquake scientists live in intraplate settings. But that comes with a responsibility to tackle earthquake-related challenges at transnational and even regional levels, and with a particular focus on addressing nations with a higher seismic risk and lower science capacity." One urgent need, he says, is information on where the greatest risks are, how research can make us less vulnerable to future earthquakes.

"The use of the geological record to understand the location, size, frequency and effects of past earthquakes for the purpose of reducing our vulnerability to future earthquakes is what underpins the fields of paleo-seismology and earthquake geology," he adds. "For example, our research in New Zealand has demonstrated virtually all of the worst effects of the 2010-11 earthquake sequence have geologic precursors of similar severity and extent that could have been better incorporated into land use planning. This is the field in which my expertise lies and the work I will be continuing with vigour at the University of Melbourne."

At the University Mark Quigley will retain his PhD supervisor, Professor Mike Sandiford (BSc(Hons) 1978, PhD 1985), who holds the Chair of Geology in the School of Earth Sciences, and with whom he has worked previously, examining earthquakes and the formation of mountain ranges in central Australia and the Himalayas.

Of all the tectonic plates, says Sandiford, the Indo-Australian plate is moving the fastest and is the most highly stressed. "This puts Australia among the areas most prone to intraplate earthquakes. One of those who knows most about Australia's seismic activity, particularly with respect to the rest of the world, is Gary Gibson (BSc 1998), a principal research scientist at Geoscience Australia. He will be contributing to the Global Seismic Hazard Assessment Program, which is bringing together historical seismic data from all over the world to create earthquake hazard maps. It’s not an easy task. Precise measurements of earthquakes go back less than a century – a mere blink of geological time, although techniques are being developed to gain indications of much earlier events. Earthquakes play out differently in different geological environments, Gibson says, so comparisons become difficult. "A magnitude-5 quake in Western Australia may be felt 400 kilometres away, but only 150 kilometres away in Victoria, given its softer, more absorbent rock.”

While the maps are preliminary and constantly being updated, they show the areas of greatest earthquake hazard in Australia are the south-east and south-west corners of the country, as well as central Western Australia.

Our complacency doesn’t help. In the past few years, several insurance industry executives have expressed concern at the lack of basic earthquake risk mitigation by business and government in Australia. That’s a situation that researchers in the School of Engineering and its associated Centre for Disaster Management and Public Safety, such as Associate Professor Helen Goldsworthy (PhD 1990) and Nelson Lam (PhD 1995) and Dr Elisa Lunantara (BE CivEng(Hons)) 2001, MEngSc 2004, PhD 2012), are trying to change. They are working on earthquake-resistant building design and the development and implementation of building codes that address the risk.

Buildings can be engineered and retrofitted to resist earthquakes, Goldsworthy says. And we now know quite a lot about resistant materials and construction, from investigating the reaction of buildings to events such as Christchurch and also from the latest research work on damage-resistant technologies.

Meanwhile, David Norrish has decided to stay on in Kathmandu as it gets back on its feet. "After a couple of months, things are only superficially back to normal," he says. "The traffic’s back to full bore. But you can still see in the city where the houses are damaged. And the tourists have completely emptied out of the country. That’s seriously affecting livelihoods.”

Some of the public has lost trust in our abilities. It was a difficult, but important, time to be an earth scientist.”

DR MARK QUIGLEY (ABOVE)
Emma Welsh’s first foray into the fruit trade wasn’t a huge success. As a young girl she developed an idea to sell $1.50 for three hours’ back-breaking work, she abandoned the plan and didn’t even bother going back to collect her pay.

It’s fair to say her next attempt hasn’t been more productive. She and childhood friend Tom Griffith founded Emma & Tom’s in 2004, after Tom spotted a gap in the Australian market for additive-free bottled fruit smoothies. They’ve gone from an initial range of just four flavours – developed in Welsh’s home kitchen – to an array of drinks and snacks that’s stocked in cafes, delis and supermarkets across the country.

的关系 has been key. “We’ve learned a lot from talking to other people,” says Griffith. “Really everyone has the same issues and challenges, whether you are selling hamburgers, fruit juice or insurance. It’s about pricing, dealing with new types of customers, what margins should we be aiming to achieve … all the things you just don’t know by instinct.”

But slowly they found their way around their new industry. “It was like pulling at a thread,” Welsh says. “You just follow along all the things that need to be done – what’s the bottle going to be like, what are the ingredients going to be, what’s the recipe going to be … you just keep talking to people and following it along.”

Relationships have been key. “We’ve learned a lot from talking to other people,” says Griffith. “Really everyone has the same issues and challenges, whether you are selling hamburgers, fruit juice or insurance. It’s about pricing, dealing with new types of customers, what margins should we be aiming to achieve … all the things you just don’t know by instinct.”

A decade on, they still have external advisers. Welsh says: “It’s really important to have people who can look critically at your business to help you see the wood from the trees as well as to make the most of other people’s experiences.

“An entrepreneur you have to be an optimist and you have to be driven. That can be a weakness because you are so hell-bent on making it succeed, you actually don’t see that you are going down the wrong path.”

Having learned on the job what works and what doesn’t, Griffith is an enthusiastic advocate for the new Wade Institute for Entrepreneurship at Ormond College. Established with a $10 million gift from entrepreneur and Ormond alumnus Peter Wade, it aims to give budding entrepreneurs the tools they need for success.

From 2016 it will offer a Master of Entrepreneurship degree, delivered in partnership with the Faculty of Business and Economics and the Melbourne School of Engineering.

The teaching will be practical, blending academic study with advice from entrepreneurs like Griffith. Students will graduate with a business plan that is hopefully strong enough to attract venture capital. Associate Professor Rufus Black, Master of Ormond, says students will come from a range of backgrounds, but will share a passion for creating something with impact. “Finding ideas is not the hard part – turning those ideas into something that will be a successful, competitive business is.”

Some of those ideas will likely come from areas in which the University already excels – medical research or engineering, for example – but Black (BA 1990, LLB(Hons) 1991, Ormond College) is keeping an open mind. “Disruptive players are almost always black swans – they come up with innovative and unexpected ways to meet the world’s needs.”

Between the new Masters and the Melbourne Accelerator Program, which provides a place for entrepreneurs to grow their businesses, Black says the University can make a major contribution to creating a much-needed “entrepreneurial ecology” in Australia. “Other mid-size economies have recognised that they have got to create the next generation of globally competitive businesses that will provide the future wealth and jobs. We need to do that here. We need a new generation of entrepreneurs,” he says.

“This is a really big issue for Australia. We’ve tended to look to big business or government to provide an economic future – that has got to change.”

That’s a view shared by alumni and entrepreneur Susan Oliver (Bllhdg 1973), co-founder and chair of female-led angel investor network Scale. Its aim is to develop a group of savvy investors who can support early-stage ventures, particularly those led by women and mixed teams, and it’s working. Since its launch in 2013, Scale has recruited 75 members who have invested more than $3 million in six start-ups.

Oliver believes a change in attitude is critical. “Everybody thought the US was on its knees post-GFC, but they hoisted themselves up through their culture and their ‘can do’ culture. Here we’re doubting Thomases and it can be a reason why our start-ups move to the US,” she says.

She welcomes new additions, like the Wade Institute, to the entrepreneurial landscape. “We need as many players contributing as possible,” she says. “And we also need to recognise that we are a small, small voice in a big, big world and if we don’t work collaboratively and dynamically we are wasting the opportunity.”

She’d like to see Australia follow the UK’s example and allow individuals investing in start-ups to claim it as a tax deduction. “We subsidise real estate investment through our taxes. Why don’t we subsidise technology or start-up investment?” she says.

She’s also wary of government policies that seek to “pick winners” in the entrepreneurial market. “Australia is a small country with a big, big world and if we don’t work collaboratively and dynamically we are wasting the opportunity.”

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In the shadow of the firing squad

After a long legal struggle, two Australian drug smugglers were executed in Indonesia earlier this year. For their team of defence lawyers, the journey was both harrowing and uplifting.

It was when all was lost and their plight was at its worst that the condemned men were at their best.

With their deaths by firing squad imminent, Myuran Sukumaran and Andrew Chan, once alleged by police to be the “strongman” and the “Godfather” respectively of the Bali Nine drug smuggling operation, confirmed the truth of their rehabilitation with deeds of compassion.

“It’s well documented that the process of execution is deeply traumatic for all involved,” says Julian McMahon (BA(Hons) 1987, LLB 1990, Trinity College), the longest serving of the team of Australian lawyers who represented the condemned men.

Chan and Sukumaran knew that they were being watched, and their integrity was being assessed to the last, he says. They faced death caring for their fellow prisoners and their executioners.

“They held everyone else together. The prisoners as a group died praying and singing, and I saw most of them at length in the days leading to their death. They were composed, and for the most part...” – here, McMahon pauses for a long moment to find the right word before concluding – “serene.”

Though their case had rolled on for 10 years, dropping in and out of Australia’s national consciousness, the nation was transfixed when the two convicted Australians were executed in Indonesia earlier this year.

Standing in their corner for eight of those years – largely unseen – was that band of volunteer human rights lawyers, committing their time, skill and emotional energy to trying to save the pair as their case wended its way through the Indonesian judicial system.

The deaths of Sukumaran and Chan would ultimately leave some in the legal team feeling raw and frustrated, while insisting none of it was really about them. McMahon, for one, resists any focus on himself and refuses to discuss the case in personal terms.

The long road to Nusakambangan Island, where the Indonesian government conducts its executions, began at Bali’s Denpasar Airport on April 17, 2005 when four young Australians were arrested with heroin strapped to their bodies. Three others in possession of heroin were arrested at a Kuta Beach hotel.

Chan and Sukumaran – “the boys” to their lawyers – were also arrested in connection with the smuggling operation. In February 2006 they were found guilty of heroin trafficking and sentenced to death.

Almost immediately legal networks in Melbourne and overseas were tapped to provide a defence. It began in 2006 when the Chan and Sukumaran families sought out Lex Lasry QC, who was known for trying to save another Australian, Van Tuong Nguyen, who went to the gallows in Singapore in 2005. Lasry recruited McMahon, another who had acted for Nguyen.

Over time the team would grow and change as circumstances and career shifts dictated. In 2007 Lasry was made a Justice of the Supreme Court of Victoria, leaving McMahon as the sole barrister.

He in turn recruited eight barristers and solicitors to the collective, but along the way two more left to take up senior appointments: John Champion SC (LLB 1973, GDipArts(Crim) 1974, GDipCorp&SecLaw 1994), who became Director of Public Prosecutions; and Mark Taft SC, who became a County Court judge.

Other recruits were prominent defence barrister Peter Morrissey SC (BA(Hons) 1981, LLB(Hons) 1991), and Michael O’Connell SC, who has lived in Indonesia and is fluent in the language. Just like the shifting membership, there was a touch of improvisation in the way each lawyer’s role played out.

Morrissey became local and international media spokesman, while McMahon, O’Connell, and solicitor Veronica Haccou, who is also fluent in Indonesian, worked on the ground in Indonesia.

Despite the desperate nature of the exercise there was no lack of lawyers willing to try to save the men. None would be paid, but that is not unusual, says McMahon.

“Barristers in criminal law operate under the cab rank principle – you take the next case that comes along if you have the time and it’s appropriate that you do it, for example, if you don’t have a conflict of interest,” he says.

“Often barristers try to apply that principle whether or not a brief is a paid one. It’s also common for barristers to carry multiple briefs at the same time. “You don’t have one case and work on it until you have another case, so the pro bono case is just another case you are working on.”

McMahon tells students at the University that the privilege of studying brings the obligation to share their skills pro bono. He told a student publication
in 2012. “With the luxury of quality education comes the responsibility to show courage and to lead.”

Peter Morrissey says working unpaid on deserving cases is “good for the soul.” “We all do a lot of pro bono,” he says. “With me, it’s all mixed in. I was doing (paid) work along with this at all times. It’s really your own principles at work. For me it’s really a joy to be in the thick of legal life. It’s nice to live a life where altruism and self-interest complement each other.”

Does it take a personal toll? “There is a sadness in the loss, if you lose a case,” says Morrissey. “And very frequently that happens, but that’s part of the lot of being a defence lawyer. If you are playing at the top level of criminal law you have people who are going to get 20 years. “During the running of the case the toll is on your family. I don’t have any complaints. I wish I had done more.”

While the Australian lawyers drafted appeal and clemency applications for Sukumaran and Chan, in court the work fell to Indonesian human rights lawyer Todung Mulya Lubis, who was recommended to McMahon as he built the team.

“At this point (August 2006) they had lost in the Supreme Court and had been sentenced to death three times in eight months. Their profile in the media was disastrous and there was a real expectation that execution was a strong chance in the foreseeable future,” says McMahon.

“All of my contacts in a number of countries identified senior commercial lawyer Mulya Lubis. He has a lifelong history of fighting for human rights in Indonesia.”

Yet representing accused drug offenders carries a stigma in Indonesia. “He was submitting himself to enormous personal criticism in order to act for people on death row,” says McMahon. “He is a person I hold in the highest regard.”

Michael O’Connell had studied Indonesia’s language and literature, had taught legal aid lawyers there and was familiar with its legal system. Trying to save the lives of Chan and Sukumaran was a collaboration, he says. “We would write draft papers … send them to Indonesia saying these are the arguments they wanted and would work those up. It meant going there two or three times a year to see the clients and talk to the lawyers.”

Once President Joko Widodo unexpectedly refused clemency for the pair in December 2014 and January 2015, the lawyers had to try to fight that decision in the courts. They took the case to each of the courts where it might have been possible to have the merits of the case of the President’s decision reviewed, but were unsuccessful in obtaining a full hearing in each instance. A further complication emerged with allegations of judicial corruption. O’Connell recalls. “Even on the day of the executions we were arguing with the Judicial Commission, saying that they should summon Andrew and Myuran as part of their investigation into the corruption allegations. Right up until they were killed we had those arguments running. It’s impossible not to be touched by the intensity of it.”

Following such tortuous legal paths burnt up untold nervous energy and creative thought. “He will not tell you, but Julian was astounding in those months,” says Morrissey. “He was almost full time from December (2014) while taking zero paid work here in Australia.”

And why do they speak of the condemned men as boys? “They were 21 and 24 when arrested,” says Morrissey. “and there is a sort of arrested development thing that happens in jail. And you come to feel very protective towards them.”

Over time, he believes, the public perception of the pair shifted, but only once they shifted first. Says McMahon: “About seven years ago they made a decision to lead good lives. They not only stuck with the commitment, but they showed tremendous integrity and courage in holding to that ideal so by leading good lives themselves and encouraging others to lead good lives through education, in Myuran’s case, and religion in Andrew’s case, they could help other prisoners and improve themselves, and have anyone who chose, notice that they had reformed and were good people.”

“And the proof of the depth of that transformation was exhibited in the manner of their dying, which was essentially an exercise in taking care of the other prisoners who were to be executed, and the guards and their executioners.”

For Morrissey, the truth of their transformation was exhibited in the manner of their dying, which was essentially an exercise in taking care of the other prisoners who were to be executed, and the guards and their executioners. “At this point (August 2006) they had lost in the Supreme Court and had been sentenced to death three times in eight months. Their profile in the media was disastrous and there was a real expectation that execution was a strong chance in the foreseeable future,” says McMahon.

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From page 15 – are highly sought after by school principals. And these newly-qualified teachers are able to hit the ground running more than 90 per cent report that they feel well-prepared for what they find in the classroom.

Just as well.

A level of professional self-confidence is the only defence these days against the assaults of politicians, the demands of parents, and the expectations of young digital natives, long accustomed to instant gratification. The arguments about schooling and what teachers “should” do run the gamut – from the call for back to basics to a view that, in the age of Google, the role of the teacher should be more scribe on the side than sage on the stage.

All this is set against highly publicised global measures that rank countries according to educational performance. As a result, it’s not surprising to see that debate now centres on whether it’s reform that’s needed, or a completely new form of educational delivery.

The pressure on universities offering degrees in education has never been greater. The core business remains – the training of teachers who will have a transformative effect on the lives of students. But in the 21st century, there is a premium on educators who know how to challenge and constantly extend the learning capacity of those in their care.

Program Co-ordinator Dr Daniela Acquaro (MEd 2005, PhD 2013), a teaching veteran herself, is the first to say that the Master of Teaching course is “male in front of anything I studied over 20 years ago.”

She says the feedback speaks for itself. “We have principals contacting us all the time. It’s because they are seeing the different way these graduates think.”

“And that’s because of what we do here. We explicitly teach them to think about their practice in the classroom.”

That means a program heavily focused on “differentiated teaching” – the art and science of adapting lessons to meet the needs of individual students, rather than simply expecting them to keep up regardless of their circumstances.

Through a network of partner schools, MTeach candidates are constantly testing what they learn at university within what they encounter in the classroom.

For those who may approach teaching with a somewhat romantic view – “the course is damned hard and it needs to be because teaching is hard work. You are always thinking about how best to address the needs of students and how to help them become successful learners,” she says.

“If you are doing the job well, you are constantly assessing, implementing strategies and evaluating, which is demanding. But the one thing that teaching has over all the other professions is that it is hugely rewarding and uplifting.”

As a result, it’s a near-perfect fit for Crivari and fellow student Dr Sarah Avitabile, part of a small team of trainees who have spent the year honing their skills in extended classroom sessions.

At 48, Avitabile is a mid-career changer. She spent 20 years as a nurse, before returning to study and completing a PhD in fire ecology. She brings a high level of science expertise and significant life experience to teaching and, with only a few months’ exposure to boisterous teenagers, she knows she has found her true vocation.

“I love it,” she says. “I love the instant feedback from the class. The relationship you have with students and the general busyness of the day. That said, it’s the hardest thing I’ve ever done and I’ve done a lot of hard things.”

For Avitabile, that includes time spent nursing terminally ill children, combining work and study as a mature-age student, and the demands of a doctorate. None of it compares, she says, with the challenge and thrill of teaching a Year 8 class about particle theory and “watching a student demonstrate their understanding by being able to explain the concept to someone else.”

After teaching a Year 10 English class, Crivari, 23, feels much the same. She says the experience of being in the classroom has made her “much more reflective about my practice.” In setting out to demystify Shakespeare’s Much Ado About Nothing she quickly realised that her own love of the text meant she was taking too much for granted. She slowed down, focused on students who were struggling with comprehension, and got the whole class to act out the play. “The best thing I have learnt this year is the importance of adjusting my teaching. Being set in your ways or being stubborn should never come into it.”

Making science relevant: Dr Sarah Avitabile oversees an experiment at Kambrya College.

“The best thing I have learnt this year is the importance of adjusting my teaching. Being set in your ways or being stubborn should never come into it.”

Dr Daniela Acquaro, Program Co-ordinator

“You are always thinking about how best to address the needs of students.”

The Graduate School’s 2015 intake has weathered the first shock and awe phase. Trainees have to quickly realise that their own love of the text meant they were taking too much for granted. She slowed down, focused on students who were struggling with comprehension, and got the whole class to act out the play. “The best thing I have learnt this year is the importance of adjusting my teaching. Being set in your ways or being stubborn should never come into it.”

Avitabile has had similar challenges with her science students, some of whom fail to see the relevance of what they are being taught. “I think we’ve lost our way on this,” she says. “We need to value the teaching of science and that means getting experts into primary school so we can start early.”

The hope is that the mindset and training embraced by the Graduate School has a contagion effect, promoting an Australia-wide shift toward high quality graduate qualifications and a generation of teachers who can accommodate challenge and complexity.

A bonus would be in achieving something close to what we see in high-performing Finland and Singapore, where teachers are prized professionals, on a par with doctors. But ultimately, the beneficiaries will be future generations of children – an incalculable return on investment.

Maxine McKew is an Honorary Fellow at the Melbourne Graduate School of Education and author of Class Act (MUP).
A GREENER UNIVERSITY

Sustainability is more than a subject for study at the University of Melbourne – it’s a way of life for many staff and students. The University is committed to reducing its impact on the environment. And it’s making good progress, as these figures show...

32,746 tonnes carbon savings (up from 9713 tonnes in 2008)

20,000 number of native trees planted to offset the emissions generated by University motor vehicles. The University has supported Greenfleet in offsetting its motor vehicle carbon emissions since 2007.

1311 tonnes (60%) of waste diverted from landfill to recycling in 2014, compared with 95 tonnes (16%) in 2009 (only applies to Parkville, Southbank, Burnley and Werribee campuses)

5204 tonnes recycled from 2009 to 2014.

Furniture and Equipment Re-use Program
From 2012 the University has redeployed
7400 pieces of furniture
Diverted 190 tonnes of waste from landfill - saved $3.6 million based on estimated retail replacement value and saved $200,000 on landfill charges.

350kg amount of old stationery re-used by sharing it at a stationary party for students.

2100 number of bike parking spaces now available on Parkville campus

20,000 number of Melbourne Bike Share stations on University campuses (operated by RACV)

The University has supported Greenfleet in offsetting its motor vehicle carbon emissions since 2007.

72 drinking water fountains across the University. Also, Southbank campus has stopped selling bottled water – the first Victorian university campus to do so.

872 megalitres of water saved from 2006 to 2014, equivalent to an average usage of 6017 Melbourne households.

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FROM PAGE 19

This is a story that needs to be told, and Humphries is just the person to tell it. Before that, however, it is important to place matters in perspective.

In 1955, the University was a smaller and vastly different place than what it is today. "Even then, it had a collection of some of the ugliest buildings in Melbourne," Humphries says. "But it did have the Gothic Revival Law School. The Wilson Hall had just been burned down, but there were bits of the lawn that hadn't been built out yet, and students could be seen sitting under the trees, reading." Humphries was a member of the Union Theatre, the forerunner of the Melbourne Theatre Company. "It was housed in the Union Building. On the left, as you went into the Union, was a bas-relief, a marble thing, of an oriental scene. 'The Wheel of Life'. It was frequently disfigured with what only later came to be known as graffiti.

"I was very bad at learning my lines, and getting smaller and smaller roles. I knew I was being phased out when I finally got a job in a play. 'Of Mice and Men'. I had to be a dog, barking offstage. I had unshaven legs. The hat was like a pantomime dame."

The revue's content, written by all the company members, was determined at a series of meetings held in a little office next to the Wheel of Life. Humphries recalls: "The director of the company was Ray Lawler, who on the quiet had written something called 'Summer of the Seventeenth Doll', which sounded like a Tennessee Williams pastiche. No one expected much of it. Anyway, he asked me, 'Would you write something? Why don't you do something like that woman you do on the bus?'"

The woman on the bus was invented by Humphries during one of the Union Theatre's excursions into country Victoria. "We were touring 'Twelfth Night', and everyone sang and did things to cover the boredom. At every town we played, local ladies would give a little supper. Then one of the ladies made a speech, thanking Mr Lawler and his company for bringing culture to, say, Benalla. She would say how lovely it all was. When I did my little monologue at the back of the bus, I impersonated some such lady - the dentist's wife, or whoever she was - and what speech she might make. It got more elaborate and absurd. I employed a falsetto, which I discovered I had. The company heard just the voice of this lady. I called her Edna, after a sort of nanny who looked after us. I liked her very much."

Back to the revue, and this pithy interchange between Lawler and Humphries:

"Why don’t you do her?"

"No, it’s just a voice. I don’t want to dress up."

It’s a revue. You know, you could do it like a pantomime dame."

"I’ll write something, but get Zoe Caldwell to do it."

"Look, she’s got three songs in Act I and two in Act II and so far you’ve got nothing."

So Humphries, with some reluctance, but spurred on by simple practicalities – "I wasn’t considered either very funny or very good" - wrote a sketch featuring the hitherto invisible Edna. Subject: the approaching Olympics.

"There were big ads in 'The Herald' asking housewives to put up athletics or tourists. Because we’d been in a mad scramble to appear international, we had demolished all the hotels. There’s only the Windsor left. So they asked housewives to give up their spare bedrooms for visitors. You had to go into the Melbourne Town Hall and describe your house to some official. They’d come and look at it and they would billet someone there when the games came."

"The Edna sketch was a dialogue between me and an Olympic official, who was played by Noel Ferrier. It was all really Edna describing her house in great detail to this man. In minute detail. It ended with Edna saying she was very happy to put up an athlete, but she drew the line at foreigners."

Sixty years on, it is almost impossible to equate the luridly and globally omnipresent Dame Edna we all know and fear with the mousey Mrs E who tripped on to the tiny Union Theatre stage. For a start, she looked so un-Edna-like.

"It had all to do with nothing to wear," Humphries says. "My mother had a twin-set with a big fur. It was blue and she would put it all on at George’s. So I wore that, with a very small hat, few flat shoes, no tights. I had unshaven legs. The hat was pointed yellow. I combed my rather dank brown locks down the middle and wore just a little bit of red lipstick. It was really no attempt. Edna didn’t even have the glasses, which were introduced in the early 60s.

Olympic Hostess was very successful. So much so, Humphries believes it might have restored his reputation, even if he still thought he wasn’t meant to be an actor after all. This was more or less consolidated when, not much later, he was asked to join the Phillip Street Theatre in Sydney, a company specialising in revues.

"I suddenly realised that’s what I meant to do: get out of Melbourne. So I went to Sydney, very oppressive. No nice cream brick homes there."

He looks back with mixed feelings at the time at the University, which awarded him an honorary degree of Doctor of Law in 2003. He is now a patron of 'Believe – The Campaign for the University of Melbourne'.

"I didn’t do that much there, really," he says. "I went with great promise, with scholarships and exhibitions. I did very well at school. But by the time I got to university, all the desire to study left me. I had that prickish feeling that I knew more than they did.

"My literate tastes had been formed, my artistic interests were established. I looked in the time of holding those exhibitions – I was very interested in cultural anarchy. You know, Melbourne was a very smug little town, a very self-satisfied town. I found that rather frustrating and naively thought I might be able to change that.

"In a way, it could be said, Humphries did change things by holding a mirror up to society. In the process, he also changed himself.

"I think that’s another purpose of university, don’t you think? It’s got me going. And thank goodness for that. I would not have been invited to join the Union Theatre if I hadn’t been in some student shows. I was allowed to stag a revue I wrote, 'Call Me Madman'. It was only one luncheon-time show and it caused great offence."

"I’m pleased to say that even today, as rather a staid figure, I still manage to offend some people. Good, isn’t it?"
I n November last year the leaders of the United States and China made what may well be a truly historic statement. Releasing the US-China Joint Announcement on Climate Change, President Barack Obama and President Xi Jinping committed to work together, and with other countries, to "adopt a protocol, another legal instrument or an agreed outcome with legal force" at the United Nations Climate Conference in Paris later this year. The announcement went on: "They are committed to reaching an ambitious 2015 agreement that reflects the principle of common but differentiated responsibilities and respective capacities, in light of different national circumstances."

Whether or not the leaders of the world's largest economies, and the two largest greenhouse gas-emitting nations, provided the leadership needed for a meaningful agreement on global warming will largely depend on negotiations in Paris in the first two weeks of December. What are these negotiations about? What are some of the key elements under discussion? And what are the prospects of success?

In May the Intergovernmental Panel on Climate Change finalised a Synthesis Report of its latest findings for all governments. Written by more than 800 scientists from 80 countries, and based on an assessment of over 1500 scientific papers, the report tells policymakers what the scientific community knows about the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.

The key findings are:

- Human influence on the climate system is clear.
- The more we disrupt our climate, the more we risk severe, pervasive and irreversible impacts, and
- We have the means to limit climate change and build a more prosperous, sustainable future.

It is one thing for governments to accept the urgency of reducing greenhouse emissions, but the challenge has been in getting them to agree on a way forward. The Paris negotiations are occurring under the United Nations Framework Convention on Climate Change, first adopted in 1992. Of course, many countries now have policies to limit emissions and to stimulate renewable energy. However, because emissions from any one country affect the climate of us all, global action is required. Two years of intense negotiations have delivered a draft text for the Paris negotiations. Each country is now putting forward indicative commitments of their proposed emission reductions and actions.

Significantly, November's US-China announcement included targets. The US intends to achieve an economy-wide emission reduction of 26 to 28 per cent below 2005 level by 2025. It agreed to make "best efforts" to reduce its emissions by 28 per cent.

China expects its CO2 emissions to peak about 2030 and underwrite to make "best efforts" to peak earlier. It intends to increase the share of non-fossil fuels in primary energy consumption to about 20 per cent by 2030. In the announcement both sides intend to continue to work to "increase ambition over time."

Overall, governments have now agreed to the goal of keeping warming below an additional 2 degrees on pre-industrial temperatures to try to avoid the most dangerous impacts of climate change.

Some of the outstanding issues in the negotiations include what additional actions to reduce emissions can be encouraged if the sum of the national commitments does not adequately close the gap on what is needed to keep warming below that 2-degree goal. The important role that cities and state governments around the world can play in addition to the efforts of national governments is another focus of discussion to assist with this challenge.

There is also considerable debate about whether there should be a goal for decarbonising economies around the world. A recent meeting in Germany of the major industrialised countries that form the G7 built momentum for this. At the conclusion, German Chancellor Angela Merkel said the meeting agreed on the goal to "decarbonise the global economy in the course of this century."

Experience in Germany, California, and more recently in China, shows that economic prosperity can be decoupled from growth in emissions and pollution. In essence, cleaner and more efficient economies can continue to deliver growing economic benefits while cutting emissions.

Another key element of the Paris negotiations is how to ensure sufficient funding is available to help vulnerable countries adapt to some of the damaging impacts already locked into climate systems. The effects of increasing storm intensity because of warming oceans and sea level rise associated with this are already being felt in many tropical islands, including Australia's Pacific Island neighbours, the Philippines, Indonesia, and south-east Asia.

Related to this is the need to scale up and encourage private-sector investment in cleaner technologies. A recent commitment by the Indian Prime Minister to substantially boost his country's renewable energy is most encouraging, but highlights the need for a rapid increase in private-sector investment.

With the costs of renewable energy dropping rapidly - in particular solar and wind - a transformation of energy systems in many parts of the world is now occurring. Globally the level of investment in new renewable energy projects has now exceeded investment in new fossil fuel projects in energy generation.

So what is the relevance of the Paris negotiations to Australia and the Asia-Pacific region? People across the region, including in Australia, support action on climate change and cutting emissions. Policy settings vary across governments, but in most countries in the region there is an increasingly rapid uptake of renewable energy and a mix of policies is being put in place to start the job of cutting emissions.

For example, in Australia more than one in seven households has rooftop solar, Bangladesh has the highest rate of solar installation in the region, while China and more countries in Asia have dramatically scaled up manufacturing and use of renewable energy. China is on track to introduce legal restrictions on emissions and an emissions trading scheme next year.

The position that Australia takes into the Paris negotiations is significant. At preliminary negotiations in Bonn in June, China pointed out to the assembled nations that Australia had received more questions than any other country on its commitment to cut emissions.

Interestingly, international negotiations are now demonstrating that there are two strong drivers of change. One is the need to reduce emissions because of the damaging impact on climate; the other is the opportunity to develop new pathways to economic prosperity and well-being based on highly efficient and cleaner economies.

The continuing work of universities around the world, including the University of Melbourne, is important to the Paris outcomes and their implementation. The disciplines of climate science, engineering and technological development, the social sciences with their understandings of human behaviour, political science and international affairs, climate policies, law and international governance, economics and business, are all informing decision-making and action.

What are the prospects of success at Paris? Because the negotiations follow the United Nations consensus approach they can be fraught. Finding common ground among so many countries and competing interests is always difficult.

But the leadership of the US and China is highly significant and has built momentum for an agreement at Paris. In their joint announcement, the leaders said the intent of their countries was to build the impetus for a successful agreement.

"The United States and China hope that by announcing these targets now, they can inject momentum into the global climate negotiations and inspire other countries to join in coming forward with ambitious actions as soon as possible," they said.

Apart from any agreement, the current focus on climate change action around the world is creating the opportunity for the development and deployment of innovative technologies, continued public education, the advancement of science, and implementation of new policies, all of which are delivering significant advances for societies everywhere.

The key question remains, can our agreements and actions globally and nationally meet the great challenge of the urgency of emission reductions and the development of cleaner economies that our scientific community is so clearly pointing us towards?

A substantial portion of the greenhouse gases being emitted are long-lived in the atmosphere. Action today to bring down emissions can have many years of very slow progress on global action to tackle climate change.

The compelling nature of the science and the great opportunities for economic prosperity and jobs growth through new cleaner economies should encourage every nation to strive for success at Paris.

Professor Don Henry is a Public Policy Fellow for Environmental at the Melbourne Sustainable Society Institute. He was formerly Chief Executive Officer of the Australian Conservation Foundation.
FIVE QUESTIONS FOR 3D PRINTING
EXPERT BERNARD MEADE

It’s the stuff of science fiction: printers that can create not just plastic or metal objects, but food and even body parts. Bernard Meade (BA, BSc 1996), organiser of the University’s annual 3D printing showcase, explains how this technology will change how we live. Val McFarlane reports.

What exactly is 3D printing and how does it work?

3D printing is another term for additive manufacturing, which in some ways is more descriptive. To get a good idea of how it works, imagine a piece of paper that you put through the printer, and you print words on it. You then put the same piece of paper through the printer again and again. The toner starts to build up in the printer and you then put the same piece of paper through the printer again and again. You then put the same piece of paper through the printer again and again. The toner starts to build up in the printer again and again.

In defence, there’s a design for an aeroplane with a 3D printer on board that can print out its own parts. When astronauts on the International Space Station needed a replacement arm, one was worked out using 3D printing technology.

University of Melbourne alumni are at the forefront of developments in 3D printing medical technology. This year Dr David Ackland (BEng 1984, PhD 2003, GCertUnTeach 2014) led the engineering design and testing of a titanium jaw joint implant to correct a patient’s rare congenital jaw deformity. Dr Ackland is a senior lecturer and researcher in experimental muscle and joint biomechanics at the University of Melbourne. 

What about other uses?

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In the beginning 3D printing was very expensive. Now you can buy a printer for $500. A kid in the US built one using Lego. Most of us will want something more robust but it shows that the technology is developing quickly.

Engineers from the University were involved in the creation of a 3D printed jaw joint this year (see breakout). What other medical uses might 3D printing have?

It was thought we’d never be able to print living tissue, that we’d never be able to print living tissue, that we’d never be able to print living tissue. It was thought we’d never be able to print living tissue, that we’d never be able to print living tissue, that we’d never be able to print living tissue.

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Is there a downside to 3D printing?

The fear of people printing guns is played on a lot, particularly here in Australia. But people can get guns already with a licence, and you can already make a gun without having a licence. But even though people can make guns, they typically don’t. Ultimately 3D printing allows clever people to overcome obstacles and if you are trying to overcome the obstacle of making a better gun you’ll figure it out.

Some people might choose to replace certain bones with titanium, for example, because imagine how hard you could hit if you had a fully metal arm. Or if you could put titanium flakes throughout your skin – you would be almost bulletproof. There is also always the risk that we will think we can fix things when they don’t need fixing. It could exacerbate body dysmorphia problems.

Ultimately there is real benefit to 3D printing but there has to be some wisdom applied to the way we use it.
A work in progress for women

Many women are frustrated by the slow pace of change in the gender balance in corporate Australia.

BY KIRSTY SIMPSON

D r Jackie Fairley has built a career ignoring gender stereotypes, rising to the top of Australia’s corporate elite on determination and hard work. Fairley, chief executive of biotech firm Starpharma and a board member of the Melbourne Business School, started working life as a vet. After first studying science, where more than 50 per cent of the graduates were female, she was surprised to find only a quarter of her fellow students at the Melbourne Business School’s MBA program were women.

“Yet at that time there were certain stereotypes in the views of students. One of the things that motivated me was to prove a fellow student wrong. (He said) that girls can’t do finance,” Fairley recalls.

“The fact that I had beaten him in finance all the way through was irrelevant. This was 1992, and another [male student] said that no companies should have women on their boards. There were some pretty extreme views, you know. It’s the sort of thing, that you shouldn’t get a scholarship because your husband is a doctor. ”

In the best response to such beliefs, Fairley (BCom 1984, MBA 1992) went on to win the Clemenger Medal for highest overall marks throughout MBA 1992) went on to win the Clemenger Medal for highest overall marks throughout the Melbourne Business School’s MBA program, the third woman in a row to do so. Given the program’s gender skew, this was more than against the odds.

But glass-ceiling breakers remain in the minority. Across Australia, women make up barely a quarter of the top echelon of management of larger organisations (those with 100 or more employees), and the gender pay gap remains stubbornly higher here than in other OECD countries.

Neither Fairley nor Naomi Simson (BCom 1984) – entrepreneur, motivational speaker and ‘Shark’ on Network TEN’s business reality program Shark Tank Australia – feels that overt sexism has held her back. They found it more a motivating factor than a hurdle.

Advocates for change: Naomi Simson …

Yet it is far from easy to pinpoint the reasons why the journey to equality in the top ranks of business has been so slow. Many initiatives have been taken to lead by example in addressing this imbalance in executive ranks and boards, notably through the Male Champions of Change mentoring program, which aims to level the playing field.

Latest figures from the Australian Institute of Company Directors show that 20 per cent of board positions in the top 200 listed companies are now filled by women, compared with a mere 8.9 per cent in 2009. And, in the first six months of 2015, 26 per cent of new positions were filled by women. While this is a substantial improvement, many still find progress agonisingly slow.

The 2014 World Economic Forum’s Global Gender Gap Report ranked Australia 24th out of 145 countries when judging equality against economic, political, education and health criteria.

And through the principle of equality may be sufficient motivation for most of us, it’s worth noting that gender diversity – not just on boards but throughout business – is linked to increased productivity and work satisfaction, according to the Workplace Gender and Equality Strategy Project at the University of Melbourne’s Centre for Workplace Leadership.

The research fellow in charge of the project, Dr Jesse Olsen, says he suspects gender imbalance is due more to embedded sub-conscious cultural biases than any widespread cases of overt sexism.

“There is a lot going on and the complexity is what makes it hard to address,” he says. “Culture is a really big piece and we really need to examine how the Anglo-Saxon culture has viewed gender roles. I think it’s less about explicit discrimination, but there is stuff going on in our heads about what men and women are supposed to be like. We still have this idea about the women being the care giver, and while it’s getting weaker over time, it still persists.”

Growing up, both Fairley and Simson had strong women around them, and both note the importance of role models. Simson’s mother, Lorna Elms, worked in the mathematics department at Monash University in the 1960s.

Fairley’s mother was Professor Priscilla Kincaid-Smith AC CBE (MD 1964, LLB 1991, University College), renowned for finding a link between headache powders and kidney damage and campaigning against their use. She was also a past president of the Australian Medical Association and, in 1975, became the University’s first female professor.

While their mothers were clearly shining examples, both women also cite the importance of other mentors and role models within the business community.

When Fairley was younger, giving birth to her non-teenage children, it was during a period of rapid promotion. With 120 staff to manage, she took only a few weeks of maternity leave for each of her children. For her, it was important to see that other women in business were also able to sustain a career while rearing children.

“Recent research from Harvard found that the daughters of successful women earn more than the sons tend to have more stable relationships. [My mother] was very important to me as a working female role model,” she says.

But determining what equality actually looks like is vexed.

“For me gender equality is not about numbers but opportunity,” says Fairley. “There are sometimes reasons why some workplaces have more or less. Numbers are more a surrogate for equality. If you look at engineering classes you are likely to find fewer women, and I suspect much of that is not sexism, but self-selection.

“There are probably sectors that are better and worse than others. The health sector is better. There are some sectors, like mining, that are not so good. In my experience, and when I look around, I can’t see any [vestiges of sexism]. I wouldn’t tolerate it.”

At Starpharma, 53 per cent of the staff are female, while 37 per cent of executive positions and 42 per cent of leadership roles are held by women.

“So what should be done across the business world to improve diversity? While Fairley disagrees with setting quotas for the number of women who must be employed in senior ranks, Simson and other high profile women believe a more even gender balance won’t be achieved without firmer action.

Another prominent business figure, Elizabeth Proust A4 (LLB 1985), who is now chairwoman of Nestlé Australia and the Bank of Melbourne, recently told the ABC’s AM program “Who would have thought we’d still be talking about this in 2015? I think, whether you call it quotas or targets, without some mandating of or for gender diversity – and remember, diversity is much more than gender – then, I think we probably still will be talking about it in 2025 and beyond.

“So I think that we need targets or quotas to ensure that companies and all organisations focus on how they comprise their top teams: both boards and senior management.”

Simson goes further. She advocates “naming and shaming” the worst performers to spur more employers into action.

“We already have that information,” she says. Since 2012 all businesses with more than 100 employees are legally required to report their gender equality performance to the Workplace Gender Equality Agency.

After the recent launch of an ANZ Bank report into financial gender equality, Simson noted that one of its most alarming findings was that women earn 4 per cent less in their first graduate job than men with the same qualification.

“A full-time working woman will earn $295 per week less on average than a full-time working man,” she blogged.

“That is $15,890 over the course of a year. Extended over the course of a typical 45-year career, that gap becomes a staggering $700,000.”
Body of evidence

When disasters strike, forensic scientist Pamela Craig is often one of the first on the scene, using her dental knowledge to identify victims.

October 2002: Clad in a heavy plastic apron and gumboots, Dr Pamela Craig is part of an Australian Federal Police forensic team working in the mortuary of Denpasar’s Sanglah Hospital. The forensic odontologist is examining, charting and X-raying the teeth of victims of the terrorist bombing of two Kuta Beach nightclubs, an atrocity that killed 202 people.

It is hot and exhausting work, but less emotionally draining than the alternative: working in the hospital’s “reconciliation room”. There she would be matching the charts and X-rays with the dental records of Australians missing since the bomb blasts. She would be looking at the victims’ photographs and personal details – and thinking of their families.

The non-expert might assume that working in the mortuary is the most confronting aspect of her work. “But clinical examination allows Craig to focus on the abstract details of anatomy. Her expertise in this area is important because body parts are all that remain of some victims. It is their photographs and personal belongings, the tappings of their individual humanity, that she finds most confronting.”

Thirteen years on, the details of her final case in that 10-day tour of duty in Bali stay with her. The only examinable part of this victim was a small part of his upper jawbone. “There was almost nothing to go on, except a knowledge of anatomy,” recalls Craig, still an honorary lecturer in oral anatomy and radiology at the Melbourne Dental School.

Studying an X-ray of the victim’s maxilla, the front part of his upper jawbone, she noticed the roots of the teeth were growing outwards, in a V-shape, with a wide gap in between – suggesting a tooth had once been there.

“Treading through the dental records of the missing, she came across a 21-year-old man from Perth who, at the age of nine, had an extra tooth extracted from between his two central incisors. But first she had to wait for the dental records to be flown in from Perth. When the X-rays arrived on Craig’s last day, they confirmed that the victim was that man.

“Having seen so much death
I have a more practical attitude toward it than most people.”

Craig has worked on enough cases to make several seasons of a CSI-style TV series, including one horrific Queensland murder in which a man with protruding teeth was accused of strangling and murdering 17-month-old Deidre Kennedy, whose body was found with bite marks. Talking about that case remains a painful experience for Craig. While the details of the crime were horrific enough, she then faced an aggressive defence barrister while giving evidence in court – the kind of experience that persuades some forensic scientists to add a law degree to their qualifications.

Other cases have been less confronting. In 2007 she was consulted by a Singaporean businessman concerned about the authenticity of a tooth, supposedly one of the Buddha’s molars, just installed as the cenotaph of a new and expensive Buddha Tooth Relic Temple. This time nobody argued with her expert opinion: the tooth belonged to a cow or a water buffalo.

As a research partner to forensic Egyptologist Dr Janet Davey, Craig has also worked on some of the oldest “cold cases” imaginable. In one, she examined scars of the teeth of a child mummy from Egypt’s Graeco-Roman period. She concluded that the child had died as the result of osteoclasia after an orthodontic procedure in which teeth were removed from an overcrowded mouth.

She has also spent more than 20 years as a part-time consultant in insurance and worker’s compensation cases. Yet this impressive career in forensics was never part of Craig’s life plan. In fact, she believes if she had graduated in an atmosphere of equal opportunity she would have become an oral surgeon.

Enrolling in dentistry in 1962, she heard comments such as “It’s a scandal, training a girl.” “She’s taking the place of a man… she’ll never work (as a dentist).” Worse followed when she enrolled for postgraduate study.

“He was barely off the plane when I was on the phone to him,” recalls Craig. By 1993 she was a permanent part-time lecturer in anatomy and radiology and, along with fellow forensic odontologist Tony Hill (GDPForenOdon 1991), who died in 2013, working as a consultant to the Victorian Institute of Forensic Medicine. It is Craig’s work in the highly specialised area of disaster victim identification that has made her reputation as one of Australia’s top forensic scientists.

On Boxing Day 2004, when news broke that a tsunami had devastated coastal areas of South East Asia, from Thailand to Sri Lanka, she was among the first to be called by the Australian Federal Police. She subsequently served four stints with the Thai-based multi-national team of forensic scientists.

In 2009 Craig worked on identifying victims of a different kind of disaster: Victoria’s Black Saturday bushfires. Fortunately for the identification effort, most victims had been to the dentist and none of the local dental surgeries had been burnt.

This identification process offered its own unique difficulties, including “commingled” skeletal remains, with some people dying huddled together with their pet animals.

The process of identifying victims will always be harrowing for the forensic specialists involved, says Craig. But, as she discovered in her first case, in 1991, there is a satisfaction in being able to offer relatives an end to the terrible uncertainty about the fate of a loved one.

In that case, involving a jawbone found on Cape Woolamai beach, Craig worked with Tony Hill to establish that it belonged to a local youth who had been washed out to sea whilst surfing nearly a decade earlier. No dental X-rays were available. The scientists had only a school photo, in which the boy wore a blue-checked shirt, to guide them.

Using the checks as a scale, they were able to enlarge the X-rays. They then superimposed a photo of the jaw bone, lining it up with the chin cleft, teeth and bite mark. It was an impossible task.

The forensic scientists never met the boy’s family. But they received a message of thanks from them, the family, on the phone to him, “says Craig. “After that they were able to have a funeral.”

While outsiders often dwell on the confronting nature of forensic work, Craig points to the positives. Death, for example, holds fewer fears for her. “I think last year alone I have seen more dead than I should be. So I am more emotional distance from my work. I think it’s all part of the sheer delight of human existence. I know that one has a very tenuous hold on this mortal coil and it takes very little to push us over. It makes me think that life is very precious. So I am more careful and safety-conscious perhaps than I should be.”

Craig also talks of the need to keep an emotional distance from her work. “You have to build a wall and become dispassionate about that. But it gets you in the end.” Yet, if there is another mass disaster in coming years, she will get the call. And she will go.
When the Olympic Games are held in Rio de Janeiro in August next year, Kitty Chiller will be out front of the Australian team carrying the elaborate title of ‘chef de mission’.

So, what’s with the French connection? Well, it is one of the two official languages of the Olympic movement, along with English, and all the team leaders carry that title. As for Chiller (BA 1984), she is happy with plain old ‘chef’, although her business in Brazil will have nothing to do with culinary skill.

Rather, she will be the one doing the explaining if some pubescent swimmer or bike rider punches a random drinker in a bar at 4am. That’s not the way she likes to think of her job, but it is also one of the realities. “I see myself as CEO of the team,” she says, by way of explanation.

That part of the job that she likes most is the chance to develop 470 athletes and nearly 300 officials from Australia at Rio, about 750 people over the fortnight of the Games. For many of them, these will be the most significant weeks of their young lives; emotions will be running high.

It is also a test for 50-year-old Chiller, hand-picked by the Australian Olympic Committee for the task after impressing as deputy chef de mission at London in 2012, when the former Oarsome Foursome rower Nick Green OAM (DipAppSci (Horticulture) 1993) was head of the team, and through her success in group training projects.

Chiller is a former Olympian herself. A world No.1 ranked athlete in the modern pentathlon – the combination of fencing, running, swimming, shooting and show jumping that simulates the experience of a cavalryman behind enemy lines – she competed at the 2000 Sydney Olympic Games. That was memorable, for sure, because I had a broken nose, I’d retired but came back when the news came through that the modern pentathlon was going to be in for Sydney. I’d been at the IOC meeting when they voted to put it in, and I’d been involved in the movement to get the females put on to the program.

That is what we are there for. We can’t make Sally jump cleaner or Anna ride better. All we are trying to do is to develop an environment that’s based on sound performance. From a chef de mission’s point of view.

“It would be the appointment that I’ve been hunting for a team that is provided with the best opportunity to reach that top-five environment. If they perform to their world championships and world cups but it’s just rowing or athletics or swimming.

It’s an aspirational goal, “ she says. “It’s an aspirational goal, but it’s going to be bloody hard. What’s important to me is that I’m responsible for a team that is provided with the best opportunity to reach that top-five environment. If they do their best and walk away proud of what they’ve done and respectful of their teammates, that’s a good result.”

“Every decision we make is based on ‘what is going to help the performance of the team?’”

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CHARMAINE THAM
(BAnimSc 2002, BVSc 2004)

When Dr Charmaine Tham was a small girl growing up in Singapore, dogs were anything but her best friends. They were frightening. They also carried diseases, like rabies, something that worried her even more.

"As kids we would tease each other about getting rabies, whether or not it existed," she recalls.

How things changed. Tham conquered her fears and went on to become, of all things, a veterinarian.

And then she fell in love. Her name was Pepe and she was a Pomeranian-Chihuahua cross that had been rescued from a local shelter.

But it was while working as a volunteer for Vets Beyond Borders Australia that Tham got the opportunity to do important work in communities where stray dogs are a danger to people, spreading diseases such as rabies.

"I happened to speak to someone who was going on a Vets Beyond Borders trip to China to teach the vets over there and he asked, 'Would you like to come along? You speak Mandarin and would be a great help.'"

"And I said, 'Yes, absolutely, for sure.'"

"And so that was my first experience with Vets Beyond Borders (VBB). That's pretty much how the journey started."

Today, Tham is chair of the group, overseeing funding and management of projects throughout Asia. Much of the work concentrates on India, a country with a high incidence of rabies.

"What we know about rabies and dogs in these communities is, if you call the dogs they just breed and it becomes an unsustainable cycle of killing, breeding and killing, with rabies not changing in its rate of incidence. It may even get worse."

Since 2003, VBB estimates it has vaccinated more than 65,000 cats and dogs and sterilised more than 30,000 street dogs, which has led to more stable populations and a better appreciation of animals in local communities.

No longer a practising vet, Tham's career now is as a technical manager at a complementary medicine company, Blackmore's, overseeing the development of natural health products for dogs, and speaking up for company, Blackmore's, overseeing the development of natural health products for dogs, and speaking up for natural health products for dogs, and speaking up for natural health products for dogs, and speaking up for.

CHALLENDER AO (BMus 1968) a quarter of a century ago.

But it's at home that Carter is making news. In April, at the age of 29, he was named principal conductor of the Adelaide Symphony Orchestra. He takes up the appointment next year. Intriguingly, Carter is the first Australian to be appointed to such a post with a mainstream Australian orchestra since the late Stuart Challender AO (BMus 1968) a quarter of a century ago.

"I am humbled to be that person," Carter says. "It seems to be that the chemistry was right: the right person at the right time."

Carter will be joined at the ASO by two most distinguished musicians: violinist and conductor Pinchas Zukerman as artist-in-association; and the British maestro Jeffrey Tate as principal guest conductor and artistic adviser. Carter recently caught up with Tate in Berlin. "He's the most extraordinary human being who's had a remarkable career," he says.

Conductors, though, also have to be communicators about fine music in all its forms. The knack, Carter says, lies in bringing your audience along with you, especially with contemporary music. "But in trying to convert them, I'm not going to ram it down their throats. Trust is vital. If we put together a good program with contemporary music in context, they're more likely to accept than smashing them over the head with a Xenakis cycle."

Carter will have the best of two possible worlds: the mighty culture of Berlin, which has seven orchestras and three opera houses, and the smaller but, to him, just as thriving culture of Adelaide, which, he says, has "one of the finest orchestras not only in Australia but, as I am starting to realise, the world!" He can't wait to get started. "My experience living in both cities is that each complements the other."
Trading on a milk run

DAVID ZHU
(BE(ElecEng)(Hons) 2009)

When David Zhu decided to start a business in Shanghai, he knew he wanted to stay connected to the country he calls his second home. “I love Australian culture,” he says. “I lived in Australia for several years, so I wanted to bring Australian products back to China.”

After graduating in 2009, he set his sights on the dairy industry, seeing a “huge demand” for imported dairy in China, especially since 2008, when a deadly toxic called melamine was found in Chinese milk and infant formula.

Zhu registered his imports company, Henger, in 2011, and began importing dairy products from Australian companies such as A2 Milk and Gippsland’s Longwarry Food Park. The company also sells its products online, through e-commerce sites such as Amazon China and Alibaba, and through offline channels, like Wal-Mart China.

His work allows him to travel to Australia several times a year. “It’s not like I’m going to a different country,” he says. “It’s familiar to me.”

Zhu, who was born near Shanghai, moved to Australia in 2003 to attend high school in Brisbane, where he stayed with a local family. Initially, he struggled with the English language and other cultural differences. He still remembers feeling shocked by his first lunch in Australia, when his hometown family gave him a humble sandwich, a far cry from China’s more elaborate midday meals.

After high school, he moved to Melbourne to study electrical engineering – with the encouragement of his job-minded parents – but soon discovered that entrepreneurship was better suited to his gregarious personality. “I like to talk to different people,” he says. “I like social networking. I like making friends.”

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A higher calling

ROBYN SHACKELL
(BA 1977)

Predominantly Shackell is a trialbater, but a patient one. She waited decades for the Anglican Church’s Ballarat diocese to welcome women to the priesthood. When they finally did in 2013, she was one of the first two women ordained and became Warrnambool’s first and only female priest.

“It was really wonderful,” she says of her inaugural Sunday service in her parish, when she celebrated the Eucharist and wore the vestments, the traditional robes of the priesthood.

Shackell, a grandmother of two, says she brings a “different perspective” to a male-dominated profession. Though some people were uncomfortable having women in church leadership, she says her community has been overwhelmingly supportive.

She recalls a woman in her 80s who approached her after a recent service and told her, “I’ve been waiting all my life for this.”

Shackell had too. “I guess I always felt that God was calling me to something but I didn’t quite know what,” she says.

Shackell grew up in Sydney with three younger brothers and parents who thought educating a girl would be a “waste of time.”

She was successful applied for a scholarship to teachers’ college, and later moved to Melbourne to study theology at Melbourne College of Divinity, where she received a Licentiate in Theology and a Diploma of Religious Education.

Shackell eventually enrolled in a bachelor’s course in psychology and Middle Eastern studies at the University of Melbourne.

After graduating, she moved to Kooyong, where her husband, Denis, worked as principal at a local primary school.

She was 40 when she finally found her calling, in 1986, during a trip around Australia with her husband. In Tennant Creek they met missionaries at a small church lamenting the departure of their priest.

It was then that she knew what she wanted to do, though it would be years before she could fulfill her ambition in her home diocese.

She became a workplace chaplain in 1988, counselling employees of companies such as Nestle, Fletcher Jones and VicRoads, and in 1998 she received a Master of Ministry from Melbourne College of Divinity. In 2008, the Ballarat diocese voted to ordain women as deacons. Several years later, at age 67, she was ordained a priest.

Meet the man from Deep River

BY EMMA BRIMFIELD-WALSH

Nobody grows up wanting to be a Director of Alumni Relations. Not even James Allan. Born and raised in Canada, James started his career as a lecturer before deciding to change direction.

“I was teaching and enjoying it, but a lot of the work I was doing was pretty lonely,” he says. “The nice part about alumni relations is that I get to meet people and support higher education without having to grade all the undergraduate essays.”

He looks forward to meeting as many Melbourne alumni as possible.

Allan is a strong advocate for the value of a university education. His parents were among the first generation of their families to attend university and their lives were very different because they duly did graduated with a PhD and went on to some significant roles in the nuclear industry and my mum studied physical education and ran community programs for the whole town on health and fitness.

The town he’s talking about is Deep River, a remote scientific community in the Ottawa River Valley. It was the first planned community built by the Canadian government in 1945 to accommodate employees of the nearby Chalk River Nuclear Research Laboratories.

“It was a weird little place to grow up,” Allan says. “It’s a suburb-without-suburb.” There’s winding cul-de-sacs, forests and rivers but there’s no city – just nuclear reactors.

With a population of 4000, Deep River may have been small, but it was far from parochial: it had the highest number of PhDs per capita in Canada for many years.

Perhaps unsurprisingly, Allan went on to graduate with a PhD, but not in science – in communications and media studies.

He led the alumni relations program at York University, Toronto, for eight years before becoming Director of Alumni Relations at Melbourne.

He was attracted by Melbourne’s constant willingness to explore new ideas, like the recently announced For Thought partnership between the University, Sydney Opera House and the Wheeler Centre. The partnership promises to deliver a series of scintillating events for alumni and the wider community.

“For Thought is a three-hour deep dive into a topic that puts phenomenal thinkers from around the world in conversation with the best and brightest from the University,” Allan says.

At the inaugural event in June, thinkers included academic “rock star” and world-renowned cosmologist Lawrence Krauss and astrobiologist Paul Davies.

But Allan says the best is yet to come. “June marked the beginning of a three-year program, and the calibre of speakers they’re considering is extraordinary. I encourage our alumni to pay close attention to Alumni eNews for further updates.”

Go to unimelb.edu.au/alumnei/news to view and subscribe to Alumni eNews. For more on For Thought visit events.unimelb.edu.au/forthought
AWARDS, HONOURS & ACHIEVEMENTS

Immunologist and virologist Professor Alan Kellie AC (BSc(Hons) 1975, PhD 1980) has been appointed as the Executive Officer of the National Health and Medical Research Council (NHMRC). Professor Kellie is a distinguished cancer scientist who has made significant contributions to the study of the immune system and its role in cancer, and has been a leader in the field of immunology and inflammation for decades.

Two Melbourne alumni have received Australia’s second highest civilian honour: the Companion of the Order of Australia (AC), in the 2019 Queen’s Birthday Honours. Professor Nathan Efron, one of Australia’s leading optometrists, was recognised for his work in creating two life-changing inventions – daily disposable contact lenses and an eye test that can give early diagnosis of diabetes. Professor Efron, president of the Australian College of Optometry since 2012, is based at the Queensland University of Technology. He is a Type 2 diabetes sufferer who has used his own experiences to influence much of his research into diagnosis and treatment of the condition.

The honours of Justice Christopher North (BSc(Hons) 1971, MA(CrWrtg) 1991, LLB(Hons) 1991, MA 1996) and Dr Michelle de Kretser (BArch(Hons) 1976, DipDramArts 1982, MA 1986) were recently announced in the 2019 Australia Day Honours. Justice North is the first woman to serve as the President of the Victorian Court of Appeal, received the law and the judiciary. Justice North has been a member of the Royal Australian and New Zealand College of Psychiatrists for many years and has a particular interest in the care of staff and patients in complex mental health settings. Dr de Kretser is a celebrated writer and performer whose work has been widely acclaimed for its intellectual depth and emotional resonance.

AWARDS, HONOURS & ACHIEVEMENTS

Eminent professor of neuropsychiatry Christos Pantelis (MB BS 1970, MD 2004) has been awarded an honorary doctorate by the University of Athens. Professor Pantelis is an NHMRC Senior Principal Research Fellow and Foundation Professor of Neuropsychiatry and Scientific Director of the Melbourne Neuropsychiatry Centre at the University of Melbourne and Royal Melbourne Hospital. He holds a Honorary Professorial Fellow position at the Florey Institute for Neuroscience and Mental Health and heads the Adult Mental Health Research Unit at Sunshine Hospital.

Academic and author Dr Tony Birch (BA(Hons) 1991, MA(CWright) 2000, PhD 2003) has joined Victoria University as the first recipient of the Dr Bruce McKinless Indigenous Research Fellowship. Birch is named for one of Victoria’s most respected Aboriginal elders and a long-time activist in the struggle for Aboriginal justice. Dr Birch’s research will explore the implications of climate change on Aboriginal communities and Aboriginal knowledge of land and the natural environment to inform the wider community. Dr Birch is also a highly respected novelist and author of many books and short stories, including Shadowdancing, Blood (shortlisted for the 2013 Miles Franklin Award) and The Promised (shortlisted for the 2014 Victorian Premier’s Literary Award). He was a recipient of the Henry Lawson Award in 2014 and the Don Keely Short Story Student Award for his strong academic record. Dr Birch also received the Don Keely Short Story Student Award for his strong academic record.

Academic and author Professor Dr Tony Birch has been awarded the 2019 Victorian Premier’s Literary Award for his novel The Promised. This is Birch’s third novel to be shortlisted for the Miles Franklin Literary Award, and it is the first time he has won the award. The Promised is a powerful and deeplyfelt exploration of the ongoing impact of colonisation on Aboriginal communities and their cultural heritage.

Professor Peter Doherty AC (LLD 2002) tackles climate change, one of the most pressing topics on the planet, in this year’s Doherty lecture. The event, which is attended by politicians, environmentalists and scientists, will be broadcast online for free. The lecture will be held at the Doherty Institute for Infection and immunity at the University of Melbourne. Doherty is one of the most influential scientists of our time and is known for his work in immunology and virology.

Molecular biologist and geneticist Dr Michael Goddard (BSc(Hons) 1972, PhD 1979) has been elected to the Australian Academy of Science. Goddard is known for his research into the genetic basis of cancer and the genetic improvement of livestock. The Fellowship of the Royal Society is made up of the most eminent scientists, engineers and technology leaders in the Commonwealth. Past Fellows and Foreign Members have included Newton, Darwin, Einstein and Hawking.

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Narrowing the reality gap

BY SIMON CORONEL
(BA, BE(SoftEng)(Hons) 2004)

In April 1999, I began the first year of a combined BA/BEng in Psychology and Software Engineering. On a whim, I also joined the Melbourne University Magicians’ Society. It was one of the 200 or so clubs and societies on display at first-year orientation week, and one of about 15 I joined with a desire to connect with interesting-sounding things on campus.

I had no background in magic whatsoever. Like many people, I’d had a magic kit when I was about 12, but nothing about it particularly resonated with me back then. The few magic shows I’d seen in my life just seemed like vaguely baffling show-off sessions that I couldn’t really connect with.

However, the people at the magic club seemed cool, and were offering to actually teach beginner-level tricks to people who joined. I figured learning a card trick might be fun, so I paid the $5 sign-up fee. I turned up to a meeting and, to my surprise, discovered a fascinatingly deep art and craft.

Most people have never actually seen a really good magic performance. I don’t even like using the word “magic” to describe what I now do professionally, because it carries a lot of the wrong connotations. I’ve spent almost my entire life, at heart, as a truth-seeking scientist/engineer. My initial interest in magic stemmed purely from a desire to understand what I’d just seen, and then later to share it in a way that leaves the audience understanding more, not less, about reality.

It was oddly fortuitous that just as I was starting to learn about magic I was also studying psychology and software engineering. The links between psychology and magic are well-documented. Illusions, in the “magical” sense, literally happen in the mind of the observer. You don’t make the coin disappear; you provide a set of visual stimuli that will create the impression in the audience’s minds of seeing a coin disappear. Making a coin disappear is impossible. Making someone “think” they saw it disappear is a complex and interesting challenge.

The links with engineering are more subtle. A good illusion, when performed properly, looks effortless. It’s easy to forget that there’s a huge amount of complexity behind the scenes. Some illusions are based on sleight-of-hand dexterity. Some are based on incredibly clever optical principles. Some are based on the subtle use of secret devices or obscure physics principles.

All of them, however, have a method. A method that needs to be designed, developed, tested, and executed near-flawlessly each time. To this day, when working on a new show, I still find myself thinking in terms of the lessons I learned when studying software deployment. Design, test, deploy ... and iterate.

Throughout university, magic was simply something that fascinated me. When I graduated, I briefly considered trying to do it professionally. Instead I got a graduate position at a business consulting company, which lasted six years. In those years though, the magic hobby grew. I started to win awards, and to get paid gigs. After six years of business consulting, I leapt from the safety of a corporate career into the maelstrom of professional showbiz.

That was five years ago. Since then I’ve performed in seven countries across four continents, and had far too many stranger-than-fiction experiences to even begin to describe here. Now, ironically, the majority of my income comes from corporations booking me to entertain, MC, or speak at their events – sharing the insights I’ve gained about perception, innovation, and things that seem impossible but aren’t.

“The links between psychology and magic are well documented,” says Simon Coronel.

Believe
A LITTLE GIFT CAN MAKE A VERY BIG DIFFERENCE

As one of four children growing up in regional Victoria, my parents didn’t have the option to financially support me in moving to Melbourne. Receiving the Mildura Alumni Scholarship changed everything. I feel very privileged to be able to study here. A lot of rural students don’t get this chance, and many people in the city take it for granted. I’m so thankful to everyone in the alumni community who contributed in order to give me this opportunity.

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