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Encounter

NEWS AND VIEWS FROM FLINDERS UNIVERSITY

Inside this issue

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Professor Graeme Young was honoured with the Award of *South Australian Scientist of the Year in 2013*.

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Artist's impression of Tonsley building
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Flinders actor gets a view from the top

Ken Yamamura's first film role was in a small-scale independent film in Adelaide; his second was in *The Wolverine*, a Hollywood blockbuster with a \$US120 million budget.

The Flinders graduate was back home in Japan when he won a part in *The Wolverine*, an Australian-American co-production starring Hugh Jackman, which was released in Australia in July this year. The Fox Studios film, one of a series based on Marvel Comics superheroes, has grossed nearly \$375 million world-wide.

Ken, who finished the Flinders drama course in 2010, was chosen from hundreds of aspirants to play the movie's villain, Yashida, as a young man.

Ken originally travelled to Australia in 2005 to learn English and look for an acting school; he settled on Flinders. Unconfident of his spoken English, in 2006 he lived on campus and studied in a Bachelor of Arts for a year before successfully auditioning for the Drama Centre.

Even then, he found acting in a second language to be a struggle.

"When I went to see a play, I usually had no idea of what was going on, but I guess I must have picked up some English on the way," he said.

Ken returned to Osaka after completing his course, arriving just before the Fukushima earthquake in 2011.

As one more Japanese actor among the thousands in Japan, finding work was a tough prospect. In the hope of snaring a role in *The Wolverine*, which he had heard would be shot in Japan, Ken sent out dozens of letters to directors, producers and casting directors.

"I knew they would require Japanese actors, but I didn't hear back until a month before shooting was due to start," he said.

He travelled two hours each way to Tokyo to attend the audition, which lasted just two minutes.

Ken believes his success in winning the role was partly attributable to a lucky physical resemblance to the actor who played the older Yashida.

"The casting director said I was good, but I know there were so many great actors out there who auditioned for the same role."

The young Yashida appears twice in the narrative – in the film's early flashback scenes he is a young Japanese officer shielded by Logan (Wolverine) from the blast of an atomic bomb. He reappears at the film's climax when the aged and murderous megalomaniac Yashida is (very) temporarily rejuvenated.

The location shoots in Sydney in late 2012 brought Ken back to Australia, where, he says, his familiarity with the country helped head off any nerves on set.

Ken found working alongside Hugh Jackman to be an "incredible" and very instructive experience. He said Jackman is highly dedicated to his craft: "I could see why he is right up there."

Since *Wolverine*, Ken has had a minor role in another Hollywood film, this time in Canada, and is also in demand for more auditions. Currently, though, he is working as a plumber.

"Many actors start to get lots of work suddenly and lose their feet on the ground, but I have to survive doing different things every day, so that keeps me motivated."

Charles Gent



Hugh Jackman in a still from The Wolverine
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Destined to make a difference

Raised by parents who, as Salvation Army officers, dedicated their entire lives to helping the less fortunate, Graeme Young (pictured) seemed destined to follow in their footsteps.

Honouring the community-conscious family tradition, he graduated from Melbourne University with a medical degree in 1969 and was posted to Papua New Guinea as a Regimental Medical Officer to a training battalion near Port Moresby when called up for National Service the following year.

During this placement he cracked an ancient Papua New Guinean mystery, which became the catalyst for a distinguished career dedicated to solving the mysteries of health science.

“We were seeing side-effects of a drug to treat leprosy, which was a major problem at the time. I was doing medicals on every native PNG soldier coming into the army and I saw the chance to identify the reason,” the now Professor of Global Gastrointestinal Health at Flinders University recalls.

“They thought the explanation was an inherited gene (G6PD) defect so I developed a simple blood test and plotted the geographical/tribal distribution of this gene deficiency, finding that it was particularly common in natives from coastal regions because it protected them against malaria,” he says.

“But we also discovered a high occurrence in native soldiers from a specific region in the Highlands, which didn’t make sense, so I consulted an anthropologist who became very excited because according to folklore, this tribe had moved to the Highlands 300 years earlier and I had just provided the proof.

“It was then I realised that research had unexpected exciting consequences as well as being able to contribute to medical knowledge. I realised I wanted to do more than just be a doctor.”

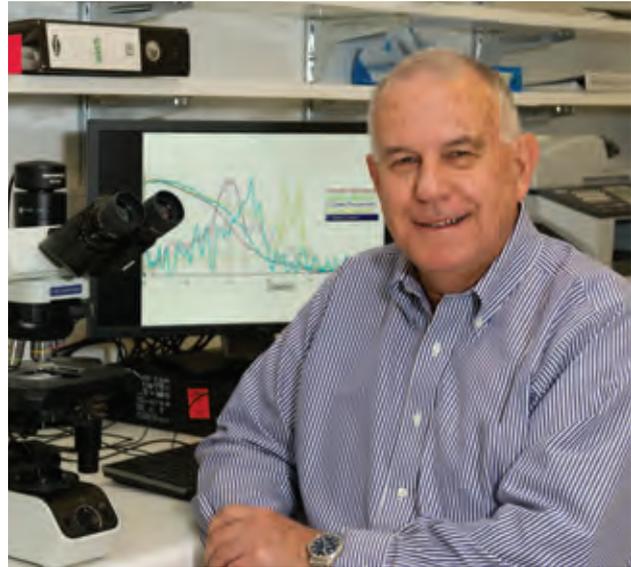
Since then Professor Young’s research has gone on to influence and change entire healthcare systems on a global scale, prompting the Government of South Australia to name him the 2013 *South Australian Scientist of the Year*.

Announced at the Science Excellence Awards in August, the prestigious title recognises Professor Young’s instrumental role in developing the National Bowel Cancer Screening Program, as well as his tireless efforts to eradicate infant deaths from diarrhoea in developing countries.

He was also acknowledged for his integral part in establishing the Flinders Centre for Innovation in Cancer, particularly the third-floor Cancer Prevention Unit where he is based.

The title has gone to a Flinders researcher for two years running, with Professor of Biomedical Engineering Karen Reynolds named the 2012 *SA Scientist of the Year*.

Professor Young – who became the foundation Professor of Gastroenterology at Flinders and Regional Head of Gastroenterology and Hepatology for the Southern Adelaide Local Health Network in 1997 – says he is particularly proud of his teams’ contributions to bowel cancer screening becoming an established part of healthcare in an increasing number of countries worldwide.



“As a researcher it’s not often you get to see your work translate to changes in health care systems – there’s a huge gap between lab research and tangible community benefits.

“My research teams, to whom most of the credit really belongs, are one of the few to see their innovations and discoveries become not just practice but medical policy, on a global scale.”

As the chief investigator on a major international project, Professor Young is also influencing the global strategy on infant deaths from diarrhoea in developing countries by improving the current standard treatment using resistant starch and developing preventative measures to combat zinc deficiency.

Together with international colleagues, his teams have received almost \$14 million in research grants from the Bill and Melinda Gates Foundation and studies are currently underway in Bangladesh, Malawi and India to gather the information needed to reshape global policy.

“Science is one of the main ways we can improve society and enrich lives, including that of societies less fortunate and less empowered, and I am truly privileged to have been involved in several scientific endeavours where our initial solutions have provided direct benefit, both locally and abroad.

“But I couldn’t have done it without the skills and knowledge of the teams I work with so any award I receive is as much for them as it is for me.”

When he’s not embarking on the latest lab breakthrough, supervising PhD candidates or writing journal articles, Professor Young enjoys gardening and travel – although even his holidays have a research focus.

“I find travel to other countries informative and stimulating. It gives insight into how other societies function and this sets the constraints and opportunities around how one implements new programs for improving health.

“It is also stimulating in a way that opens the mind and promotes creativity; I have had some of my best ideas while travelling.”

Emily Charrison

No looking back for Flinders fossil hunters



Palaeontology, a discipline usually associated with creatures being frozen in time, is having an unprecedented growth spurt at Flinders University.

From a cohort of two postgraduates and one part-time research assistant less than five years ago, palaeontology at Flinders has grown to two postdocs, five PhD students, four Honours students and several research assistants and volunteers under the supervision of Associate Professor Gavin Prideaux (pictured).

There's been a further boost, too, with the arrival in early 2013 of two internationally-renowned researchers: Professor John Long, who was appointed Strategic Professor of Palaeontology after three years as Vice-President of research and collections at Los Angeles County's Natural History Museum; and Dr Trevor Worthy, who moved from the University of Adelaide after he was awarded a Vice-Chancellor's Research Fellowship.

The team has already outgrown the recently-refurbished palaeontology lab. In coming months, they, their cabinets full of fossils and a small mountain of equipment will move into more spacious new digs, two floors up in the School of Biological Sciences building.

On the day *Encounter* visited, the lab was a hive of activity. The hubbub was due to CAVEPS 2013, the 14th biennial Conference on Australasian Vertebrate Evolution, Palaeontology & Systematics. This year's meeting was the largest in the event's 26-year history with some 170 delegates from Australia, China, the USA and New Zealand participating.

The centrepiece of the conference was the Stirton Symposium, commemorating the 60th anniversary of the famed expedition in 1953 to central Australia that is credited with 'kick-starting' vertebrate palaeontology in Australia.

Associate Professor Prideaux said Ruben Stirton was Professor of Palaeontology at the University of California, Berkeley, when he and his PhD student Dick Tedford were awarded Fulbright Fellowships to come to Australia to search for the remains of mammals that lived between 65 and 2 million years ago, a hitherto gigantic gap in our understanding of the history of Australia's unique fauna.

It was Douglas Mawson who pointed Stirton and Tedford to central Australia.

The Americans enlisted the support of two South Australians: Geoff Woodard, an undergraduate student in geology at the University of Adelaide; and Paul Lawson, a preparator and taxidermist at the South Australian Museum, who organised the logistics for the trip.

Associate Professor Prideaux was "flabbergasted" to learn only weeks before the conference began that Paul Lawson was alive and well at 95 years of age, and living in suburban Adelaide.

"Paul has been wondering for years about what to do with the knowledge he accumulated during these expeditions. He's got copies of all of Stirton's original slides. He decided to give a talk at CAVEPS on an aspect of that early expedition, which was to rediscover the site of the 1893 South Australian Museum dig for giant marsupials at Lake Callabonna," he said.

And so, on the first day of the conference, Paul Lawson presented what he described as an illustrated travel talk to a captivated audience.

"They went to a whole range of different places and were out in central Australia for some nine months, finding very little. But on their way back to Adelaide to fly out, they were just a bit off the Birdsville Track. They climbed to the top of a sand dune just to have a bite to eat. It was Paul Lawson who, looking into the distance, saw a lake with some bluffs next to it," Associate Professor Prideaux said.

Paul suggested they take a look: "they found a bounty of bones, of precisely the age they'd been chasing, sticking out all over the place."

It was the find that led to the renaissance of Australian vertebrate palaeontology.

As a tribute to that original expedition, Associate Professor Prideaux and Professor Rod Wells led a 30-strong group of delegates after the conference, retracing part of Stirton's original expedition, his first of seven trips in total.

"That 1953 trip and the subsequent trips by Stirton and his protégés opened up the Australian fossil record in its fullness and increased the number of people on the ground by a magnitude," Associate Professor Prideaux said.

There's been a further boost with the arrival in early 2013 of two internationally-renowned researchers: Professor John Long and Dr Trevor Worthy

Professor John Long is a very busy man. When he spoke with *Encounter* in late September, he was just back from a two-week study trip to Estonia and England. Listed on the whiteboard behind him are 24 academic papers he currently has in progress.

“While I was in Tallin, I discovered that Elga Mark-Kurik (the 85-year-old Estonian fossil fish specialist) had some material that was the missing piece of the puzzle about the origin of sex,” Professor Long said.

This is not an unusual conversation to be having with Professor Long. He’s dedicated a good part of his career to explaining how the fossil record shows that humans evolved from ancient fish – and the means of reproduction is, of course, central to that.

“All tetrapods today have arms and legs. But the primitive condition was three pairs of limbs for all vertebrates and we’ve just discovered that. Sexual organs were a separate pair of limbs, basically,” he said.

“The evolution of vertebrate limbs is far more complex than we ever imagined.”

He speaks with an almost missionary zeal. The big picture, he says, is “just how much of the human body plan really did take shape in these ancient fish”.

“The more and more you look, the story of evolution in vertebrates is really about the innovation of new systems, not the fine-tuning of an existing pattern.

“It’s a totally radical and stunning new view of evolution that nobody’s really picked up on.”

Professor Long is keen to point out the wrongheadedness of the portrayal of evolution in popular culture.

“The Hollywood view of evolution, which you get in movies like *Adaptation* and, for the very first time, in *Fantasia* in 1941, is a snapshot of evolution. The way we perceive evolution is this image going from a fish to an amphibian to a reptile to a mammal to a primate to an ape to an ape-man to a human.

“That’s archaic. The real measure of evolution is when innovation appears, like having arms, front limbs; having a spine, hind limbs, having three semi-circular canals in your ear instead of two which revolutionised balance and sensation, having teeth, having jaws. They’re all major innovations in evolution.”

Just what prompted these major innovations around 150 million years ago is not clear but Professor Long says it’s tied to genetics.

“I’m working with a colleague in London, Dr Zerina Johanson, on evolutionary biology work which ties the patterns of palaeontology back to the expression of certain genes and both inform one another.”

Filling in the evolutionary gap will see Professor Long head out into the field.

“I believe that we palaeontologists make our biggest finds not in the lab but when we go out in the field, when we bring back new data that can be analysed,” he said.

“I’ve proved with the Gogo fish (found in Western Australia’s Kimberley region) over the past 27 years that by going back to the site we can find spectacular new things. I figure that if I apply the same sort of approach to other sites in central Australia that have only been lightly looked at – they haven’t really been excavated with a big team – then we’re likely to make some big breakthroughs in some of these areas as well.

“These sites aren’t far from Adelaide; that’s why it’s good to be here. Flinders is a good base.”

Vincent Ciccarello



John Long in the field at Gogo July 2013 wrapping fossils



Nanotubes open up a world of possibilities

Dr Ben Flavel with Katherine Moore

As an undergraduate at Flinders 11 years ago, Ben Flavel's first exposure to scientific literature was a journal article by German researchers Professor Ralph Krupke and Dr Frank Hennrich.

The subject of their paper, nanotechnology, proved a fateful one: the discipline has become the focus of Dr Flavel's continuing research, and his career is now inextricably linked with work on carbon nanotubes.

Dr Flavel now counts the two Germans as friends and collaborators.

Carbon nanotubes, a nanoscale structure that can be envisaged as a cylinder formed by rolling sheets of graphene, have emerged as one of the most exciting materials in science. Their potential applications hold extraordinary possibilities for revolutionising technology across several fields of science and industry.

Having a rolled sheet of graphene results in a material that is defined by quantum mechanical confinement, and is optically active across the visible spectrum and into the invisible infrared spectrum.

After looking at ways to use nanotubes as electrochemical sensors for his Flinders PhD under Professor Joe Shapter and Associate Professor Jamie Quinton, Dr Flavel headed to New Zealand with an Endeavour Fellowship to conduct research under Professor Alison Downard. His work there shifted his interest towards other properties and potential applications for carbon nanotubes in biological interfaces and biosensing.

A holiday in Germany at the end his fellowship saw him looking around for research possibilities, and when he returned to Flinders to look at the potential of light-sensitive nanotubes as active components in solar powered devices, it marked the start of his research collaboration with Professor Krupke and Dr Hennrich, based at the highly prestigious Institute of Nanotechnology in Karlsruhe.

The Institute is the world leader in producing large quantities of nanotubes with defined diameters and hence

predictable optical properties, rendering them into a useful material for research.

In 2011, with encouragement from his German mentors and the support of a highly prized Alexander Humboldt Postdoctoral Research Fellowship, Dr Flavel travelled to Germany to begin living and working in Karlsruhe.

"Then in 2012 I was admitted into the Emmy Noether program from the German Research Foundation, which will allow me to build up my own junior research group at the Karlsruhe Institute of Nanotechnology over the next five years," Dr Flavel said.

Dr Flavel is presently exploring ways to combine a range of nanotubes that absorb light at many different wavelengths, with the ultimate aim of creating a highly efficient solar cell.

Nanotubes can also be used to emit light at given wavelengths, creating colours like LEDs. This versatility means that theoretically a carbon nanotube display panel would not only emit visible light but could also have the capacity to absorb energy from the invisible spectrum to power the device.

Dr Flavel said a major potential benefit of carbon-based devices is the ease of disposal at the end of their lives, and among the long term applications for nanotubes is the manufacture of mobile phones and even television screens entirely from carbon-based components.

"These things are very much in the future: at the moment we are engaged in the basic science," Dr Flavel said.

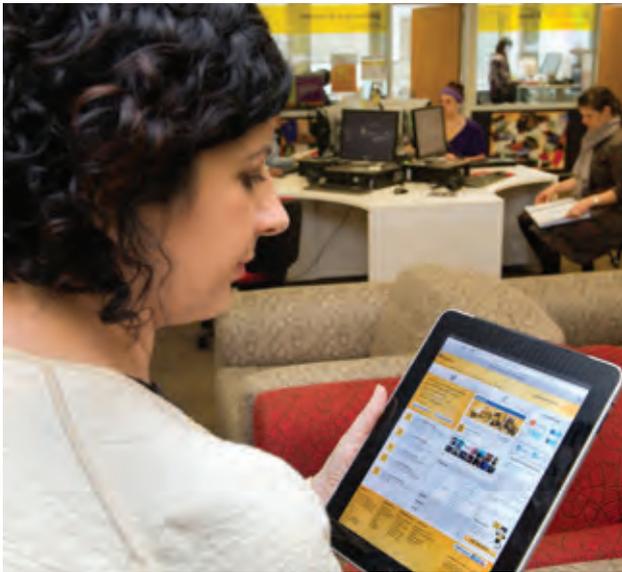
Dr Flavel's links with Flinders continue. He collaborates with Flinders PhD candidate Mr Daniel Tune, and is also supervising the thesis of PhD student Ms Katherine Moore, who recently paid a visit to the laboratories in Karlsruhe.

Dr Flavel said that while he had four months of intensive German tuition as part of his fellowship and has now been speaking German in social settings for two years, he still had some way to go towards being fluent in the workplace.

"The trouble is they all speak such good English, and I just want to get on with the work," he said.

Charles Gent

Social media gives voice to Flinders community



Reporting in October on a survey of how more than 1000 students in Victoria use university Facebook sites, The Australian's Higher Education Supplement (HES) concluded universities' efforts to communicate with students via social media "might be in vain".

According to the HES, the Twig Marketing survey found that while 85 per cent of students surveyed had visited a university social media site, 90 per cent said social media had no influence over course choice and one-third saw no value in uni Facebook sites at all.

More positively, half thought the sites were valuable for event promotions, 40 per cent said they were good for reminders about key dates and one-third enjoyed the 'fun and competitions'.

"Maybe it's just about fun, and procrastination," reporter Bernard Lane surmised.

But expecting social media to function as a recruitment tool or source of course advice is missing the point, says Antonia Malavazos (pictured), Head of Online Communications at Flinders.

"Initially, and I think this is what a lot of universities did, we set up Facebook pages thinking that this was a way of attracting future students but what we've found out about social media is that it's not that: it's actually about engaging with our University community. It's community building," Ms Malavazos said.

"In most cases, the people that are actively engaging with us on Facebook are our current students and alumni who notice things; if we post photos of the campus, for example, we get that kind of response: 'I miss sitting by the lake,'" she said.

"It's an opportunity for the voice of the University community to be demonstrated, so that it's not just about us saying things: it's about what people themselves are saying.

"It's also an opportunity to hear from our community about what they think."

The University is active across a variety of social media platforms – Twitter, YouTube, Google+, LinkedIn, Foursquare – with a special focus on Facebook and the micro-blogging site, Twitter.

"Twitter is more real-time interaction and updates. There's a lot that's starting to happen around customer service. We're getting people asking us questions via Twitter," Ms Malavazos said.

"And it is more of an opportunity to share stories around research, which tend to go well, and international stories," she said.

Flinders News and Media has found the 'knock-on' effect of Twitter to be useful in reaching untapped and specialist audiences through the referral of Tweets by 'influencers' – Tweeps, or Twitter users, who have a large number of followers and whose Tweets are often retweeted.

The launch of the University's regular pages in the online news service *InDaily*, for example, received a boost through Tweets by former SA Premier Mike Rann, Adelaide media identity Keith Conlon and ABC political reporter Annabel Crabb.

Twitter has also proved useful in 'live streaming' from large public events such as the annual Investigator Lecture and the inaugural Dean Jaensch Lecture.

Alumni Relations Officer, Geoff Sauer, said Twitter and the professional networking site, LinkedIn, had given the team new channels for connecting with alumni.

"LinkedIn and Twitter are two ways of communicating with people that didn't exist five years ago," Mr Sauer said.

"Until then we were relying only on the hard copy magazine and email. Now we have four ways of reaching our alumni, and there could be others," he said.

The University's LinkedIn Alumni Group was created in September 2009 and has steadily grown to a membership of more than 1560 alumni.

"The group is gradually becoming more active, with people responding to discussions. We also use it to promote events," Mr Sauer said, adding that about 14,100 LinkedIn members identify as having a Flinders Uni qualification – about 20 per cent of all Flinders alumni.

"That is a significant number of people. It would be good to be able to contact them to see whether they could offer any work-integrated learning opportunities to students, to help us identify people who could be ambassadors for the University, and to reconnect with the University" Mr Sauer said.

It is another dimension of the power of social media, as Antonia Malavazos points out.

"I don't think any university can afford not to be using social media, just like pretty much any organisation these days can't be seen to be not using it either. People are talking about Flinders in social media – we should be listening and be part of the conversation," she said.

Vincent Ciccarello



Statue to mark Flinders' resting place – more or less

It's an ironic fate for a man whose fame rests on his remarkable feats of navigation and precision map-making: no-one quite knows where Matthew Flinders is.

Flinders was buried in 1814 near the church of St James' Hampstead Road in central London, but it seems the exact location of his remains was uncertain even before part of the cemetery was claimed by extensions to Euston Station.

So while it's possible that Flinders lies beneath the westerly platforms of Euston, equally he could be somewhere below the grass and playgrounds of the adjoining St James' Gardens, which make up the rest of the decommissioned churchyard.

Whatever the case, a group of international admirers is intent on making amends to the memory of the illustrious sailor with the commission of a life-sized bronze statue that will overlook the concourse of Euston Station. The figure, by leading English portrait sculptor Mark Richards, will depict a kneeling Flinders poised over a chart, dividers in hand, with his companion cat, Trim, by his side.

As the project gained momentum, its English steering committee approached Australian officials and descendants of Flinders for assistance, and secured enthusiastic support from Mr Bill Muirhead, South Australia's Agent-General, Deputy Agent-General Mr Matt Johnson (a Flinders graduate, pictured) and former SA premier Mr Mike Rann, among others.



In August, a promotional event at Flinders University Victoria Square saw 11 miniature casts of the statue each sold for \$7,500 to assist in raising funds towards the cost of the full-size version.

Flinders' remarkable achievements are celebrated in Australia in the names of streets and a mountain range as well as our university, and he is already the subject of statues in Adelaide, Melbourne and in his birthplace in Lincolnshire. Soon his likeness will be seen daily by thousands of commuters and travellers in London, close to his final resting place.

Charles Gent

Further information about the Matthew Flinders statue can be found at: southaustraliagov.co.uk/study/296,the-matthew-flinders-memorial-statue



A Flinders link at Flinders

At Flinders University, you don't have to go further than the Art Museum in Social Sciences North to find a living descendant of the famous navigator.

Fiona Salmon, the Art Museum's Director, traces her lineage back through her great, great, great maternal grandfather, John Pilgrim, who married Susanna Pearson, Matthew Flinders' niece.

Ms Salmon has known about her link to Flinders since she was a child in Geelong, thanks to two great-aunts in Melbourne who were keen to share their knowledge.

As well as a reminder in the form of a childhood book about Trim that she still treasures, Ms Salmon said attending the reunion of Flinders relatives organised as part of the University's 40th anniversary had made the connections "crystal clear", well before she came to work at Flinders.

"I became aware of a web of connections that reaches around the globe," she said.

Ms Salmon said it was natural that Matthew Flinders should loom large in the minds of South Australians in particular.

"The meeting at Encounter Bay is a critical and potent part of our history, as was the early charting of the coast."

Ms Salmon said that during her time as co-ordinator of Maningrida Arts and Culture in Arnhem Land in the late 1990s, she realised that charts made by Flinders of stretches of the nearby coast line were still in use.

"The precision of his work was extraordinary, and it was all done without the benefit of modern technology," she said.

Ms Salmon is also full of admiration for the courage and resource of the maritime explorers: "They were young men who sailed into the unknown in tiny boats that weren't particularly seaworthy".

Ms Salmon, whose career morphed from linguistics into art curating – "language and art are inextricably intertwined" – came to Flinders to manage the Art Museum's 6,000-work collection in 2007, and was appointed Director in 2009.

"The stars were aligned, but there was no nepotism involved," she said.

Ms Salmon said she felt very lucky to have charge of an art collection with a national reputation for its holding of Indigenous work, which includes early work by Papunya Tula artists. Since coming to Flinders, she has curated four individual exhibitions, including the recent *Spinifex Country* and the record-breaking *Crystal Palace* earlier this year.

Charles Gent

Operation Saving Nemo

The take-home message from the hit Disney/Pixar movie *Finding Nemo* is clear – don't take fish off the reef.

But a decade after the box-office hit was released, clownfish have continued to be a highly sought-after commodity, with the increased demand from pet shops causing a decline in wild populations.

In a bid to prevent over-collection, Flinders University is breeding clownfish and selling them to local aquarium shops at a cheaper rate than fish bought from the wild.

Dubbed "Saving Nemo", the project allows students to learn how to breed and care for clownfish while also providing stock to aquariums stores, reducing the need to order wild caught fish.

Hundreds of clownfish have been bred across a number of different species since the initiative started in 2012, with the program now expanding into other tropical fish and shrimp species.

"Clownfish populations have decreased in some collection areas of the Great Barrier Reef since *Finding Nemo* was released, which is the exact opposite of what the film is portraying," Saving Nemo project leader Karen Burke da Silva said.

"The whole moral of the story is don't take these little fish off the Reef and stick them in a tank but everyone wanted a Nemo after the film came out, and now in some areas of the Reef there are no clownfish left at all."

Ms Burke da Silva, a biologist, said the public was largely unaware that most tropical fish sold in pet shops, including clownfish, were taken from the wild.

"Most people think the fish they buy in pet shops have been bred in captivity but the vast majority of tropical fish are actually taken from the wild."

"The other thing people don't realise is that clown fish can live for up to 30 years in the wild so we're grabbing fish that could possibly be quite old and sticking them in tanks not knowing how to properly care for them and as a result they're dying."

"It seems like such a waste, it's a tragedy."

While the Great Barrier Reef Marine Park Association has set good bag limits on the number of clownfish that can be legally taken from the ocean, Ms Burke da Silva said there should also be consideration of the age and sex of fish which are removed.

She said that although clownfish were not classified as endangered, the entire Great Barrier Reef was under threat from pollution, climate change and over-collection.

"At the moment every living thing on the Reef is vulnerable. The fear is if we aren't able to protect the reef now, it could be gone in the not too distant future."

"But if we stop taking clownfish and other animals in such high numbers and care for the Reef in a better way then we might be able to salvage this beautiful natural wonder."

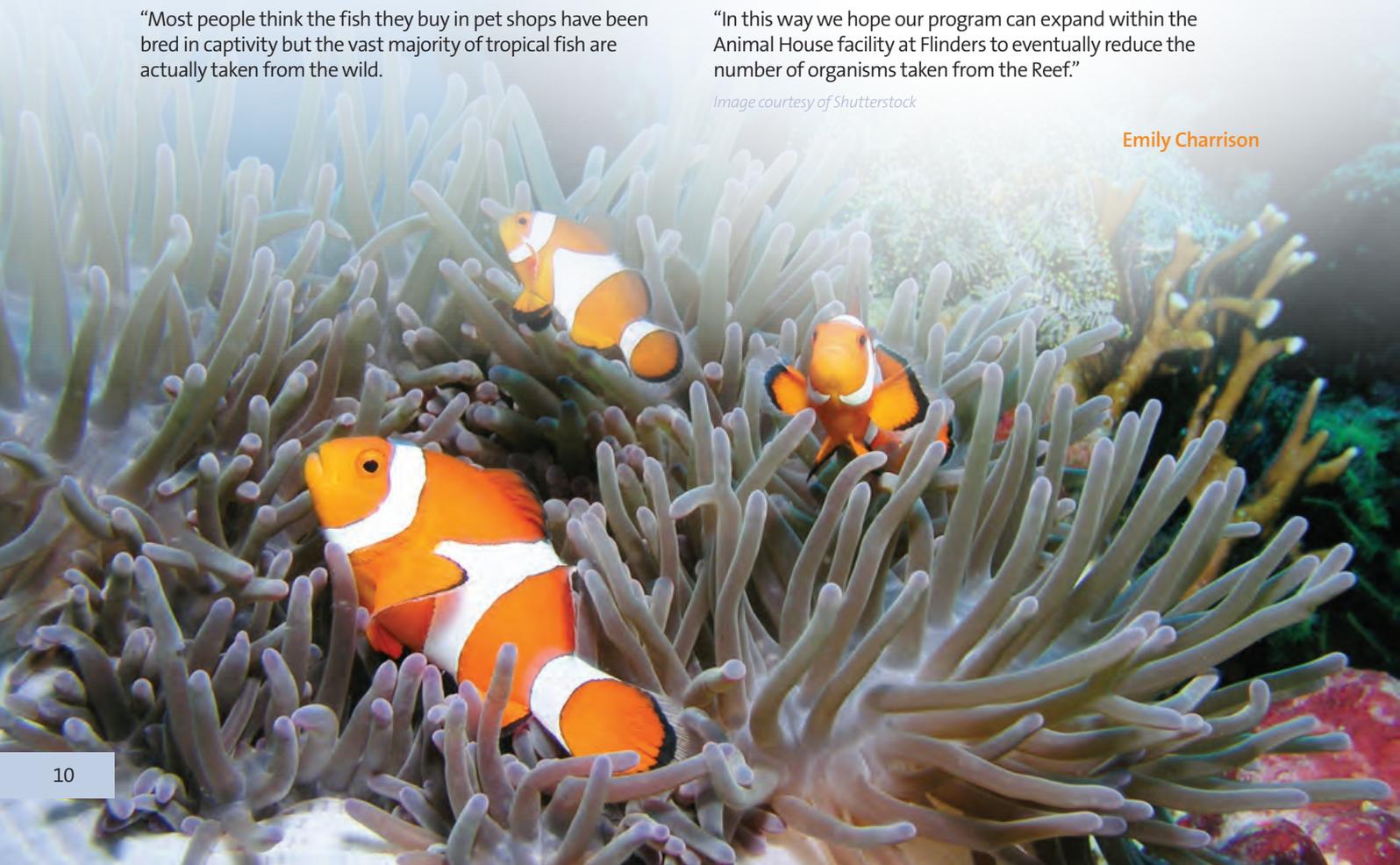
Through captive breeding and education programs, Ms Burke da Silva said she hoped more consumers would demand to buy captive bred marine fish for their tanks instead of removing them from the wild.

"Clownfish are relatively simple to breed when you know the process so we're hoping to eventually be able to provide not just clownfish but a variety of other marine ornamental fish and invertebrates, perhaps even anemones which have proven to be much more difficult to raise in captivity."

"In this way we hope our program can expand within the Animal House facility at Flinders to eventually reduce the number of organisms taken from the Reef."

Image courtesy of Shutterstock

Emily Charrison



Extinction loomed for bees as well as dinosaurs



The cataclysmic events that wiped out the land dinosaurs some 65 million years ago took a toll on smaller creatures too, causing widespread extinction in bees, Flinders University research has found.

In a world first, research by biological scientists Associate Professor Mike Schwarz, Dr Sandra Rehan and Dr Remko Leys has shown that the events at the so-called K-T boundary – marking the point in time when the catastrophic events occurred – caused massive extinctions among bee populations and was reflected in major changes in the development of flowering plants on Earth.

Unlike dinosaurs, which left a legacy of large and frequent fossil deposits, mapping the effect of such an event on bees has always been problematic: “Bees fossilise very poorly, and their presence in the fossil record is very patchy,” Associate Professor Schwarz said.

There is a concentration of fossilised bees in amber from 45 million years ago, but earlier bees are scarcely represented in the record at all. The fossil record does, however, indicate disruption in the evolution of flowering plants consistent with the K-T event.

Unable to rely on fossil evidence for bees, Associate Professor Schwarz’s team turned to a technique known as molecular phylogenetic analysis that extracts fragments of bee genes and, in effect, enables scientists to track paths of genetic development retrospectively.

The Flinders-based team used 230 bee species from one subfamily, taken from every continent (except Antarctica). The four tribes within the subfamily have a wide variety of geographic adaptation and nesting behaviour, thus providing a broad and viable sample for the research.



The analysis of the bees’ lineage showed a pattern of early diversification followed by a long period during which development effectively stalled; this was then followed by further rapid diversification in all four tribes.

“When we find that something is affecting all of them in the same way, you have to ask what that would be,” Associate Professor Schwarz said.

“What we found was a genetic signature that is exactly what you would expect for a massive extinction event, and it corresponds very closely in time with the extinction of the dinosaurs.”

“What we found was a genetic signature that is exactly what you would expect for a massive extinction event, and it corresponds very closely in time with the extinction of the dinosaurs.”

Because bees are the main pollinators of flowering plants and their evolution is closely linked, Associate Professor Schwarz said the implications of extinction of bee populations are profound, and would have had major consequences for flowering plants as well as the subsequent evolution of bees themselves.

The findings are the subject of a published paper in the academic journal *PLOS ONE*.

Charles Gent

Nutrition graduate seeks fresh inspiration from Flinders



Almost a decade after Yuefen Wong graduated from Flinders University, the now senior dietitian is turning to Flinders for inspiration to develop nutritional outreach programs in Singapore.

A graduate of the 2004 Bachelor of Nutrition and Dietetics, Ms Wong visited the Healthy Eating Local Policies and Programs (HELPP) team in October to learn more about the University's community food literacy programs, in the aim of developing similar initiatives in Singapore, with a focus on at-risk and low-socioeconomic communities.

The month-long visit has been funded through the Singapore Government's Healthcare Manpower Development Plan, a program which provides funding support for the local and overseas training of Singapore health professionals.

Ms Wong, a senior dietitian with the National Healthcare Group Polyclinics, spent most of her stay meeting with community stakeholders and exploring Flinders-modelled obesity prevention programs including HELPP, which focuses on helping local councils and organisations to develop healthy eating policies, and OPAL (Obesity Prevention and Lifestyle), which aims to encourage healthy eating and physical activity in the community.

"In my role I work one-on-one with clients but the clinics in Singapore now have a budget which will allow us to go out to communities and conduct prevention and health promotion projects," Ms Wong said.

"I heard about OPAL and other South Australian programs such as Start Right Eat Right when my former lecturer Kaye Mehta visited my company two years ago and since then I've been keen to learn how I could adapt these programs in Singapore because I know how successful they are in SA," she said.

"I'd like to develop programs that are sustainable and long-term, rather than just a once-off, and I'd also like to develop something that can be easily replicated across various groups of people, including clinic patients and public communities, so that the work done will not be wasted."

Ms Wong said she has been particularly impressed with the evaluation of Flinders' food literacy programs.

"In Singapore we mainly ask participants to fill out evaluation forms to see how they rate the presenters and the overall program but we don't do much impact evaluation to understand if their knowledge has increased or if they are more confident in making healthier food choices.

"Most of the participants in the community centres are older adults and illiterate so filling out evaluation forms is not an ideal way of getting impact feedback."

With an ageing population, Ms Wong said health promotion and obesity prevention was critical.

"A lot of clients that come into my clinic have chronic diseases so aside from managing these diseases we also want to prevent them, and it's important to continue striving for ways to make prevention programs better."

Ms Wong, who worked in a private consultant firm in Singapore for two years immediately after she graduated, said it was "great to be back" at Flinders.

"Everyone is so friendly here and willing to share information, whereas the culture in Singapore is that all materials are guarded within the various companies.

"I was also surprised to see everything still looks very familiar to me even though it's been almost 10 years since I was last here – hopefully my next visit will be a lot sooner."

Emily Charrison

Making partnerships work



Ms Diané Ranck

Ms Diané Ranck says that the dynamic and multi-layered aspects of the University's continuing involvement with a range of corporate and community organisations are part of an overall strategy to showcase the University.

Director of Marketing and Communications at Flinders, Ms Ranck said the University has actively pursued partnerships across seven categories: arts/culture, education, business, media, government, sport, and health and science.

Ms Ranck said she prefers to use the term partnership in preference to sponsorship: while the relationships do involve a financial contribution from the University, energetic engagement means the benefits flow in both directions at many levels.

Some of the University's partnerships are a natural fit in terms of expertise and shared interests. Given the strength of the University's reputation as a centre of training for drama performance, for example, an alliance with the State Theatre Company (STC) was a logical step, Ms Ranck said.

She said Flinders' status as the Education Partner of the STC builds on strong existing links. Even before graduate Geordie Brookman took over the artistic directorship of the company last year, Flinders drama graduates had acted in, or directed, numerous STC productions.



L-R Chloe Eckert, Joh Hartog, Alfie Simpson and Geordie Brookman

STC activities are promoted to alumni through access to seats, backstage tours and events with performers; for Flinders drama students, the STC runs workshops and offers opportunities to attend rehearsals, and has also provided attachments for students across directing, stage management and text adaptation.

The University is also a sponsor of STC's annual prize for young playwrights, which has twice been won by Flinders students.

While football may seem poles apart from theatre, the prominence of the South Adelaide Football Club as a community-based organisation in the southern suburbs of Adelaide also made it an obvious contender for collaboration. Students from courses including nutrition and dietetics, accounting, creative writing and physiotherapy undertake 100-hour placements with the Club.

"Our students also join school visits by players in the Be Your Best campaign to promote exercise and healthy nutrition," Ms Ranck said.

The club is also involved in Flinders research projects, and the Panthers recently commissioned a study that saw academics from Tourism explore the factors that attract people to football games and how attendance can be improved. Since the partnership began, several Panther players have undertaken courses at the University.

Charles Gent

NAB home loan offer



In a unique new offer, Flinders alumni who take out a home or business loan with the National Australia Bank (NAB) have the opportunity to receive

a discount on NAB's standard variable interest rates while also supporting the University's scholarships and research. NAB's home loan standard variable rate is the lowest of the major banks.

The Director of Marketing and Communications at Flinders, Ms Diané Ranck, said the alliance with NAB presented 'a first of its kind opportunity' for the University to build on its fundraising efforts while offering a tangible benefit to its 80,000 graduates.

"This is a unique association between Flinders and the NAB. Thanks to the innovative nature of the offer, the advantage extends in both directions, helping our graduates and our current students at the same time."

The discount available to alumni extends to home loans for residential and investment purposes, as well as business loans.

Ms Ranck said loans made under the offer will generate a cash benefit after drawdown that goes into directly supporting the University's Karmel Endowment Fund – the major philanthropic channel for Flinders.

To talk to a NAB home loan consultant about this offer, complete the online enquiry form available at flinders.edu.au/alumni

Credit terms, conditions and eligibility criteria apply. Correct as at 22nd November 2013.



Flinders University truly appreciates the generosity of our donors and partners



Your ongoing investment enables vital research, supports the academic life of the campus and transforms the student experience.

Each and every donor, volunteer and sponsor has played a part in the success of Flinders University.

The following list and photos offers a glimpse of our supporters, the diversity of community relationships and sponsorship initiatives.

We also acknowledge with sincere thanks the many donors who have chosen to remain anonymous.

To the donors who have given generously over time; those who have set up specific scholarships, funds and prizes, your past and ongoing support is inspiring. Your conviction in Flinders provides great encouragement to our students, staff and community.

We are currently consolidating all the various support measures across the different areas of the University. As the new Donor Relations Officer in the Development and Alumni Relations team, I invite you to join the growing family of donors and look forward to hearing from you or meeting you personally in 2014.

Warm regards
Emily Drewniak

Alumni, donors and partners



Scholarships, Prizes and Bursaries

Cyon Knowledge Computing P/L, EJC Carr & Associates, Brian Abrahamson, Michael Adams, Michael Alpers & Deborah Lehmann, Catherine Antonio, Geraldine Avent, Barbara Baird, Michael & Jeanette Barber, Jane Bassham, Lisa Beament, Elizabeth Bongers, Bronwyn Carson, Murlen Champness, Allan Chan, Ian & Meredith Chesterman, Peter Chislett, Martin Crowe, Mary Cusack, John Dawes, Dorothy Durdin, Norman Feather, Ann Gardiner, Terry Giesecke, Pauline Glover, Ben Hartridge, Stephen Hedger, Francis Holland, Adam Jamrozik, Haydon Manning, Helen McSkimming, Patricia Nesbitt, Chrissy Pavlakis, Alison Philip, Rene Pols, Shaowen Qin, Richard Ryan, Thomas Sag, Linnett Sanchez, Geoffrey Sauer, Michael Schlossmacher, June Semmens, Efthymios Sorvanis, Glenn Swafford, Richard Symonds, Acram Taji, Wongwiwat Tassaneeyakul, Marika Tiggemann, Quang Tran, Thierry Troosters, Bronwen Whyatt, Rotary Club of Barossa Valley Foundation, Austin Taylor, Bellberry Ltd, Ross Kalucy, Phil Hoffman Travel, CARA, Greg Poche, BUPA, Ron & Heather Barnes, Peter Fiora, Maria Del Col, Michael Kidd, Bert and Carmel Boulderstone Charitable Trust, AET Discretionary Charitable Trust, Origin Foundation, Janis Marsh, Kyle Dix, John Willoughby, Erica Jolly, Janet Stanton, Shaun Berg, Emily Drewniak, John Warne, Jennifer Kuyper, Judith Weston, Weng Yau, Wendy Murchland



Research & Innovation

Paul Brennan, Jennifer Clark, Jennifer Dudley, Norman Feather, Robert Fletcher, Dorothy Hall, Ann Ireland, Ann Ireland, Sakon Kerdpol, Wendy Laffer, Siew Lee, Arthur Lucas, Carole Mackintosh, Cameron Phillips, Sharon Pratt, Stephanie Rowland, Joan Sawyer, Roger Sexton, Ramona Stainer, Wongwiwat Tassaneeyakul, Phyllis Tharenou, Geoff Upton, Gregory Venn, Jurij Wasyluk, Gerald White, Sir Ewen Waterman Foundation

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The Matthew Flinders Statue Fund

Anthony Brown, Anwyn Martin, Barry & Joan Miskin, Peter Saunders

Flinders' School of Medicine turns 40

The 40th anniversary of the School of Medicine will be celebrated next year with events and activities beginning on 28 July 2014. Graduates are encouraged to update their details at flinders.edu.au/alumnicconnect to be included in the celebrations.

1 | Aunty Josie Agius (R) presented the Welcome to Country at the Indigenous Scholarships Donor Recognition Afternoon Tea. Sr Maureen O'Connell.
2 | Foundation for Hellenic Studies hosted the "Great Greek Debate", to raise funds for the Flinders University LOGOS Centre for Greek Language. Costa Georgiadis, Senator Nick Xenophon, Tom Koutsantonis MP, George Kapiniaris (L-R) Maria Vamvakinou MP (Front).
3 | Jessica McKenzie is the recipient of the Professor Michael Kidd Scholarship. Currently she is in her second year of a Bachelor of Midwifery.
4 | Ms Debra Webb, Corporate Account/Business Development Manager SA/NT, BUPA. Ms Jessica Beinke, The BUPA Indigenous Health Scholarship.

Alternative energy is making a move

Harnessing the power generated by playing children or partygoers on a dance floor used to be a subject for amusing speculation, but the science of piezoelectrics – collecting and converting movement or vibration into useable energy – is getting a lot more serious.



Just ask 18 year-old Aroha Woods (pictured), a first-year science student at Flinders, whose research paper on piezoelectricity and its potential earned her a trip to the Shell Global Energy Forum in Perth in October and a \$1500 prize.

The annual event offers an opportunity for undergraduate and postgraduate students from universities in South Australia, Western Australia and the Northern Territory to present papers on alternative energies to an audience of industry leaders from the energy and resources sector.

Ms Woods said that her crash course in the field revealed a developing technology that is still in its early experimental stages.

Piezoelectricity relies on materials that are responsive to pressure or movement.

“As this pressure is applied, a positive charge is applied through this compression, and on the expanded side, a negative charge is produced. When the pressure is gone, there is an electrical current that flows through the material,” Ms Woods said.

And while the amounts of energy generated and collected via piezoelectric materials are still very small, significant advances have been made in recent years: “Piezoelectric harvesting has been produced in milliwatts in comparison to the previous record of microwatts,” Ms Wood said.

The mineral quartz is the major naturally occurring material with piezoelectric properties. So far the small scale of energy production has limited applications of the technology to roles such as the generating lighting from piezoelectric flooring in dance clubs.

But much bigger things could lie ahead if a range of natural vibrations could be harnessed. Vibrations from waves, for example, that travel through piezoelectric materials in the hull of a boat could be used to power the boat itself.

Mines would be another obvious site for the technology. “The action of mining produces vibrations throughout mines, so if this wasted energy were to be reused, it could be collected in the form of piezoelectric energy to power the mine, that is power the lighting, tools and equipment,” Ms Woods said.

Ms Woods said the logical extension of the technology would be to place piezoelectric materials, or to utilise naturally occurring ones, in earthquake prone areas.

If a renewable energy resource that creates almost no pollution and which could be situated underground seems almost too good to be true, for the time being, at least, it is.

But Ms Woods said that as there is always going to be movement, piezoelectricity has a good claim to be the electricity of the future.

“With more development into future ways of producing and recording this energy, piezoelectricity could be a suitable energy source for the future and could potentially be used to supply power to the globe.”

While at a very early stage of her studies, Ms Woods, who qualified for admission to Flinders by completing the Foundation Course, also has an eye on the future.

As her science degree progresses, she hopes to specialise in mathematics and has ambitions of continuing on to postgraduate study.

Charles Gent

Flinders technology to revolutionise desal plants



A major problem facing desalination plants worldwide could soon be solved by nanotechnologists from Flinders University.

The University has been granted a provisional patent through Flinders Partners, the commercialisation arm of the University, for an additive that prevents biofilms from clogging up membranes used in the desalination of seawater.

The provisional patent is between Flinders University, SA Water and Adelaide-based global renewable energy company Wind Prospect.

Flinders' Professor Amanda Ellis (pictured), who is leading the research, said the additive can be easily and cheaply incorporated into the manufacturing of reverse osmosis membranes.

These film-like, synthetic polymer membranes help produce pure water by filtering out salt and other effluent materials from the ocean under high pressure, yet the main drawback of reverse osmosis membranes is that they cannot be reused and need frequent replacing due to blockages.

"The problem with reverse osmosis membranes is biofouling, which occurs when microorganisms accumulate and grow on top of the membrane and stop water from flowing through," Professor Ellis said.

"This means the membranes have to be cleaned more frequently and it also drives up energy consumption because you have to increase the pressure in the membranes to get the same amount of freshwater through," she said.

"But the major issue is that the membranes are not recyclable so when there's biofouling they don't last as long."

Professor Ellis said the additive – which can be integrated into the membrane manufacturing process for just a few cents per membrane – makes the surface of the membrane appear "neutral" so organisms do not recognise the surface and therefore keep moving through the saline flow stream.

She said laboratory tests have confirmed the additive removes nearly all biofouling from the membrane while having no impact on salt rejection.

Flinders has partnered with a membrane manufacturer who is now testing membranes containing the additive, with a key aim for the membranes to be used in South Australia's desalination plants.

Professor Ellis said the technology is both cost effective and importantly, environmentally friendly.

"These new membranes lower energy use because you don't need to apply as much pressure to maintain the flow rate, you don't need to clean the membranes as often because there's virtually no biofouling and you don't need to replace them as often, which reduces environmental waste.

"Biofouling is a problem in every desalination plant worldwide but the beauty of our technology is that it's just an added chemical in the membrane manufacturing process – there's nothing complicated about it and the cost is insignificant from a manufacturer's perspective.

Professor Ellis said she hoped to lodge an application for a full patent by April 2014.

The project was initially funded through a \$60,000 grant from the South Australian Department for Manufacturing, Innovation, Trade, Resources and Energy in December 2012.

Emily Charrison

Speakeasy

A showcase of the creative writing talent at Flinders University

Four readings annually by students – two in a public venue and two on campus – have entertained, engaged, amused, challenged, and sometimes confronted audiences, over the past five years. Following are just a taste of three of the pieces that were published in *InDaily*, Adelaide's independent news service in which Flinders publishes a page of University news and views each Tuesday and Friday, in 2013.



I Remember You

Jack McEntee

Remember the first time I met you? We were only kids then, but I remember it perfectly. You had come into my family's store wearing a wrinkled summer dress; it was purple with white periwinkles. I think I might have been staring at you, but you didn't notice because you were too caught up looking at our miniscule book collection; mostly trashy romance and fantasy novels for people passing through.

'We just moved here,' your mum had said. It stuck in my head because my heart gave an unexpected leap; something that, at the time, I did not understand. 'I heard the school here is fantastic,' she continued. It wasn't really the truth, but I am glad that she believed it all the same.

It took me two years to speak to you. We had a lot of the same classes, do you remember? I sat in front of you, in a vain attempt to get you to notice me, but also because I wouldn't have been able to focus otherwise. I was always aware of you though. I felt like a fool most of the time, telling myself I would get over it; girls as pretty as you didn't date guys like me.

Jack McEntee is studying a Bachelor of Arts majoring in Creative Writing, with minors in Drama and Film. He wants to write everything from house advertisements to epic novels.

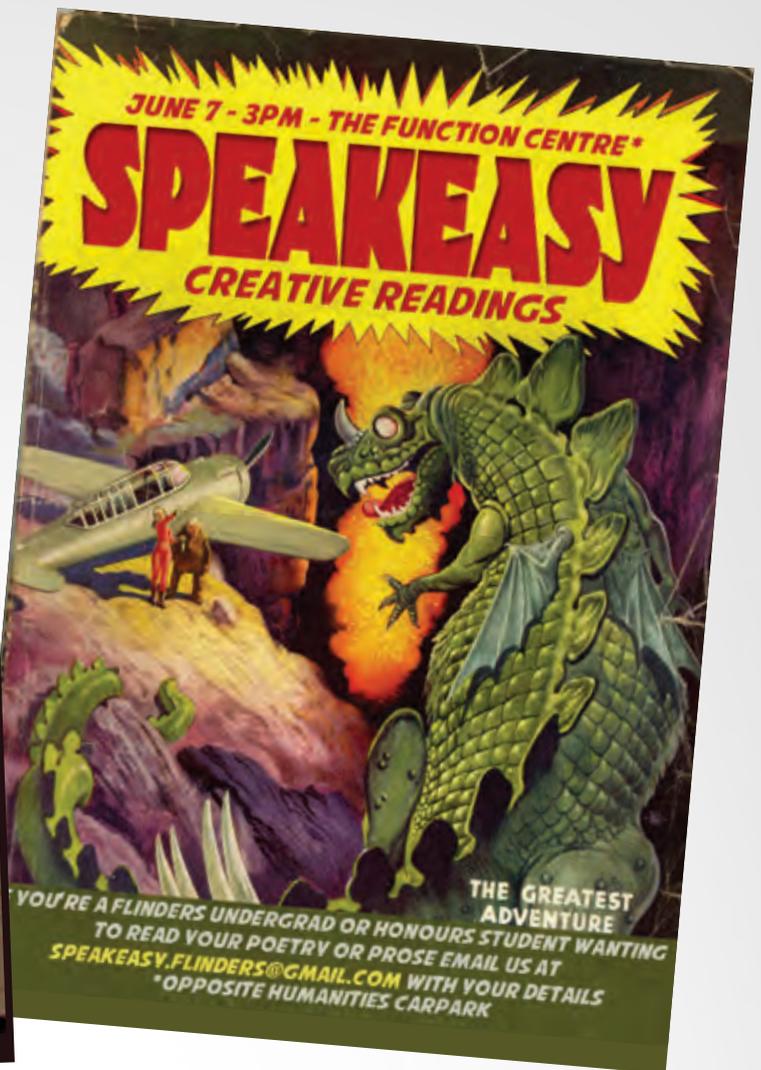
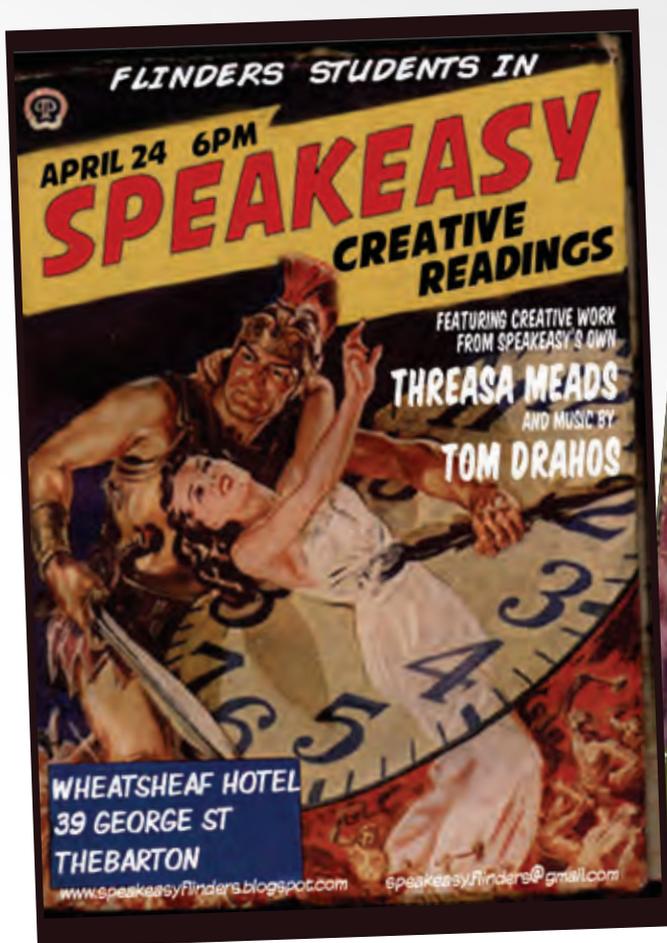


A Sonnet

Samuel Williams

On starry nights like this one, speech comes easy,
and little separates the sorely crafted
from last night's efforts, tickled from a breezy
thought, scribbled down and hardly once redrafted.
Who was the famous poet who once said,
'Tread softly, for you tread upon my dreams?'
He said it better than I could. The dead
are more alive than we who live, it seems.
In any case, if his dreams were so fine,
why did he leave them lying on the ground,
insisting that I do the same with mine,
which to their dreamer are more tightly bound?
Until I learn to dream more carelessly,
those who tread here must also tread on me.

*Samuel Williams was born at least a hundred years too late to be a poet. He writes fiction instead, some of which has appeared in *Voiceworks* magazine and *dB* magazine. He is currently waist-deep in a Creative Writing Honours thesis at Flinders University, and also works part time at *Mostly Books*, where he facilitates a young writers' group for criminally talented ten-to-fourteen-year-olds.*



Melanie Pryor is a writer, musician, teacher and visual artist. Her fiction and poetry has been published in street press and an anthology, and she completed Honours in Creative Writing in 2012. She was also shortlisted for Young Writer-in-Residence at the Katherine Susannah Pritchard Writers' Centre in 2012.

The Seasons That Left Me Behind

Melanie Pryor

8am. Sunlight. You can't sleep in. Brilliant blue skies, golden prickly grass. Tractor humming, hay for the cows. You swing, barefoot, on the outside chair, fizzy water in hand.

3pm. The end of a school day. Laughter, crushed grass sweetening the air. Orange pith and apple cores. The soles of your feet are swollen and sore from the heat of the basketball court.

9pm. Splintery logs fall with a clang into the wood box by the pot belly stove. Woollen socks on piles of books. Stewed fruit for dessert.

11pm. You dream. Velvet, the colour of the sky from your childhood. The soft woolly arms of your mother. In the murky space before sleep, your warm hair whispering in your ears makes you think of the ocean in seashells.

The childhood I had is a story that no longer fits my skin. I cannot tell, anymore, the time from which I am writing...

Space heritage belongs to all



Dr Alice Gorman with a quarter-scale model of Sputnik

The United Nations' Committee on the Peaceful Uses of Outer Space is meeting in Vienna this week, and representatives of 74 countries will discuss, among other things, how to ensure space is maintained for peaceful purposes, and the long-term sustainability of space activities.

It's a good time to reflect on how we, as the public, have contributed to the current shape of space, and the ways we can find to make space meaningful. To help us do this, let's imagine it's sometime in the future when space travel is affordable.

In our spaceliner, we'll visit a few of the most culturally significant space places in the solar system. These places are our heritage beyond the Earth's atmosphere. Our first stop is Low Earth orbit, from about 200 to 2,000km above the surface of the Earth. This is where the International Space Station orbits, and most of our Earth observation satellites. It's also crawling with orbital debris or "space junk". A collision with a piece of space junk can make a spacecraft fail or even explode.

But it's not all industrial waste up there. Orbiting among the debris and the functioning satellites are historic spacecraft representing the origins of the space age. One of these pieces of space junk tells an important story of regular people engaging with space exploration.

Vanguard 1, a grapefruit-sized aluminium sphere with four antennas, is now the oldest human object in space. It was launched by the USA in 1958. It wasn't the first object in space – that honour goes to Sputnik 1 – or even the first US satellite, which was Explorer 1 – but unlike those two, it is still in orbit, and may be for another 600 years.

The moon has always been a huge part of human culture, governing the tides, providing light, and as the source of stories and myths about how the heavens and earth came to be.

But in 1969, how we view the moon changed forever. On one fateful day, humans set foot on another celestial body for the first time. The Apollo 11 landing site, Tranquility Base, is both an archaeological site, with the traces and remains of a unique human activity, and a symbolic site representing how we like to think of space: in the spirit of human curiosity and technological ingenuity.

But it's time for us to move on. There have been flybys, probes and orbiters to most planets in the solar system, as well as a few asteroids and comets. We're not doing too badly in the inner and middle solar system.

But as for the outer reaches, beyond Jupiter, we have barely made an impact. Only four spacecraft have ventured out this far: Pioneer 10 and 11, with whom we have lost contact, and Voyager 1 and Voyager 2. Both are currently heading outside the solar system into interstellar space, if they have not already crossed the boundary.

What these tiny spacecraft mean is the entire solar system is a human place. Our senses, through these robotic avatars, have reached into places we can't go ourselves. We have used the physical bodies of the spacecraft to imbue space with human meaning – and human culture.

On the Voyager spacecraft, we sent representations of human culture in case, against all the odds, someone of another species one day finds them. The spacecraft each carry a "Golden Record" with recordings of music and different languages. Included in the music are two Aboriginal songs, recorded by an anthropologist in the desert. Australia might only have a few objects in Earth orbit, and no space agency, but the culture of Australian Indigenous people is going to the stars.

We all use space assets in Earth orbit for weather predictions, telephone and television, and global positioning systems. We are stakeholders in space not just because it provides resources, but also because space development has shaped everyday life in the 20th and 21st century and these satellites and places are our history and heritage. This heritage is the illustration that space does not just belong to spacefaring nations and commercial organisations.

If it is important to us, it is also our right to have a say in what happens to it. And if we are not engaged in this process, then governments, the military and commercial enterprises will make those decisions for us. Space heritage is what links us to our past in space, and to our future in the stars. And that future should be yours and mine to decide.

 *Dr Alice Gorman is a lecturer in archaeology and an expert in space archaeology. This is an edited version of an article published in The Conversation in June 2013.*

ALP plays safe with reform



Dr Rob Manwaring

So the election between two middle-aged, middle-class, white men with broadly shared policy agendas is over. In this case, it is not the federal election between Kevin Rudd and Tony Abbott, but the month-long Labor leadership contest between Bill Shorten and Anthony Albanese that has finally come to a conclusion, with Shorten emerging triumphant.

In a first for the Labor Party, Shorten was elected with a 50:50 weighting split between the parliamentary party and the rank and file membership. Despite losing the rank and file vote to Albanese (polling just 40.08% of over 30,000 members' votes), Shorten won 63.95% of his caucus colleagues' support for a total of 52.02% overall.

For Labor, this has been largely a therapeutic exercise. Not since the 2010 National Review — undertaken by party elders Bob Carr, Steve Bracks and John Faulkner — has the party membership's views been given so much weight. Perhaps not since Simon Crean's internal reforms has the party membership been taken as seriously by the leadership.

Yet for all the boldness of the new election process, this is something of a missed opportunity for the ALP. In a strategic bid to bury internal divisions, both candidates claimed similar ideological ground. A more open competition might have helped the party renew further.

A wider contest might also have been a battle of ideas, not just a demonstration of leadership skills. Chris Bowen, the interim leader since the election, is a noted social liberal, and his recent book argues Labor should reclaim this tradition. In contrast, former prime ministers Julia Gillard and Kevin Rudd oscillated between Labor's labourist and social democratic traditions.

Regardless of the result, Labor will be pleased with the process. Drawing upon wider research, British political scientist Tim Bale notes in his book — *The Conservatives Since 1945: The Drivers of Party Change* — that opposition parties need to do several things to get elected. Freshening the leadership and maintaining party unity and discipline are crucial to the process of renewal. To some extent, the ALP is extracting the poison of its previous leadership problems.

The ALP is often a late adopter of reform processes. It is the latest of a number of parties to “democratise” its selection processes. Following the 2010 election debacle, the British Labour Party elected Ed Miliband through a new process. The electoral college was split three ways between MPs, individual members of trade unions, and party members. Effectively, the reforms ended the trade union “bloc” vote in the British Labour Party. Rudd, in reforming the ALP, just cut them loose.

Across the Tasman, New Zealand Labour has yet to find a worthy successor to Helen Clark. In 2012, it reformed its leadership rules to enable the rank and file to vote. On a version of UK Labour's electoral college, David Cunliffe was elected party leader, on a vote split between the party caucus (40%), party members (40%) and trade unions (20%).

The Canadian centre-left New Democratic Party has also reformed its leadership structures. At its 2003 leadership contest, party members were given a 75% weighting, while trade unions were given 25% (in effect, a “bloc” vote). In 2006, the party shifted to a one-person one-vote process for party members, with Tom Mulcair winning the leadership under this method in 2012.

Local context is crucial to understanding leadership change, but all the major political parties are suffering from declining membership. While the ALP might be buoyed by the apparent influx of 4000 new members, this might prove to be a short-term boost. Current British Labour leader Ed Miliband enjoyed a surge in membership, which then shrunk — as did membership under Tony Blair.

In presidential France and the US, there is a strong tradition of primaries, which enable both party and public to get a good look at the candidates. Of these, failed presidential contender Ségolène Royal tried to make participatory democracy a key party of her appeal in the lead-up to the 2007 French presidential election. Royal, like US president Barack Obama, was an innovator in e-campaigning to find new sources of support.

In this context, Bill Shorten might do well to continue the reform process of the ALP. In “playing safe” with democracy, it might spur a further appetite for democratic reform. And all Australians, not just ALP members, might appreciate that.

 *Dr Rob Manwaring is a lecturer in politics and public policy. This is an edited version of an article published in *The Conversation* in October 2013.*

Tapping into Flinders brain power



Neurologists from Flinders University will maximise their expertise in human brain banking under a new research venture with two of China's top medical universities.

As part of the two-way alliance, Flinders researchers will share their knowledge in human brain research with Central South University (CSU) and Peking Medical College and – in return – Flinders will have access to cutting-edge scientific technologies.

Flinders University Research Fellow Dr Wei-Ping Gai (pictured), who helped initiate the collaboration, said Flinders was particularly keen to work with China to achieve medical breakthroughs in the area of neurodegenerative disease.

“This partnership will enable the Flinders Centre for Neuroscience to enhance its existing relationships with CSU and Peking, which are among the best medical science universities in China,” Dr Gai, who is based in the Human Physiology Department, said.

“By contributing our expertise in human brain research we will have more opportunities for funding and access to state-of-the-art medical resources,” he said.

“The other advantage is that we will be conducting research on more brains, and

when you're looking at the cause of brain diseases you need large numbers.”

Flinders University Deputy-Vice Chancellor (Research), Professor David Day, said the collaboration would further cement Flinders capabilities in neuroscience.

“The Flinders Centre for Neuroscience employs a range of world-class research strategies to provide the foundation for advances in neurology, neuropathology and various other fields of neuroscience,” Professor Day said.

“As a research-driven University, Flinders is keen and committed to work with institutions both locally and abroad to enhance our understanding of the world so it's very encouraging to see a cross-sharing of knowledge between Flinders neurologists and their counterparts in China,” he said.

“In doing so, Flinders will significantly enhance its research capacity because we will be gaining access to facilities and resources that are not readily available in Australia.”

Emily Charrison

Ancient history meets high-tech modern world



A contingent of staff from Flinders' School of Computer Science, Engineering and Mathematics travelled to China earlier this year to strengthen and enhance collaborations with Hunan University in the realm of supercomputing.

Flinders' Manager of ICT Security in Information Technology Services, Aaron Finnis (pictured), provides a personal insight into the stark contrast between Hunan University's historical roots and its present-day capabilities at the forefront of supercomputing technologies.

“A group of 12 staff from Flinders' School of Computer Science, Engineering and Mathematics arrived in the chaotic, smog-filled Chinese province of Hunan on June 24.

After unpacking our bags we took our first trip to Hunan University. The lush, green campus sits on the base of the picturesque Yuelu Hill and on the west bank of the Xiang River – it feels worlds apart from the bustling city streets.

Hunan had organised an official welcome ceremony during which time the President of the University Zhao Yueyu, who is the equivalent of our Vice-Chancellor, presented Flinders' Vice-Chancellor Professor Michael Barber with a replica stone carving of Chinese rules for living.

The carving is a replica of an original stone tablet from the University, which I was surprised to learn is one of the oldest universities in the world. Hunan University dates back to the Yuelu Shuyuan Academy which was originally founded in 976 – over 1000 years ago!

The purpose of our trip was to establish key collaborations in the area of parallel and supercomputing, which is a strategic focus for Flinders. In a very surreal moment it occurred to me that I was standing in one of the world's oldest universities, viewing some of the world's latest and greatest technological advancements.

Solving China's water woes



Water is a scarce commodity but in the world's most populous country, the resource is all the more precious.

As China's population continues to grow amid rapid economic development, water shortages have now reached crisis levels in many parts of the nation.

Compounding the lack of supply, drinking quality has severely deteriorated as a result of contamination from high amounts of factory emissions, poorly treated sewage, industrial spills and agricultural fertilisers.

Now, Flinders University researchers have developed a system to deliver safer drinking water to China by stripping the supply of harmful chemicals.

The research – led by PhD candidate and CSIRO scholar Mai Lei under the guidance of Flinders Professor of Environmental Health Howard Fallowfield (pictured) – is part of a collaborative research project with Hunan University in Changsha.

In the past year the two universities have been working together to test a Flinders-made biological filtration system that uses naturally-occurring bacteria to facilitate the chlorination of drinking water by degrading harmful chemicals, thereby ensuring a safer supply.

“One of the world's greatest public health interventions is the chlorination of water to remove disease-carrying organisms and pathogens, such as salmonella,” Professor Fallowfield said.

“A large percentage of drinking water comes from rivers and lakes but particularly in developing countries, these waters are contaminated with high levels of ammonia from industry and agriculture run-off,” he said.

“Ammonia reacts with chlorine, reducing its disinfection capacity, so we've created a biological filtration system that uses

naturally-occurring bacteria to convert the ammonia into nitrate which doesn't react with chlorine, ensuring a safe and more easily managed drinking supply.”

While similar systems are already being used worldwide to remove pollutants from wastewater, Professor Fallowfield said the researchers were believed to be the first to extend the application to drinking water treatment.

He said the next step in the project is to test whether the system can degrade other chemicals that leach into waterways, including pharmaceutical compounds and personal care products such as shampoo.

Flinders School of the Environment is working on a number of other water research advances with Hunan, including a project to remove faecal pathogens from wastewater that is re-used in agricultural irrigation, while several other projects are being planned for the coming year.

Involved in the projects are two undergraduate students on scholarships from Hunan, along with Hunan wastewater specialist Professor Xiaoming Li, who has spent six months at Flinders as part of the University's Visiting Research Fellowship.

Emily Charrison

Although Flinders has a high-performance computer, which is quite large in comparison to standard computers, we don't currently have a supercomputer.

By developing a two-way partnership, Flinders will gain access to Hunan's cutting-edge computing power and on the flipside Hunan will be able to send their professors and PhD students over here to learn from leaders in the field.

A highlight of our trip was a group excursion to see the world's fastest supercomputer, Tianhe-2, which was built by the National University of Defense Technology in Changsha.

In one whirlwind week, I had the privilege of visiting one of the world's founding academic institutions, witnessing cutting-edge technologies and building exciting research partnerships with bright minds.”



Hunan University Library



Ancient manuscripts at Hunan University

Empire Times' raucous history

Earlier publications had purported to be for and by Flinders students, but when the *Empire Times* put out its first edition in 1969, a robust if rambunctious vehicle for the views and interests of the student body was born.

With a name gently mocking of both Australia's political situation and the establishment press, the newspaper quickly established its radical credentials. It seemed only fitting that after its first five years, the single editor model was abandoned in favour of collectives, with groupings of up to nine students involved in writing, designing and laying out the paper.

Perhaps the most significant factor in *ET's* formative years was the purchase of a printing press by students Martin Fabyani and Rod Boswell (now a professor of physics at ANU), which an initially reluctant Student Representative Council eventually took over. The action brought the entire production process of the paper physically on to campus and under student control.

Like many student publications of the time, the paper and its sensibilities were fuelled by a heady mix of radical politics and the influence of 1960s counter-culture from Europe and America. The early influence of arts students, particularly from drama, was marked: *ET's* first two editors, Martin Fabyani and Martin Armiger, went on to careers in film and music respectively.

Original poetry was popular, and reviews of music, film, art, literature and theatre quickly became an enduring staple. At the time a drama student, Scott Hicks spent time backstage with the Rolling Stones during their 1972 tour to generate a memorable feature on the band.

Andrew McHugh (pictured), who was sole editor in 1975 and went on to share the job with others for two more years, would also retain the job of printing the paper up until the early 1990s in his role as Students' Association printer. A constantly available source of technical and editorial advice to his successors, he has also contributed to *ET* in every subsequent year of its existence.

McHugh says American underground comics including Robert Crumb's cartoons and Gilbert Shelton's *Furry Freak Brothers* were very popular with students and were frequently reproduced (without permission) in *ET's* earlier years.

"It really was a bit like the Rip Off Press: no-one cared too much for copyright and just pinched things from here and there," McHugh said.

A press service of articles compiled from small and alternative newspapers around the world by the National Student Union was another valuable source of material, and contributed to the paper's eccentric news values.

As the sometimes misogynistic attitudes of the 60s were abandoned, *ET* increasingly championed feminism and also became an advocate for gay rights. Forthright and frank discussions of sex and sexuality were almost mandatory, although one issue was judged to have overstepped the boundaries of public acceptability (*ET* possessed a modest off-campus readership) and was pulped.



From the time of the *Vietnam War* onwards, the *Empire Times* editorial line was almost invariably strident in its opposition to Australian military involvement overseas, and the paper also became an enthusiastic backer of the environmental and anti-nuclear movements.

The big ticket ideological issues shared space with perennial student-centred concerns. Each decade had its diatribes against university fees, calls to increase the student living allowance and demands to overhaul assessment methods, as well as periodic campaigns denouncing the quality of refectory food.

"Nothing was too big, or too small, or too trivial or too obscure," McHugh said.

When radical politics came on to the campus with the occupation of the Registry, *ET* was strongly sympathetic, although the editors were too busy producing the paper to actually take part.

The University administration was obviously not always at ease with the sentiments of *ET*, but, says McHugh, usually had the good sense to stay away and let the students have their head.

ET's turbulent history was suddenly interrupted by the introduction in 2006 of Voluntary Student Unionism, which effectively removed funding for *ET* as well for the student organisations, clubs and societies, and the paper ceased production. Following the introduction of a new system of student service fees, *ET* was successfully revived in 2013, giving back Flinders University students their distinctive voice.

And despite his official retirement and departure from campus, Andrew McHugh is still contributing the odd article.

Charles Gent



New life at Tonsley site



An artist's view of Tonsley's interior

Flinders' new Tonsley development – a new state-of-the-art, six storey, 18,000 square metre facility is starting to take shape. Construction started in July 2013 and in-ground works have been completed.

In October, approximately 1500 cubic metres of concrete – or the equivalent of foundations for about 42 residential houses – was poured to lay the foundations. Precast raking columns have now gone up, and the first suspended slab pour was in November. For the next five months, approximately 350 cubic metres – about 60 truckloads – will be poured each month to create each floor of the building.



Flinders' Vice-Chancellor, Professor Michael Barber said collaboration and entrepreneurship will be at the heart of Flinders' activities at the new Tonsley Precinct, and the University's recently launched New Venture Institute will focus and intensify Flinders' entrepreneurial activities and education to the mutual benefit of business and community partners and the University's staff and students.

The \$120 million teaching, research and innovation space – designed by award-winning international architects HASSELL – will be the new home of the School of Computer Science, Engineering and Mathematics. Flinders' New Venture Institute, Medical Device Research Institute, Flinders Partners, and the Centre for Nanoscale Science and Technology will also be based at Tonsley.

Lend Lease is constructing the innovative building for the University and when complete, 150 staff and 2,000 students will be housed at Flinders' new Tonsley Precinct from 2015. Students will be taught in new flexible teaching spaces, with the latest technology and tools including 'wireless bring your own device' which will enhance the student experience. Researchers will be supported with the equipment and resources needed to explore the frontiers of their respective fields. In the medium-longer term, Flinders will look to locate more than 6,500 students and 500 staff at the Tonsley Precinct with further high density building.

Michelle Bini

A vibrant heart for Flinders

Flinders is exploring establishing a new Student Hub to be the vibrant heart of Flinders University – and will be both physical and virtual in structure.

Starting with a blank canvas, the University asked students about their needs and what would enhance their time at Flinders and both students and staff have responded.

A comprehensive consultation process was undertaken in late 2013 including scribble-boards on campus, feedback forms, on-line surveys and forums.

The generous and thoughtful feedback received has helped Flinders identify the needs of students and staff, given an indication of desired elements and some challenging issues, and will help shape Flinders for the future.



Flinders' Your Hub, Your Say Student Engagement Campaign also included a Student Pitch competition, with Flinders University undergraduate student, Tamara Babij (pictured), awarded a \$1,000 cash prize for her "vibrant, thorough, well researched, creative, relevant and insightful," presentation.

Tamara's 7-minute presentation recognised the diversity of study behaviours at the University and addressed all aspects of enhancing the student experience at Flinders through her content, presentation, innovation and practical application of her entry.

Michelle Bini

Second life for old smartphones

Broken or unwanted smartphones will be given a new lease on life, thanks to the efforts of Flinders University's digital blacksmith Dr Paul Gardner-Stephen and his team.

In the wake of the devastating super typhoon Haiyan, which killed nearly 4,000 people when it ripped through the Philippines on November 8, Dr Gardner-Stephen has launched a public appeal for smartphone donations which will be refurbished for humanitarian deployment.

Enlisting the help of students from Flinders School of Computer Science, Engineering and Mathematics, Dr Gardner-Stephen will repair and refurbish the phones before liaising with the New Zealand Red Cross to send the phones to developing countries.

Ultimately, Dr Gardner-Stephen aims to provide phones to the New Zealand Red Cross that have been fitted with his revolutionary Serval software, which allows mobile phones to communicate during a disaster, even in the absence of cellular network infrastructure.

Rather than relying on conventional phone towers, the Serval system creates a virtual network enabling people to make calls by "bouncing" off other devices within a Wi-Fi range of about 100 metres, providing they share the same software.

Only two phones are needed to start a network, thereby eliminating any start-up or operating costs, and the technology can be downloaded from phone to phone at any time.

"In the first instance we'll refurbish as many of the donated phones as practicable, and make them immediately available to the New Zealand Red Cross for deployment, but our long-term goal is to send out phones that have been fitted with the Serval software," Dr Gardner-Stephen, a Research Fellow (Rural, Remote and Humanitarian Telecommunications) in the School of Computer Science, Engineering and Mathematics, said.

"It will be great to repair and deploy as many smartphones as we can to places like the Philippines and other areas of need but without the Serval software, the local phone networks still need to be working," he said.

"Four days into the Philippines disaster, some areas had just 15 per cent of networks operating so while any phone is useful in an emergency situation, if we can make them work without the networks it could potentially be life-saving."

In addition to making free calls, the software can also share files, maps and data – information that could be crucial in times of disaster.

"If there was an earthquake, for instance, you could use the map to record the location of a collapsed building, food and water or people who need help and that information would basically start appearing on maps of everyone's phone who is running the software," Dr Gardner-Stephen said.

"The software can also provide people in poverty with the means to make calls, send text messages and transfer files without being on a phone plan or buying phone cards. This will hopefully improve their economic situation and quality of life."

Dr Gardner-Stephen said he urged anyone with an unwanted smart phone, whether it is an Android, Blackberry, Apple or Nokia device, to donate to the cause.

"Recycling programs like MobileMuster are great because they keep phones out of landfill but what's even better is if these phones can get a second life helping people less fortunate than ourselves."

Red Cross New Zealand emergency telecommunications manager Matthew Lloyd said: "I am already aware of unmet need for donated smartphones in the Philippine Islands to assist in disaster assessment and coordination.

"This initiative is timely and has the potential to be replicated all over the world."

To comply with Australia Post safety guidelines, unwanted smartphones, with batteries still inside the phone, and no more than two batteries per package, should be wrapped and packaged in a parcel not less than 2cm thick, clearly marked "FOR ROAD TRANSPORT ONLY", then posted to the Serval Project, Flinders University, PO Box 2100, Adelaide 5001.

Alternatively, donated phones can be delivered in person to Engineering Deliveries in the south eastern corner of the Engineering Building, Flinders University.

Emily Charrison



Leaving a mark on Flinders



Bronwyn Halliday

Dr Bronwyn Halliday who died in June aged 53, served as an external member of Council from June 2009 to February 2013 and was also a member of the Council's Audit Committee and Governance Committee.

An enthusiastic supporter of Flinders, Dr Halliday, who was educated in Adelaide and the US and held a doctorate business administration, worked at a senior level in both public and private sectors, holding positions as National Director with Ernst and Young, as Director of the State Library of South Australia and as Executive Director of Planning SA, the State government's land use planning agency.

In addition to her role on Council at Flinders, she served on several boards including Minda, National Pharmacies and the State Theatre Company of South Australia.

Flinders Deputy Chancellor and Adelaide businesswoman Ms Leonie Clyne said Dr Halliday was an enthusiastic supporter of Flinders who loved the ethos of the University.

"Flinders truly benefited from Bronwyn's specialist knowledge and experience in corporate governance during her time on the Governance Committee, and her interest in risk and change management was very timely for the University."



Peter Schwerdtfeger

Professor Peter Schwerdtfeger, who died in August aged 77, was appointed as the Foundation Professor of Meteorology at Flinders in 1971, and was made Professor Emeritus following his retirement in 1999.

The founding Director of the Flinders Institute for Atmospheric and Marine Sciences, he was also founder, with Dr Jörg Hacker and Professor Neville Clark, of Airborne Research Australia, the national scientific research facility based at Parafield Airport. In the 1980s he qualified as a pilot.

In addition to research on the use of aircraft in atmospheric science and remote sensing, Professor Schwerdtfeger published in fields that included the effects of the environment and land use on climate, solar and atmospheric radiation, and glaciology

A gifted amateur pianist and violinist, he also maintained a keen interest in astronomy and architecture.

Elected a Fellow of the Australian Academy of Technological Sciences and Engineering in 1988, he served on the Australian Bureau of Meteorology Advisory Board, the Antarctic Science Advisory Committee and chaired the Country Fire Services Board of South Australia.



Ruth Megaw

Dr Ruth Megaw (née Miller) died in July, aged 75. An honours graduate in history from Glasgow University, she worked for the UK Foreign Office before marrying archaeologist Vincent Megaw and moving to Sydney in 1961, where she completed a PhD and taught American and Australian history at the universities of New South Wales and Sydney.

During the family's return to the UK in the 1970s, she established a new American Studies department at the Nene College in Northampton, and also began to collaborate as a writer with her husband.

Dr Megaw came with Professor Vincent Megaw to Flinders in 1984, where she worked in both administrative and research roles. The pair developed a joint interest in Indigenous Australian art while continuing to publish widely in the field of early Celtic art: their books included *Celtic art from its beginnings to the Book of Kells* as well as works on Aboriginal art of the Western Desert.

Dr Megaw was elected a Fellow of the Society of Antiquaries in 1997.



John Bockris

Electrochemistry pioneer and chair in Physical Chemistry at Flinders in the 1970s, Professor John Bockris died in July aged 90.

South African born but educated in England, he completed his PhD and lectured at the Imperial College of Science and Technology, where his research group included many later leaders in electrochemistry worldwide.

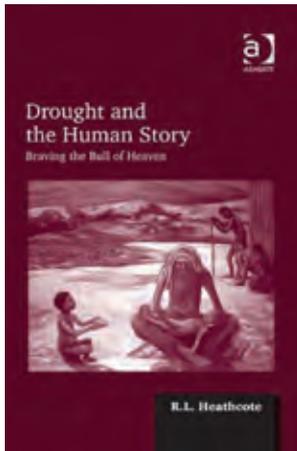
He moved to the University of Pennsylvania in 1953, where his research group expanded. Concerned with global warming as early as 1969, he came to an idea of hydrogen-based society, publishing his article *Hydrogen Economy* in 1971.

Professor Bockris came to Flinders in 1972. Remembered by former students as an attentive teacher and mentor, he linked the hydrogen economy with solar energy in his book *Energy: The Solar-Hydrogen Alternative* in 1975.

He returned to the USA to join Texas A&M University in 1978; his time there is mostly remembered for his involvement in controversial cold fusion research.

He retired in 1997 having supervised nearly 100 PhD students and postdoctoral fellows and authored more than 700 scientific papers.

In Print



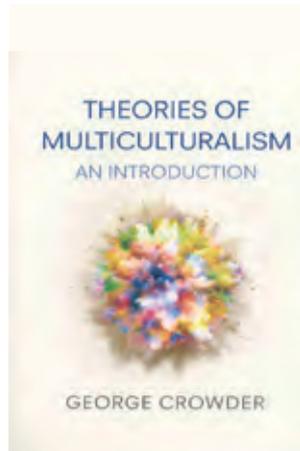
Drought and the Human Story: Braving the Bull of Heaven

Drought, its manifestations and the various responses of human populations were career-long research interests of Dr Les Heathcote and also form the focus of his posthumously published book, *Drought and the Human Story: Braving the Bull of Heaven*.

Appointed Senior Lecturer in Geography at Flinders in 1966, Dr Heathcote died in 2010 in retirement, and the draft of his unfinished book was completed for publication by his widow, Sheila.

The subtitle refers to the embodiment of drought in Mesopotamian mythology as the Bull of Heaven. In the book, following a detailed survey of droughts and their effects in urban and rural settings around the world, Dr Heathcote advocates a concerted and strategic approach to drought from scientists, governments and communities, especially to meet the increasing frequency and severity of droughts that will flow from climate change.

Dr Heathcote expressed a hope that his writing “may make some contribution towards helping societies in both the developed and the developing world face up to and cope with the undoubted future challenges that droughts will provide”.



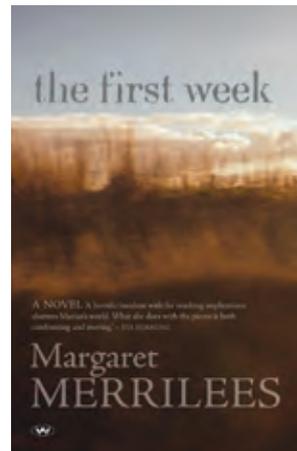
Theories of Multiculturalism: An Introduction

In his new book Professor George Crowder examines the political and theoretical underpinnings of the international variants of modern multicultural policy. The book is intended as a guide to the subject for students of politics, philosophy, sociology, and political and social theory.

Professor Crowder identifies multiculturalism “proper” as a set of official policies that recognise and actively support minority cultures. Since the 1970s, Australia, with Canada, has been one of the world’s most prominent long-term exponents.

Despite widespread criticism of the policy in recent years, Professor Crowder argues that multiculturalism is itself now part of Australia’s shared identity.

“After 40 years, it has become part of the way many Australians tend to think about Australia: as a country that welcomes and accommodates immigrants from multiple cultural backgrounds, and that respects the special place of its Indigenous peoples,” he said.



The First Week

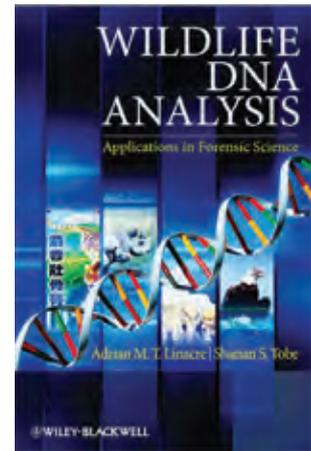
Winner of the prize for best unpublished manuscript at the Adelaide Festival Awards for Literature last year, Margaret Merrilees’ debut novel about a life transformed has recently been published by Wakefield Press.

A former Western Australian now living in Adelaide, Dr Merrilees is a graduate of Creative Writing at Flinders, and the first draft of her novel was written as part of her studies for her PhD.

The First Week tells the story of a farming woman, Marian Anditon, whose life in rural Western Australia is upended when her son shoots and kills two people in Perth. In the days that follow, between prison visits and professional appointments, she attempts to come to terms with her shock and disorientation as well as her own sense of moral responsibility and the swiftness of society to apportion blame.

Marian’s questioning of her underlying assumptions leads her to recognition of the racism and environmental damage endemic in rural Australia.

“What I was trying to tease out was what we, as white Australians, have done to this country and to its original inhabitants, and how we can find a way forward,” Dr Merrilees said.



Wildlife DNA Analysis

Analysing animal DNA is a growing specialisation within forensic science, with increasing demand for expert identification of species of wildlife in scenarios that can range from live animal smuggling to birdstrike.

Professor Adrian Linacre and Dr Shanan Tobe of the School of Biological Sciences have co-authored *Wildlife DNA Analysis*, a book that covers the various functions and practices of wildlife DNA forensics as well as discussing the scientific techniques involved.

In addition to describing who performs forensic wildlife examinations, the standardisation and validation of methods and the role of the expert witness, the book presents a detailed exposition of the science behind DNA typing and also offers a comprehensive review of the problems and possibilities of species testing using DNA, as well as those associated with the creation of genetic databases.

“The unenforced illegal trade in wildlife is having a massive impact – forensic science can play a small but crucial part in investigating wildlife crime and, ultimately, preserve some of the high-profile species from extinction,” Professor Adrian Linacre said.

Charles Gent



Shaping Flinders Future

Professor Barber (left) turned the first sod at Tonsley with Minister Tom Kenyon in July

To be successful in a competitive higher education sector, universities have to stand out from the crowd. Since the deregulation of the sector in 2009 and associated new funding arrangements – which implicitly gave students greater choice – Flinders has enjoyed growth in enrolments of 19%, exceeding the national average, a result of which we are very proud.

However, we cannot rest on our laurels and future success will be determined by creating a distinctive identity for the University. That goal will entail building on our existing teaching and research strengths and achieving the best possible outcomes for our students and the communities we serve. The University's Strategic Plan – *Flinders Future Focus* – points the way towards this goal with its encouragement to 'differentiate, focus, intensify', with these aspirations best achieved through collaboration and simplification on the national and international stages.

How do such aspirations play out in practical terms? Quite simply, by acting on the component parts to achieve success for the whole. Flinders' activities in China provide an excellent case study. We have taught in China for over a decade and have numerous relationships. The challenge now is to focus and intensify our engagement by bringing more of Flinders capabilities to fewer high priority partnerships. That strategy is already paying dividends in enhanced profile and new opportunities for staff and students.

The quality of the two master degrees – a Master of Arts in International Relations in Economy and Trade and a Master of Hospital Management – we teach in Tianjin in partnership with Nankai University have been recognised as benchmarks of educational quality by the Chinese Ministry of Education, placing these courses in the top ten of the hundreds of programs offered in China by European, American and other providers. This is a significant achievement and reflects a 12 year investment in building relationships with Nankai University, one of China's most prestigious universities, the Chinese authorities and offering an excellent educational experience for students. This success and recognition has led to Flinders being allowed to teach a third degree in educational management with Nankai – an almost unheard of achievement for a foreign country. The first students of this new program will graduate next year and already enrolment has doubled.

Flinders now has 3,500 alumni in China from the Nankai courses, and an additional postgraduate course with Capital Normal University in Beijing and two undergraduate courses taught at The Chinese University of Hong Kong. This is an amazing group of very loyal alumni many of whom are now actively involved in building the 'new China'.

On research our focus has moved south to Changsha where a novel partnership involving Central South University and Hunan University (and the local authorities) has likewise broadened and deepened. Over 40 Flinders people from medicine, engineering, environmental science and ICT attended the Second Changsha Workshop in June. That engagement has led to us being asked to establish an innovative GP training program for Chinese

doctors, bringing our distinctive expertise in rural and regional training and placements to a project that will help the Chinese Government achieve its target of 40,000 qualified GPs by 2020.

Similarly a focus on Shandong, a sister province of SA, is seeing early research relationships spawn valuable research collaborations with, for example, the Qingdao Gather Great Ocean Group (GGOG) who have invested in a laboratory at Flinders this year to explore the potential conversion of seaweed into high value food, cosmetic and medicinal products. That relationship subsequently led GGOG to make a significant financial contribution to a South Australian seaweed processor, Australian Kelp Products – a deal consummated in October with a signing ceremony at Flinders. And a month later, business leaders from China's pharmaceutical and seafood companies, as well as institute directors of the Chinese Academy of Sciences and top Chinese universities, converged on Adelaide for the inaugural SA-China Marine Biotechnology Forum. And finally, in a wonderful example of the breadth of our China expertise, the 4th Flinders-Chinese Academy of Social Sciences conference was held in Adelaide in November on the very timely theme of Changing Economies.

Flinders' experience in China exemplifies the benefit of differentiating, focusing and intensifying. It is a model that will produce tangible, long term gains as the staff and students work to their strengths and achieve great outcomes.

The University's major financial and human capital investment in the Tonsley precinct is another example of constructing much more than a building made of cement, steel and glass – as impressive as the six storey facility will be in terms of energy efficiency and technological innovation. Built on the site of mature manufacturing, the Tonsley precinct will be the foundations for the smart industries of the future. It will embody the technical skills of Flinders' computer scientists and engineers as they strive to produce the medical devices that will improve the human condition or design the homes that will allow people living with disabilities and the elderly to age with dignity. But the Tonsley precinct will also offer much more. The New Venture Institute, established by Flinders in 2013, will also tap the imagination, entrepreneurial spirit and business acumen of the University's staff, students and business and community partners to create new models of teaching, learning and business development. It will create the new companies and jobs that, hopefully, will accelerate the economic transformation of the southern suburbs which, ultimately, is the goal of the Tonsley development.

Exciting times lie ahead for the University as it delivers on its' Strategic Plan. 'Differentiate, focus, intensify' is more than a mantra – it's shaping the future of Flinders. As alumni and friends of the Flinders' family, I invite you to take this journey with us as we head towards the 50th anniversary of the University in 2016.

Professor Michael Barber
Vice-Chancellor



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UNIVERSITY
inspiring achievement

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