

# Adelaidean

News from the University of Adelaide

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brains

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weather

# QUEEN<sup>OF</sup> ARTS



THE UNIVERSITY  
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# >ADELAIDEAN



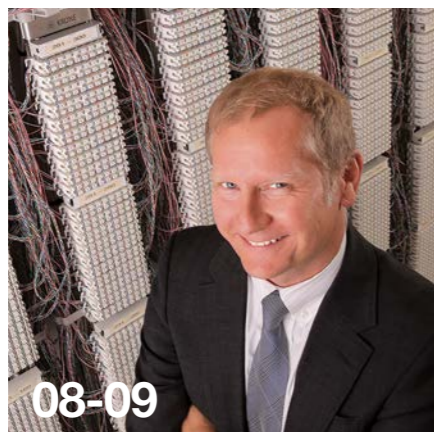
## INSIDE THIS EDITION OF ADELAIDEAN

Professor Jennie Shaw wanted to update the Faculty of Humanities and Social Sciences – so she changed its name back to Arts. Read how the dynamic Executive Dean invigorated research and teaching and empowered the faculty for the future.

It's not your imagination, our summers are becoming hotter and wetter. Using decades of data Professor Wayne Meyer explains the surprising changes that are occurring and how rain on the Mallee can change the world.

In six weeks, Associate Professor Mario Ricci will teach the basics of biology to more students than he has met in his entire career. And Associate Professor Kerry Wilkinson will explain the wonders of wine to people all over the world. Learn how the University of Adelaide's first MOOCs are changing teaching and learning forever.

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PHOTO  
Emma Gardiner

## SCHOLARSHIPS SUPPORT STUDENTS AND THE COMMUNITY

Emma Gardiner is studying at the University of Adelaide to be a teacher – which makes it even more fitting that she has a Principals Scholarship to help her with living costs and education expenses.

And what is extra special is that she is working to become a maths and physics teacher.

"I am doing a Bachelor of Teaching and a Bachelor of Maths and Computer Science. I really enjoyed maths in Year 12 and want to teach it myself," she says.

This is mathematical music to Australian education policy planners. As Chief Scientist Ian Chubb AC and all sorts of academic experts have long warned, we face a compounding crisis in science, technology, engineering and maths (STEM) education.

According to the Australian Mathematical Sciences Institute, across the country 40 per cent of mathematics classes in years seven to ten do not have a maths-trained teacher. This is a big part of the reason why advanced maths enrolments in Year 12 are down by 22 per cent since the turn of the century, which flows through to

universities, especially for females. The number of young Australian women with a maths degree is below the OECD, which means there are fewer maths and science trained graduates, and female role models, available to teach in schools.

To break this cycle we need Emma, and all the young women who she will help to follow her path for decades to come. As Emma says, one of the reasons she is enrolling at the University of Adelaide is because: "my teachers strongly encouraged me."

That she can study at the University is also an excellent example of how targeted scholarships help both students and society. Emma, who went to school at Torrens Valley Christian School, has a Principals Scholarship which she won because of her outstanding academic achievement and community service. Her scholarship provides \$5000 to help with living and study expenses in the first year of her double degree program.

But it wasn't the only reason Emma chose the University, "it's really sophisticated," she says. ♥

The University of Adelaide committed to doubling the number of scholarships for disadvantaged students by 2015 under the strategic plan, *Beacon of Enlightenment*.

The Principal Scholarship is part of the University's suite of support measures to ensure high achieving young people have access to higher education regardless of their background.



# QUEEN OF ARTS: WHAT WAS OLD IS NEW AGAIN

Professor Jennie Shaw focuses on the future – so when the University of Adelaide appointed her as an Executive Dean, she took her faculty back to the past – by changing the name of the Faculty of Humanities and Social Sciences to what it was for almost all of its very long life, the Faculty of Arts.

The change was just part of a reorganisation designed to invigorate a great tradition of teaching and research – for well over a century “Arts at Adelaide” resonated with the city, the state and scholars around the world. And Professor Shaw was determined to put the name and the achievements it stands for, back on the map – among brilliant researchers looking for a new home, and among the faculty staff who needed encouragement to explain their work to the world.

And also among prospective students, whose interest is the litmus test of an academic organisation’s standing in the community. “Our undergraduate entry scores are rising and applications were up last year, and this year – it is really comforting,” she says.

The fact that the faculty has responded to change so well points to an underlying strength obscured by perception problems. “Humanities faculties around Australia are ground-down, they are made to feel second class to science and technology, engineering and medicine,” she says.

“But you can’t assume people will know you are doing good work if you sit in your office writing. You need to teach and talk.”

“I knew the faculty needed to change as soon as I arrived in October 2013.”

“It had drifted for a decade and so I brought in an external review which suggested we had to turn everything upside down,” she says.

So she did, liberating her new colleagues and creating an environment to simply do their best. And listening to Professor Shaw it is easy to think it was as simple as that – because in the way she works, it was.

Professor Shaw is not burdened by boundaries – she has taught law at Flinders University, was a senior academic at the Sydney Conservatorium of Music (instrument: oboe, research passion: Schoenberg) and a member of the management team at the University of New England.

Organisations with difficult problems and perceived leadership instability do not distract her – she was at both the Sydney Conservatorium and University of New England during quite divisive times.

And she moves fast – working out what needs to be done, and then doing it.

The result at the University of Adelaide is a transformed faculty – in academic structure, in organisational resources but most importantly, in a strategic vision for teaching which is already increasing undergraduate demand.

A great many of the changes had to be explained to staff, like the decision to break up the School of History and Politics, with the former moving to the School of Humanities and the latter to Social Sciences. The history-politics combination was relatively recent and “had never really gelled,” she says.

Other reforms improved the way the faculty functioned – like creating a range of new teaching and administration management positions, now held by senior staff who teach as well as ensure their colleagues have the support they need.

But the big wins – and they are big – were about ensuring the faculty is best placed to compete for students and improve research. And then there is the extraordinary new compulsory course that epitomises the ideals of an arts education.

But for the faculty, general research is a challenge that must be met. “A strong humanities faculty does good research,” she says.

“The problem was our faculty was relying on its reputation, a lot of people who should have been applying for grants were not being encouraged.”

She is now selectively investing and expanding in research. “It takes time and money, you have to pick where you will thrive.”

One of those areas is demography where the recent death of internationally acclaimed demography researcher, Professor Graeme Hugo, “came as a terrible blow.” But with over 30 highly-skilled staff and postgraduates in his research centre, Professor Shaw says the faculty will recruit and move forward.

Perhaps the biggest change in the Faculty of Arts is the extraordinary new first-year course, called “The Inquiring Mind” and focuses on free speech and censorship, it is part of the small-group discovery experience, where every student learns how to research.

Professor Shaw, along with colleagues from across the faculty, taught it last year. She says she, and just about all her students, loved the experience. “It’s a classic arts subject, demonstrating what the degree is about.”

So in less than two years the Faculty of Arts is reinvigorated with new structures, new courses and a focus on freeing resources for teaching and research. Which raises the key question – where does she want it to be in a decade?

“Don’t laugh – but I want it to exist, to thrive,” she says. “A lot of universities are looking at closing areas in arts, so the faculty can’t be an add-on, it really needs to be strong in its own right.”

That means it must be innovative and energetic, in teaching and research. “When the car industry closes, education will be the largest employer in South Australia – you can’t think of what we do as safe and comfortable because it never is,” Professor Shaw says.

She would not have it any other way. ♥

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“A strong humanities faculty does good research.”

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PHOTO

Professor Jennie Shaw

“You can build brand new brain into old age.”

# WIRED FOR WONDER: GROW YOUR OWN BRAINS

After decades of helping organisations grow and change, Dr Fiona Kerr is working on ways we can improve the most complex information management and ideation system imaginable, the human brain.

Talking with Dr Kerr, the Systems and Neural Complexity Specialist at the University of Adelaide’s Entrepreneurship, Commercialisation and Innovation Centre, is uplifting and optimistic, which rather makes her point. With energy and enthusiasm for new ideas, deep self-awareness and respect for others, mature leaders can “grow their own brains” – and give others the means to do the same.

Leaders can actually “hot wire” whole organisations, she says.

The idea of neuroplasticity, that our brains change and adapt, is well understood but what fascinates Dr Kerr is neurogenesis, the way brains can grow new neural cells according to the amount of stimulation they receive. “We now know that you can build brand new brain right through life, even into old age, under the right conditions,” she says.

It is an extraordinary idea. An improbable one for people who were taught that we start life with the most brain cells we will ever have, then it is all downhill from there and the only way to cope is to stick with what we know.

But Dr Kerr says leaders with skills developed over time can use them to change organisations, and lives. “We are getting closer to identifying the complex chunks of key neurobiological processes that make people wise.”

Dr Kerr started studying how leaders can ensure organisations flourish or fail in the late 1980s with General Motors in South Australia.

Over many years of observation, and more recently PhD research, she came to understand that our brain chemistry is a critical factor in the way we learn, and how we learn from, and respond to others. “Some people make better leaders than others, not just because of the way their brains are wired but also because they are capable of building on what they have to begin with. We are wired for wonder and we can feel like this all of our lives,” she says.

But this is not enough, according to Dr Kerr; leaders who can grow their own brains with increased meta-cognitive capacity and complex schemata, and in turn can encourage this process in others, take decades of self-awareness to build on these meta-cognitive skills.

“Some work points to the possibility that people adopt the ideas, vision and terminology of strong, charismatic leaders through a neurogenetic process – when there is trust and a high level of connectivity between them, they lay down new neural nets which are almost identical when working together on new ideas and concepts. This can also happen in a close-knit team.

“So what seems like a shared idea or method can almost be seen as shared brain – indeed they are called ‘shared neural nets’. Further, neurons have been isolated in the brain which orchestrate or mirror physical behaviour, and influence trust, empathy, humour and intuition through fast intuitive assessment of complex social situations,” she argues.

Leaders have three core attributes – what Dr Kerr calls “emergent logic” – they are complex thinkers with sufficient experience to have a high level of ‘chunked’ knowledge, leaving them cognitively free to find patterns and see the big picture of what their organisation needs to do. Leaders are inquisitive and curious, they want to learn and they learn by doing. They are emotionally self-aware and empathic to the wants and needs, hopes and fears of others. They are also aware that organisations are “chaordic” (a combination of chaos and order), which is what they must work with. “It does not matter how people try to control and run things, this is what organisations are and you cannot stop people creating and changing,” Dr Kerr says. “The only choice is whether it will be positive or negative”.

Leaders with these high-level characteristics can build organisations that work in the same way as their brains – as complex adaptive systems. “Highly adaptive organisations have two critical requirements, which encourage creativity and innovation. The chief executive must be passionate about their organisation and able to communicate what it exists to do. They need to be clear on the values people must have to do their jobs. This gives people a roadmap of where they are going and how to act on the journey, leaving them room to plot a creative path. They need to know how to deal with task-based process while understanding and managing the emotional system of their organisation,” she adds.

In essence, they must inspire trust and keep inspiring – “They are pragmatic optimists”.

“While trust can create new brain, people are really good at picking falsehood and when they do, their brains release chemicals to stop new brain building. This is why scared people do dumb things; they cannot access existing knowledge, let alone build new brain,” she says.

And it is why managers who are linear thinkers and rely on hierarchies to understand organisations fail both as trusted leaders and creative managers. They find ambiguity difficult to deal with, are nervous with new ideas and they communicate their discomfort. Which means they shape their team in their own image – and as Dr Kerr points out, brains do not always grow, they can stagnate and even shrink.

“So it is critical for people to not only feel supported when they are nudged into new spaces, but for the leader and culture to welcome and openly engage with disconfirming information,” she says.

“Natural leaders can make themselves more so, and they can nurture and enrich others who can in turn develop their own abilities to discover, learn and lead.”

It is an immensely optimistic vision but one based in an understanding that a great deal of what was once called “character” is in fact “chemistry”.

“You can learn operational skills but great leaders exist because they are wired that way. The brain of a transformational leader lights up differently during various activities – the fascinating work ahead is looking at what that means for choosing and training leaders,” she says. ■

“While trust can create new brain, people are really good at picking falsehood and when they do, their brains release chemicals to stop new brain building. This is why scared people do dumb things; they cannot access existing knowledge, let alone build new brain.”



# BRUCE LINES HAS BIG PLANS FOR CAMPUS

Adelaide native Bruce Lines is home after decades in Queensland and Canberra. He's back to manage operations for one of the state's biggest businesses, with almost 4000 staff (full-time equivalent), 26 000 clients and a \$950 million budget – its premier university.

Mr Lines took-over in December, becoming the University of Adelaide's Chief Operating Officer and Vice-President for Services and Resources. He's glad to be back and delighted to be taking over at a university where the challenges are about improving on excellence rather than repairing poor performance.

"The University is financially very sound. It is making the right kind of investments in IT and its financial and infrastructure plans are all solid," he says.

But he acknowledges the University of Adelaide, like all others, faces uncertainty and must be ready to adapt, and fast, to an increasingly competitive environment, especially, he says, if government decisions mean students find themselves paying more to study.

It's a challenge he has the experience to meet. Mr Lines began his higher education career as a University of Queensland faculty manager at the turn of the century before moving to the University of Canberra in 2003, where he started as Academic Registrar. When Stephen Parker became VC in 2007 he charged Mr Lines with leading a range of projects to repair the University of Canberra's then struggling finances. Mr Lines became Vice-President of Operations in 2009, managing the budget and leading the University's administration.

But just as he has moved to a much bigger university he is now facing much larger challenges as the education environment changes and Adelaide has to expand its research base, improve teaching service and student support, and improve the quality of campus life.

For a start, the University must continue to capitalise on its standing as one of the Group of Eight research-intensive institutions, investing in the immensely expensive infrastructure needed to conduct high-end research, serve its mission to the state, and achieve its aspirations to perform at the top of international rankings.

But, he warns this is not all that is needed. "We must not lose sight of the possibility that in the future students could be paying increased dollars and will expect improved services," Mr Lines says.

So it is good that the University is already implementing the small-group discovery experience (SGDE) teaching model, which Mr Lines is convinced "is crucial to the student experience".

But ensuring the SGDE model has the necessary resources creates new complexities for the University's administration. For a start, there is ever increasing demand for IT services like mobile apps and bandwidth. While some universities assume the internet is for off-campus students, the University of Adelaide ideal is for them to be online while on campus. They watch lectures, read course material, and communicate about coursework to enable the small classes where they will participate in intensive teaching. "We are still a very face-to-face institution," Lines says.

This means ongoing investment in already strong IT infrastructure and a change in the size of classrooms to give the students great small group classroom augmented by electronic access to University resources.

The University is in good shape to accomplish this, already having commenced a concerted effort to improve performance. But there is no denying that it requires a large and continuing investment in resources. "We have moved from a poor rating to an excellent one on national surveys of staff and student satisfaction with IT. While we are putting most teaching content and lectures on-line there is also a lot of work we can do to make the students' administrative interaction with the University better and this will depend on both IT and process improvement," Mr Lines says.

For example, Mr Lines says the University needs to respond to student demand for services available via mobile devices – phone and tablet – "they expect to be able to view their next class, use a campus map and change details of their enrolment via phone," he says.



With students listening to lectures online while physically interacting with academics in small classes the University also needs to invest in new configurations of teaching space. "We need to refurbish our infrastructure," Mr Lines says. And he is committing to "spending less on big spaces".

This isn't the only change needed to make the campus more student-centric. Mr Lines puts it frankly, "many parts of campus are a bit too quiet".

"The main campus is just off the centre of the CBD but it isn't a destination in and out of itself, and there are parts that are isolated and under-utilised. We need more nodes to draw people in," he says.

This will require scarce capital, especially given the demands of the planned involvement in the new medical precinct and the recently announced dental clinic but student-focused facilities are essential given their increasing expectations.

This all puts pressure on the University to provide services as economically as possible and Mr Lines signals work to come on the structure of administrative services. "There is scope to look at organisational design principles, structure and where services are located, what should be centralised or de-centralised."

"We need to provide good value for money, with our best service models and practices replicated across all professional support areas – of course this is easy to say but hard to do," he says.

But he certainly is going to have a go. "At the end of the day the University of Adelaide has an obligation to find every dollar it can to spend on teaching, research and the quality of the student experience."

Finally, he is very conscious of the University's essential role in the state economy and keen to see it connect more with government. "Universities and governments in general are notorious for not working together but there is potential here for the University of Adelaide and state government to work together on developing the industries of the future," Mr Lines says, pointing in particular to health and medical research, science and technology. In Mr Lines' view, the University is a key ingredient to the future success of South Australia and he is keen to see the University of Adelaide have a seat at the table when it comes to the economic development of the state.

"The University has a lot to contribute as a partner in the endeavour of economic development; it is after all a significant generator of the new knowledge and technologies which will form the foundations of the industries and sectors to come." ♥

PHOTO  
Mr Bruce Lines

"The University is financially very sound, it is making the right kind of investments in IT, and its financial and infrastructure plans are all solid."



# HOT AND WET AND HERE TO STAY

FROM GRAZIER TO  
GRAPE GROWER THE  
CLIMATE IS CHANGING  
WHAT WE GROW

Professor Wayne Meyer was watching the weather when the millennium drought ended and he noticed something new was happening. A rain event from Indonesia swept down from the northwest of the continent and into South Australia in the summer of 2011. His weather station monitored what happened – it rained and rained, in what the carefully spoken professor calls “a significant event”. And then it happened again and again – the past summer saw what once would have been called unseasonably strong January falls. In fact, in three of the last five years there was good summer rain.

“It’s the direct result of climate change,” Professor Meyer says.

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“Ocean temperatures are changing and our climate projections show more intense summer rain and lower falls in winter and spring.”

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“Ocean temperatures are warming and the climate projections show more intense summer rain and lower falls in winter and spring,” he says.

This is good news for the pastoral regions of the state, the University of Adelaide resource management scientist says. More summer falls will mean better ground cover as seasonal grass species revel in the rain, here and into northern Victoria and south western New South Wales. So much so that Professor Meyer says what is occurring is a world-changing event, literally.

The Mallee took six months to respond to the 2011 summer rains but when it did it accompanied the huge growth of inland grasslands, which sucked a massive amount of CO<sub>2</sub> out of the atmosphere, he explains.

“It actually caused a small blip in the planet’s CO<sub>2</sub> signature. A change in vegetation cover in inland Australia rates on a world scale,” Professor Meyer adds.

But not everybody wins with wet summers. The state’s agriculture and horticulture crops require rain in winter and spring; grapes and cherries, for example don’t cope with hot and wet summers.

Growers need to work out how to adapt, Professor Meyer says.

That we must all learn how to adapt is a theme throughout his work. For decades he has watched the weather, and how we interact with it and the change to the landscape. This in turn shapes what we can grow, sustainably and otherwise.

“If we are hard-nosed about it, agriculture as it is practised now isn’t sustainable. Our rate of soil loss exceeds soil formation and we use more energy than we capture,” he warns.

Over three decades Professor Meyer has built, maintained and analysed models that make his case.

With a PhD in agronomy from the University’s renowned Waite Research Institute he has observed and analysed irrigation and evaporation, salinity and sustainability in the US and Africa, but mainly in the Murray-Darling basin and across other parts of South Australia.

Professor Meyer has taught and researched at the University of Adelaide since 2007, when he took up the inaugural chair of natural resource science. He now has two major research projects underway.

One is the Ozflux micrometeorological monitoring station, just outside Renmark, which continually measures exchanges of water vapour, carbon dioxide, and energy between the terrestrial ecosystem and atmosphere. This facility plugs into a national, and in turn, global network and provided the data that showed the planetary impact of the Mallee and grassland vegetation growth following the 2011 rains.

His other project is the Landscape Futures Programme which incorporates landform and soil, land and water use, climate and crops to assess the impact of agriculture and changed vegetation. Built over 30 years, it can model the impacts of what communities want from their environments and what is possible by cooperating, rather than trying to conquer, the landscape. “We can present options for the future and show how we get there,” Professor Meyer says.

So how are we doing? For the River Murray the core issue remains: “the resource is finite and if you want to maintain the river system there is only so much water you can take out. There is still too much water extracted to keep the river and floodplain in good condition,” he says.

But things are on the mend as research helps change community thinking. “The Murray isn’t out of the woods but since rehabilitation started in the ‘70s it’s been a great revamp,” Professor Meyer adds that putting a price on water has certainly helped, by making people aware of its value. “We got through the last drought because of water trading.”

And our grasp of groundcover has also made a difference. “There’s been a revolution in agriculture in the last couple of decades. Conservation agriculture, with minimum tillage, can have a huge impact on protecting soils,” he says.

Professor Meyer contrasts the great federation drought and the recent, and far less damaging millennium dry. “We had a lot less stock, a lot less rabbits and far more cover on the land, which is the most important thing you can do.”

He adds that farmers can adapt to summers with more bursts of extreme heat by using shading, but only if they can grow sufficiently profitable crops to cover the high capital cost.

But understanding that we must adapt to the environment, instead of trying to bend it to our needs isn’t universal. Professor Meyer says he still sees farmers cultivating land for weed control and destroying any vegetation cover. “People are still working land which is pre-disposed to blow.”

And old problems that are no longer as apparent are dormant, not defeated. Such as dry land salinity in irrigation areas. “When we get the inevitable wet period of seven or eight years it will reappear. Water evaporates but salt stays and all water includes salt,” he says.

Which is what makes his modelling so important. It can show the outcomes of all sorts of scenarios: “Now instead of asking what people want from the landscape we can ask what they want to experience. It is a way of finding out what people really value,” Professor Meyer says.

As his data demonstrates: when the climate changes, adaption is everything. ♥

# REAL AND PRESENT DANGER: DEFEATING THE TERROR THREAT IN AUSTRALIA



Associate Professor Felix Patrikeeff has studied a century of terror attacks and he has no doubt that Sydney siege killer Man Horan Monis was a terrorist. "He was an angry misfit but he had political objectives and aspired to be recognised by holding people. That's good enough for me to define him as a terrorist," he says.

And David Olney warns that we will see his kind again. "It's amazing it took as long as it did. There are always people who try to use fear and violence to make the world more like they want it to be," Mr Olney says.

But while the two University of Adelaide terror experts accept the threat is real and broadly agree on how we can contain, but not eliminate, what are all but inevitable future attacks, subtle distinctions emerge as they talk about the scholarship that informs their judgements.

Associate Professor Patrikeeff is urbane and erudite, a scholar whose interest in terror originates far from the modern Middle East, in Manchuria a century past, where the Russian and Japanese Empires fought both each other and Chinese rebels, the Red Beards. While working on his doctorate at St Antony's College, Oxford, he became interested in the broader security issues of

terrorism as a member of the Oxford Intelligence Group. "This group got me interested in strategic culture and how people are motivated to take up action," he says.

And for all the differences between Manchuria a century ago and the Middle East now, he says there are similarities in the tactics of terror. "The Red Beards terrorised the Russians and Japanese by kidnapping and holding people to ransom. They changed the nature of politics in Manchuria," Associate Professor Patrikeeff says.

Mr Olney came to the study of terror from a very different direction – novelist Albert Camus, one of the subjects of his PhD, was a Frenchman from then occupied Algeria, which endured a long terrorist campaign as part of the push for independence from France. "My interest in terror comes from a pursuit of freedom, which they did not know what to do with," he says.

Both scholars share the idea of the terrorist as shaped by rage that lacks political objectives that are either achievable or enduring. The ISIS terror organisation, which is now fighting to create an Islamic state in Iraq and Syria, and inspires the murderous Boko Haram insurgency in Africa, wants to create a theocracy

modelled on the caliphates of the golden age of Islam. But ISIS fails to see the caliphates were well-ordered states, which endured because of stability and tolerance. "ISIS can't tolerate difference. It has no capacity to build a state and will always have a dead-end economy. In the end it will devour itself because it will always pursue glory on the battlefield," Mr Olney argues.

Associate Professor Patrikeeff suggests that while ISIS is "infinitely flexible" it cannot tolerate dissent and its desire for "a caliphate of terrorism" means it must keep expanding, as Boko Haram does in Africa. "ISIS wants to control territory. It's like Genghis Khan quickly terrorising opponents and moving on," he says.

If this all sounds like it is a long way from Australia, both men argue that in fact the threat exists here. "Monis was an angry misfit who found something to identify with, he is like the young men going to Syria who find redemption and purpose in terror. ISIS uses social media to radicalise individuals. There are individual pockets of radicalism around the world that can hook into franchises," Associate Professor Patrikeeff says.

"Young men looking for a rationale for brutality can fly from Sydney into the caliphate," Mr Olney adds.

Or they can act here. The murder of English soldier, Lee Rigby, on the streets of London in May 2014, "showed what can be done with a camera and a meat cleaver," Mr Olney adds.

"Australia is far easier to attack because we are not used to the level of radicalisation that the UK and Europe are," Patrikeeff warns.

But while we cannot eradicate the risk of more attacks in Australia we can reduce it. Associate Professor Patrikeeff wants increased intelligence, on and understanding of, Australians who go to the Middle East to fight. "We don't know anywhere near enough about what drives people to violence and we need to study what can be done to stop radical preachers speaking to vulnerable audiences," he says.

And he draws a parallel between containing potential terror attacks by deploying enormous resources and reducing alcohol fuelled violence in Sydney's Kings Cross. "It seemed really excessive but it was the measure needed," Associate Professor Patrikeeff says.

Mr Olney agrees on the measures to suppress ISIS and its allies. "We need to cut off their money, cut off their supply of recruits," he says. "It's not productive to call ISIS a 'death cult' as Tony Abbott did". Associate Professor Patrikeeff agrees, pointing to the way the Malaysian and Indonesian governments pay close but unobtrusive attention to mosques and religious schools.

However Olney worries whether Australians will respond aggressively to the threat of terror attack. "Could we end up surrendering political and social freedoms in pursuit of an impossible level of community safety, in contrast to the Europeans who demonstrate society can cope with terrorism? The attack at Charlie Hebdo magazine in Paris was traumatic but the French state is not at risk, the economy will not collapse, people will keep going to work. We must not go to extreme restrictions on our freedom," he says.

But in the end both believe that education and awareness can do most to reduce ISIS's appeal. In Manchuria, Associate Professor Patrikeeff warns the Russians did best in dealing with the Red Beard insurgents who used terror tactics. "The Russians learned Chinese and engaged with the Chinese living in Red Beard territory while the Japanese just wanted to fight to control territory they occupied, and could not cope with Red Beard tactics," he says. And Olney suggests the lessons of the French Revolution apply to ISIS and its supporters. "I'm interested in the English anarchist philosopher, William Godwin, who observed the French Revolution and saw that using violence to achieve utopia means violence will always follow," he says.

"We can't appease the ISIS caliphate but it can be contained. That may be enough because groups with a paranoid ideology become a danger to themselves," Mr Olney says. ▀

"We don't know anywhere near enough about what drives people to violence and we need to study what can be done to stop radical preachers speaking to vulnerable audiences."

PHOTO

Sydney Siege Martin Place memorial



# ALL CREATURES GREAT AND SMALL

## PHOTO

Professor Wayne Hein with 6th year students Hannah Cohen and Chelsea Fowler

For 130 years, South Australia grew rich thanks to what people learned at Roseworthy Agricultural College. Professor Wayne Hein is now charged with keeping the garden of knowledge growing at the state's current home of vet science and animal husbandry, the University of Adelaide's School of Animal and Veterinary Sciences.

If Professor Hein feels the pressure at the end of his first week on campus he does not show it, but he does acknowledge the heritage he must protect and the achievements he intends to extend.

As a boy originally from a Murray Bridge farm, who spent years growing up in the Barossa, where he has returned to live, Professor Hein is very conscious of what he is working with: "Roseworthy has a very long legacy," he says. In the nineteenth century the agricultural community in South Australia was quick to recognise the need for education. Other Australian colonies followed its lead. In fact Roseworthy was one of the first agricultural colleges in the British Empire.

And the love of its lineage continues today. "Roseworthy has a very strong alumni. A lot of people are attached to it and expect it to expand."

With two big, and newly combined jobs, Campus Dean and Head of the School of Animal and Veterinary Sciences, his is a task for a researcher and teacher, an entrepreneur and diplomat.

One primary set of challenges is campus focused.

"There is much more to Roseworthy than the University – it is also home to partner researchers, including a member of the federal government's prestigious cooperative research programme, as well as a range of state research facilities in pigs and poultry, plus grain and animal science centres," says Professor Hein.

In addition to the veterinary school, Roseworthy has 300 animal sciences students being educated to work on genetics and breeding of flocks and herds in commercial agriculture.

Hein also points to Roseworthy's potential, "we have 4000 acres of good farmland, there is definitely scope to grow".

But while he must ensure people who know and love the campus are comfortable now and optimistic about the future he also has to ensure it appeals to others who think it is remote. Certainly it was once, but that was before people from nearby Gawler could commute the 50 kms to work in Adelaide. "50 kms – it's a doddle," Professor Hein says.

It is also important to remind communities in the north of the city that the campus offers convenient pet care. Veterinary science students learn by working with sick and

diseased animals and while Roseworthy has easy access to farm stock, cats and dogs are needed. "Caseload is the currency of vet schools, the accreditation authority demands it," Professor Hein says. "And it's good for the community who can visit general and specialist vets with their animals as part of the leading program," he says.

This makes it essential to build relationships with local vets so they know about Roseworthy's specialist skills and complex resources – no suburban vet has a CT scanner that is big enough for a horse.

Roseworthy does, with an impressive piece of horse-sized kit arriving just weeks ago. This new state-of-the-art equipment means Roseworthy can provide South Australians in general, and vets in particular, with top quality diagnostic imaging so animals of all kinds and sizes can receive the most appropriate and highest quality clinical care.

"It also means we can provide our veterinary students with the most up-to-date education in diagnostic imaging, and provide a new research tool for our animal scientists," Professor Hein says.

Professor Hein says he faces perceptions, as part of the new role, that are more apparent than real.

There is an argument in the profession that Australia has too many vets. Professor Hein is not so sure: "If there is a problem with jobs it might be in small animal practices in eastern state clinics."

"Adelaide has a deliberate strategy to train for regional areas, our graduates have no trouble finding work," he says.

Certainly young people think so. There are four applicants for every one of the 50 places in each year's veterinary school intake and while academic entry scores are important, the University is very careful about whom it accepts, with an interview and written submission. "Many of our students come from farms and have an emotional attachment to animals," Professor Hein adds.

But although there is demand, Professor Hein is happy with existing local enrolments, although he can see the school easily attracting more fee-paying students.

"The small-animal side is readily transferable and in terms of animal production systems there are vast parts of Africa and China with similar dryland agriculture."

It's a vision of service as old as Roseworthy itself, connecting South Australia to the wider world, in the service of ethical animal husbandry. ♥

"Adelaide has a deliberate strategy to train for regional areas, our graduates have no trouble finding work."

# WORLD OF WINE: SCIENCE TO THE CELLAR DOOR

“Academics must construct the learning task for today’s students. Teaching by reminiscence simply doesn’t work any longer.”

Over just five weeks, Associate Professor Mario Ricci will teach the basics of human biology to more students than he has taught in his entire 15-year academic career.

In the same period of time, Associate Professor Kerry Wilkinson will explain the chemistry of wine making to tens of thousands of students across the world.

With teams of colleagues, the two academics have created the University’s first two Massive Open Online Courses (MOOCs) and in the process put the University of Adelaide’s expertise before a global audience in a world where knowledge is currency.

“These MOOCs showcase our world-leading research,” says Deputy Vice-Chancellor (Academic) and champion of the MOOCs project Professor Pascale Quester. “Knowledge is a global construct and MOOCs are an investment in human capital.”

An investment the University is making in excellent company, as part of the edX consortium, a MOOC platform founded in 2012 by the Massachusetts Institute of Technology and Harvard University. The elite partnership now offers courses from 60 global education leaders, which three million people study in English, Hindi, Mandarin and Spanish.

Other MOOC providers are various universities groups and private providers who package courses for institutions. While some aspire to making money (by providing certification for students who pass a course, for example) courses that are free for all are the norm.

Professor Quester explains why this is so in the University of Adelaide’s case. “Yes, MOOCs are expensive, but we are not doing it for profit,” she says. “They showcase our world-reaching research, and increase our profile. But above all, they encourage pedagogical curiosity and experimentation amongst academics and we can extract fundamental ideas about the learning process from the data MOOCs provide.”

And this information applies on campus as well as online. “Academics must construct the learning task for today’s students. Teaching by reminiscence simply doesn’t work any longer,” she says. However, Professor Quester is firm MOOCs aren’t a substitute for on campus courses – you can’t do a full semester course in five or six weeks. However, there is a case, she says, for leveraging content created for MOOCs into on campus courses.

And while MOOCs may not be the way of the higher education future for students who commute to campus, they have transformed another great teaching tradition.

The idea of the MOOC is as old as distance education. But where off campus courses were taught via mailed material – or, if students were lucky, via radio, TV broadcasts and the occasional phone hook-up – the MOOC has exponentially increased access to, and improved the quality of, university courses.

The MOOC is available to anyone, anywhere, with a fast-ish internet connection. This means lecturers can teach to camera, but also use videos, interactive illustrations and animations, which students can consume at their own pace. Associate Professor Ricci says the biology MOOC includes dozens of short videos, which are essential. “Students don’t want to sit through a 50 minute narrated PowerPoint,” he says – it was this thinking that had already led him to create a YouTube channel for his on campus course.

Just as important, MOOC students can talk to each other online. Associate Professor Wilkinson says her course includes videos on the sensory experience of wine tasting. “We hope students will use the discussion boards to talk to each other and compare tasting notes,” she says.

When oenophiles enrol in Associate Professor Wilkinson and her colleagues’ six-week course, “World of Wine: From Grape to Glass”, they will learn about the joyous skills that take science to the cellar door. The course starts with an overview of wine styles, followed by a fortnight on the art and science of growing grapes and managing vineyards, and another two weeks focused on the craft and chemistry of actually preparing a vintage and how great winemakers present their work to the world, both in terms of physical packaging and marketing. It will then end with examples of how research can be used to support the future sustainability of the global wine industry.

As the first MOOC of its kind, the course will open up wine education to a global audience and provide new teaching tools. “One of my objectives as an academic is to develop online resources that support student learning, and we’ve developed an online wine-tasting tutorial, with a glossary of wine descriptors for the course. This is one of the first, if not the first, comprehensive online guides to wine tasting,” Associate Professor Wilkinson says.

And she expects it will appeal to an enormous international audience, including the emerging Chinese market for quality wine. Professor Quester agrees: “I suspect enrolments in this MOOC will really rocket. It has the potential to break edX enrolment records,” she says.

Associate Professor Ricci’s Essential Human Biology: Cells and Tissues course will also appeal to people, just not as many thirsty ones. While there are other biology MOOCs, he was surprised to find that his will be edX’s

first on human biology. As such, it will appeal to people interested in understanding how the human body works and is affected by disease. And, it will meet a need for commencing university students, including some at the University of Adelaide, who need a bridging course to get them up to speed on the basics.

“Our MOOC covers the two fundamental concepts in human anatomy, the structure and function of cells, and the four basic types of tissue in our body. It’s a snapshot of the core concepts,” he says.

The mass of digital teaching material took six months to develop. “It was exciting and challenging because everything was new,” he says. “Sure, we could have used some pre-existing material but we knew we needed to create our own content from scratch.” It was a decision that paid off when on campus students evaluated the course (an edX requirement). “They were stunned, saying they would love to have this material in face-to-face courses.”

“Some staff have asked me why the University is investing in MOOCs when it is not charging for it. I point out that it is a fantastic way for the University to promote its research, it builds staff capacity to create engaging content, and the next generation of students expect content to be online,” Associate Professor Ricci explains.

This may explain why the University of Adelaide has three more MOOCs set to follow the initial two in first semester this year; on coding, cyber warfare, and reviving disappearing languages – with more ideas in development. ▀





PHOTO

Professor Guy Maddern

“When I was training in the 1970s, patients aged over 100 were exceptional. Now they are far more frequent...”

## FROM RESEARCH LAB TO HOSPITAL WARD GUY MADDERN IS ALWAYS ON CALL

Despite the demands of an ageing population and huge expectations on public hospitals, South Australia can meet the emerging health challenge, says Professor Guy Maddern.

And none are better placed to assess what the state needs to do and how the University of Adelaide can help it happen. Professor Maddern has four degrees from the University, where he has worked for over 20 years. He is concluding work this year on three major National Health and Medical Research Council projects and completed an Australian Research Council funded study on surgical innovation in 2014.

Among his day jobs, Professor Maddern is a Professor of Surgery at the University of Adelaide, Director of the Discipline at the Queen Elizabeth Hospital and a Clinical Director at the Central Adelaide Area Health Service.

He is also Head of Research at the Basil Hetzel Institute (BHI), the research arm of the Queen Elizabeth Hospital. The Hospital is a major teaching venue for the University's School of Medicine.

It all combines to give him a system-wide insight and keeps him focused on what research is accomplishing and what it could do with more resources.

It's a huge role burdened with life and death responsibilities. And yet Professor Maddern remains a pragmatic optimist, aware that Australian medicine does well, but conscious of what it can do better.

He certainly believes the University's researchers are performing well above world standard.

The BHI, named after prominent South Australian medical researcher Basil Hetzel, has a \$21m annual research budget and is 90 per cent occupied by University of Adelaide staff and students. “We have masters to post-doctoral people working across the spectrum of clinical research,” Professor Maddern says.

“Much of our work is around cancer, managing, identifying, destroying tumours in ways that don't require mutilating invasion. We like timely treatment that gets patients home quickly,” Professor Maddern says.

“When I was training in the 1970s, patients aged over 100 were exceptional. Now they are far more frequent – many are frail but they are ‘with it’, and do well,” he says.

However even with increasing demands from an ageing population he is optimistic that the challenges can be met.

To control cost increases and improve productivity he points to information, education and expectations as the issues that shape the future of care.

Professor Maddern also says the profession must look at the way doctors are initially educated. “Students need to have more focused experiences.” He points to close contact with GPs and rural placements as “very positive” examples of what is important.

And then there are the assumptions medical professionals and patients make about appropriate care.

“The Australian health system has to look at whether we add value to care and treatment – we should not just do things because we can,” he says.

However age is not an inevitable arbiter of what treatments are appropriate. “We operated last week on an 84 year old with liver cancer. Lots of patients like this not only survive surgery but go home and continue to lead productive lives,” he says.

In the end it seems, there is a lot to like about the way Adelaide manages hospital care. “There is good evidence we use more acute beds than comparable environments – then again the United States has very short hospital stays and it spends a higher share of GDP on health.” ■

# NO LAUGHING MATTER: HOW WE CAN LEARN FROM COMICS

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You can't use Spider-Man to teach complex academic disciplines, says PhD student Aaron Humphrey. For a start, there is no point in drawing a traditional lecturer, even one with super powers, delivering a traditional lecture.

But you can use the format of comics in training and education. In fact people have been doing just that for 70 years, and our social media revolution, where text and images integrate on screen, all but ensures a golden age of comics in education.

Mr Humphrey, an American-born South Australian came to comics from film school, a reversal of the more regular route, after doing the prestigious screenwriting degree at Chapman University in Orange County, California. "I liked the way the reader has more control in a comic book than of a film. You consume film privately, in cinemas at least, and talk about them after but with comics you talk as you read and everybody constructs comics differently."

Mr Humphrey makes his case by practising what he preaches in his doctoral research on using comics in education. He reworked a chapter of his thesis from 65 pages of 15,000 words into a 22-page comic, which is one of two comics-style articles by Humphrey scheduled to be published in academic journals later this year. "Increasingly, serious journals are presenting original research as comics – it allows access to different modes of presenting and thinking about information," he says.

Comics are also used widely in medicine to educate patients or help doctors understand patient experiences. The growing 'Graphic Medicine' movement includes a conference, last held at Johns Hopkins University, where Mr Humphrey gave a presentation about a comic he was commissioned to create by Mackay Base Hospital in Queensland, which is being used to help new doctors deal with stress.

"People are not as sceptical as you might think. I am always hearing examples of comics in education. And we are moving to image-based communications in daily life, on our phones and the internet. Much of our literacy is now visual."

"Comics are also congruent with the way people express themselves," Mr Humphrey adds. This explains why the Mackay Base Hospital comic worked – a survey of the interns who received it showed them feeling better prepared for the emotional challenges of hospital life than previous cohorts who were given conventional texts.

While education comics might seem a contemporary creation of our image-rich, text-light, screen-focused Facebook age; Mr Humphrey says they are older than Spider-Man. A founder of the graphic novel genre, Will Eisner (and creator of "masked crime-fighter", The Spirit), started an education comic, Preventative Maintenance Monthly, for the United States Army in 1951, which still runs today.

It's easy to understand why these graphic training manuals work; the comic format breaks down complex information into images and text, which readers can pour-over until they get it. But the format also works with abstract ideas – which Mexican artist Eduardo del Rio, better known as Ruis, realised with his genre-creating primer, Marx for Beginners. Ruis created a learning environment "where abstract ideas and theories can be observed, experienced, and reflected upon in order to construct knowledge," Mr Humphrey says.

Mr Humphrey says comics are inspiring because, "they give us a way of showing what we *mean* rather than just telling it. They give us tools to do different things in regard to the functions of language."



If anybody thinks images just over-simplify ideas and information that is better conveyed by spoken or read text, Mr Humphrey suggests they look at a map: "You could not write a map out as text, it would be far too complex."

As for anybody who assumes comics are easier to produce than traditional textbooks or lectures they should try it. "Writing takes a style of language, when you break it apart for a comic you are not just changing the presentation you have to re-think the process."

For lecturers who know how to use the form, comics are especially suited to undergraduate teaching.

"They make you think more about what you are saying, they don't suffer from the elliptical nature of academic writing, they have a way of cutting through extraneous stuff and getting across hard ideas."

Comics are also terrific teaching tools. The format is super-suited for presenting complex information – charts, diagrams and texts are all easily combined in a comic format, which is especially useful for slides in lecture presentations.

So what disciplines would he like to see a textbook or course notes in a comic format? Mr Humphrey says he would like to write a comic book for his own field of media theory and that many fields, from maths to epistemology, would suit the format.

Which raises the inevitable question, while he can write academic comics, can he draw? "I am not fantastic, but I can express myself as a cartoonist," he says.

Not to worry, it's the ability to teach by integrating image and text that is the big picture when it comes to university comics. ♥

"They (comics) give us a way of showing what we *mean* rather than just telling it."



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OF WHAT WE  
DON'T KNOW.

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