Uni NEWS

AUGUST 2019

THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

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SNAPSHOTS

TŪRAMA FESTIVAL PART OF A VISION

There are big plans for the Tūrama Festival. The inaugural event was held in Albert Park 26-28 July and featured artworks from sculpture to interactive installations. Food and music made it the place to be in the evenings and festival director Daragh Manning says it's likely to return next year. "The ultimate idea is it becomes part of a CBD art loop from Albert Park to Britomart and High Street," he says. He's hoping a collaboration with Creative Arts and Industries (CAI) at the University will lead to CAI students being involved in the art trail, which will become an attraction for local and international tourists.

Photo: Max Burgess

THE CHECK UP WORTH A CHECK OUT

TVNZ series *The Check Up* screens on Monday evenings and features University of Auckland experts. It is co-presented by Dr Mataroria Lyndon (pictured), Northland doctor and senior lecturer at the Faculty of Medical and Health Sciences. Upcoming episodes include: Dr Andrew Collins on sunglasses (12 August), Distinguished Professor Ian Reid on osteoporosis (26 August); Dr Angus McMorland on biometrics (2 September); Associate Professor Thor Besier on bones and exercise, and Brigid Ryan and Professor Maurice Curtis on smell (all 9 September).

RAISING THE BAR

On Tuesday 27 August Raising the Bar will see 20 speakers speak in ten bars around Auckland. The list of speakers and their topics is at **rtbevent.com/auckland-19** and includes everything from gut bugs to 3D printing to cannabis legalisation to mindfulness. University of Auckland speakers include Benedikt Fischer, Damon Salesa, Olaf Diegel, Liam Wotherspoon, Rebecca Deed, Ross McDonald, Craig Sutherland and Claire Charters. Raising the Bar is a worldwide event aimed at making education a part of a city's popular culture. Talks will also go online as podcasts or videos in due course.

Liam Wotherspoon and Rebecca Deed.

VIRTUAL BAUHAUS IN THE HOUSE

The School of Architecture, in association with the Goethe Institute NZ, is hosting the Virtual Bauhaus Exhibition, to celebrate the 100th anniversary of the Bauhaus, the German art school famous for its design and architecture. Walter Gropius founded the Bauhaus in 1919 leaving a legacy for design, architecture and teaching.

WHEN 1-28 August, 9am-5pm

WHERE: School of Architecture and Planning CAI Student Centre, Level 2, 26 Symonds Street

THIS ISSUE

100 GOOD NEWS STORIES

The countdown to the end of the For All Our Futures Campaign began on 24 July with Alumni Relations and Development publishing 100 facts and figures – one a day – leading up to the last day of the campaign on 31 October. The total amount raised will be revealed on 21 November. The philanthropic campaign is the most ambitious ever attempted in a New Zealand university and the stories show its impact. The aim was to provide funding to help solve challenges and opportunities we all face. Funds raised have allowed everything from creating staff chair positions to health research to venture launches.

See **tinyurl.com/Campaign100**

EDITOR: Denise Montgomery
denise.montgomery@auckland.ac.nz
PHOTOGRAPHY: Elise Manahan, Billy Wong, Godfrey Boehnke
COVER PHOTO: Kevin Smith
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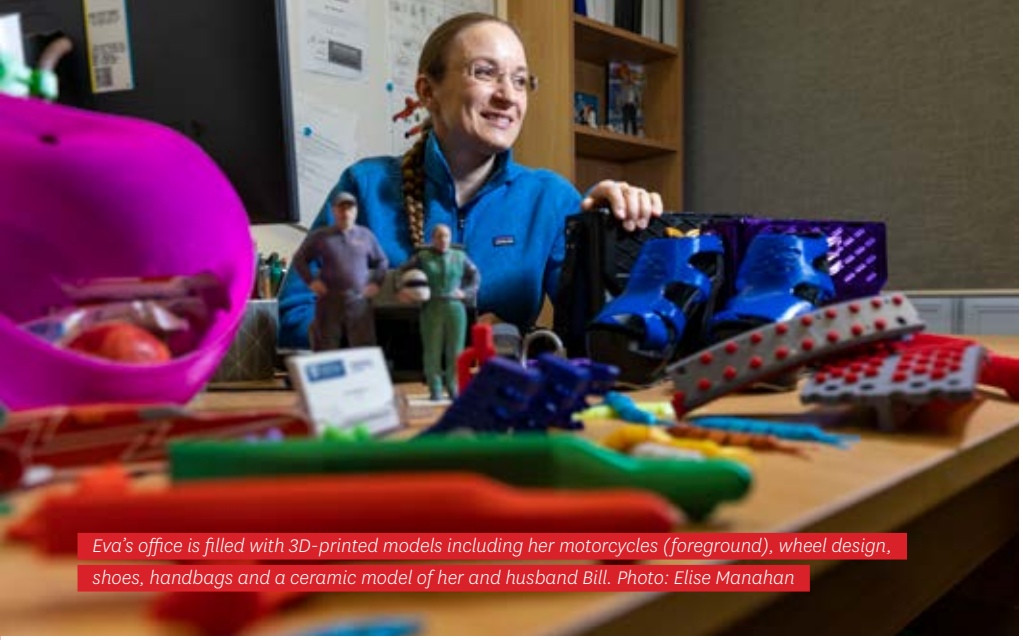


Eva's office is filled with 3D-printed models including her motorcycles (foreground), wheel design, shoes, handbags and a ceramic model of her and husband Bill. Photo: Elise Manahan

NEED **FOR SPEED**

Dr Eva Hakansson is a lecturer in mechanical engineering.

Why don't more women become engineers?
For whatever reason, women think it's not their domain. But they're missing out on high-paying, highly respected jobs where they're treated well. From an engineering perspective, we're missing out on good engineers. I am trying to change the image of engineering. I use what I do outside of work to promote it as a career too.

Tell us about this outside interest of yours.
I became the world's fastest female electric motorcycle rider on KillaJoule, an electric motorcycle I built in my garage. The record I set was 434 km/hr. KillaJoule is a sidecar motorcycle so an odd vehicle category. It's basically a loophole because from a philosophical perspective it's like a car, but it's asymmetric. It's classified as a motorcycle so it runs for motorcycle records. The asymmetry of it is a bit tricky from an aerodynamic perspective because it wants to turn right because of the sidecar. It wants to drive in a giant circle.

There's a photo of you that 'broke your Facebook'. You're using your image, right?
Yes, and I have mixed feelings about it. But it's the hand I was dealt and it's important for girls to see another girl having fun with engineering. The photo in the white dress was actually spontaneous. One of the volunteers brought the dress with her. I didn't have any suitable shoes so I went barefoot. I could only stand on the nose of a KillaJoule as it's the strongest part. Anyway, people liked the photo so I still use it. But I educate girls about STEM in a proactive and encouraging way through my scienceenvy.com site. I use this and my racing as a kind of eco-activism. If you bring in sexy fast cars, you bypass perceptions that electric vehicle advocates are tree-huggers.

Where did you first set your record?
At the Bonneville Salt Flats in Utah. It's one of the few places in the world where there is that much flat space that no one has built houses on. It floods during winter, then dries up over summer. So the land is useless and that's the only reason it's available. I can only afford to make one record attempt a year on my budget. Now that I'm living in New Zealand, I do my racing at Lake Gairdner Salt Flats in South Australia, but even that is a $30,000 adventure each time. There's a whole land-speed racing community and the first time you set a record over 200 miles per hour (321 km/h) you get a red hat and people prominently display their hats. It's very hard to go 200 miles per hour on the salt because the traction is poor.

You've said you don't actually enjoy the racing. How can that be?
It's complicated. Just because you love the subject doesn't mean you like taking the final exam. It's stressful – there's a lack of sleep and you're in a hot, confined space. It's quite claustrophobic.

Eva Hakansson and the photo that 'broke her Facebook'. (facebook.com/EvaHakanssonRacing)

Do you have sponsors?
I'm not very good at that although I do have a few generous sponsors. My husband Bill [Dubé] is my enabler. Some people have kids. Some have pets. I have a racing programme. It's an addiction.

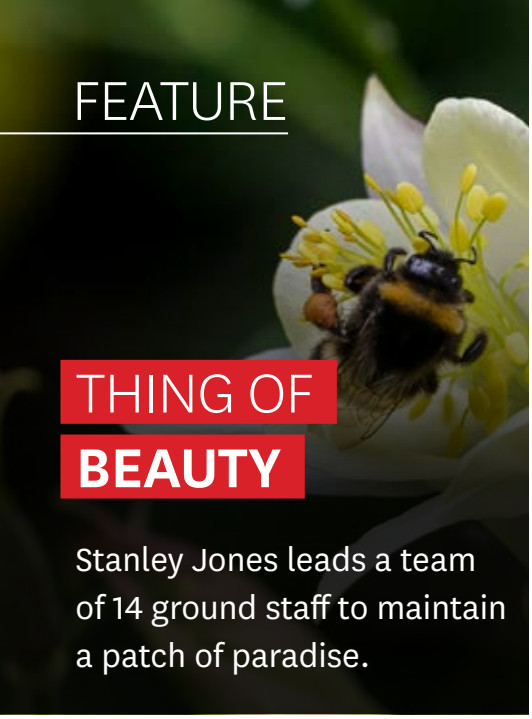
How did you meet Bill?
We met when I asked him if I could publish a photo of his electric drag bike, the KillaCycle. That was 12 years ago; the rest is history. Our wedding bands are ceramic because it's dangerous to wear metal when working with electricity.

Where are you from?
Originally from Sweden but Bill and I lived in Denver, Colorado, for ten years. We were first invited here in 2010 to race KillaCycle. We met the local electric vehicle (EV) folks, particularly Steve West who runs ChargeNet. In 2016 I'd graduated with my PhD and we decided to do something new and thought 'New Zealand is beautiful, we know people there, EVs are on the rise, why don't we see if we can get a job?' We ended up choosing here because of the EV community. I sent off my CV and was offered this job and have been here two years. I teach computer-aided design (CAD) and engineering drawing to our first-year engineering students. I also take care of the Formula SAE team of about 50 students. Last year they came third in the Australasian competition – they build a whole new race car from scratch every year and race it.

Has it been good here?
Bill and I define New Zealand as an 'it' country. It's the most fashionable country in the world. There are lots of things going on. Yes it's small and it's definitely not a place to have a bad reputation, but it has a spirit and a 'go and get them' mentality that doesn't exist in Sweden or in the US. Racing wise, I have much greater support here than I ever had in Sweden where they told me it was impossible. Here people say, 'cool, how can I help you?'

You have an engineering gene don't you?
My dad is a mechanical engineer and my mum's an engineer too, as are my brothers. I'm a third-generation mechanical engineer. Dad built racing motorcycles and was the Swedish champion in 1962. He also built an electric motorcycle for Monark during the 1970s oil crisis, so I'd say electric vehicles are a genetic disorder.

What's your next challenge?
I'm building Green Envy, the successor to KillaJoule, which will be twice as powerful and a metre longer. I have promised to have it ready to race in March. You can read about it at greenenvyracing.com. I'm also reinventing the wheel! I was awarded a new staff research grant in 2018 that has helped fund my research into designing a solid metal wheel with rubber tread elements for traction, for speeds exceeding 1000 km/h. The 'KiWieels' were tested in Australia in March 2019 with very good results.



THING OF BEAUTY

Stanley Jones leads a team of 14 ground staff to maintain a patch of paradise.

Stanley Jones wonders if people could "just look up from their phones" when they're walking through the City Campus gardens and appreciate the beauty around them. Stanley is the grounds and precincts manager for the University of Auckland, aka head gardener, for all our campuses from Leigh to Tamaki. The best known gardens are at the City Campus and Stanley says the sheer beauty of nature around us is worth paying attention to.

It's not too much to ask from a man whose passion for making the campus beautiful begins when he arrives at work around 7am each day.

Old Government House (OGH) and its gardens are a significant 19th-century historic place. Ngāti Pāoa and Ngāti Whatua trace ancestral activity in the area to the early 17th century and Māori used the site from 1840 to grow potatoes and flax. A team of gardeners was employed by the governor in 1841 to create and maintain the gardens around Government House and the first public gardener was Alexander Hobson who planted the flame tree (*Erythrina caffra*) on the main lawn. His Royal Highness Prince Alfred, son of Queen Victoria, planted the Norfolk pine (*Araucaria heterophylla*), also on the main front lawn, and the giant redwood (*Sequoiadendron gigantium*) on 14 May 1869, next to the main lawn area. The latter is Stanley's favourite tree.

"These trees were planted so long ago and we just look after them for a short time. I must make sure I give the garden over to the next person better than when I received it because our lives are fleeting."

He says while history is important in the garden, so is the process of renewal.

"I like trees because when I go away then return to a place, there are the trees that I've planted. The trees have a life cycle so you must renew all the time."

He says the secret to the lush growth all over the campus is that there's been minimal soil disruption in the area.

"We have good soil because it has not been destroyed. In many parts of Auckland they strip the topsoil and then you have to buy it back. Hundreds of years of topsoil has been destroyed. That's why you see trees around the houses struggling. But here, the ground has never been disturbed."

Stanley has developed a garden training patch near the historic gardeners' cottages. The aim has been to show his staff how to create different types of gardens, including a little Japanese garden and a bromeliad garden.

"There was very little there before. Just the sheds and the road running through. So we created this. I like to make things beautiful. If you go to many Auckland gardens they've got the same five plants ... that's not beautiful.

"And how many people grow fruit trees? I'm quite worried that the next generation will lose that ... our grandparents could grow fruit.

"Today people go to the nurseries and they buy something and three weeks later it's dead and they go buy new ones. Many people don't know how to nurture nature."

Stanley's ultimate successor has big shoes to fill. The South African-born gardener's experience spans many years in his homeland where he first studied horticulture.

"There are beautiful gardens in South Africa.

'I must make sure I give the garden over to the next person better than when I received it, because our lives are fleeting.'

I worked in Cape Town and Durban as well as several other cities for Councils, Parks, Cemeteries and Reserves Departments. Before starting at the University in 2009, I was part of a team who maintained the Parks and Open Spaces in Manukau.

"This is a different job to any other job because it's 24 hours, seven days a week. I'm so involved."

He does get some time to do oil paintings, however. "It's good for your brain to paint ... to do good landscaping I think you need to be artistic. You need to understand the flow, the focal points and what's pleasing to the eye."

The catalogue of plants across all campuses is vast, numbering around 8,000, including the Australian tree collection planted by Governor Viscount Galway's wife Lucia between 1935 and 1941. As well as regular planting of the beautiful or significant, Stanley says it's important to help preserve endangered plants, no matter where they are from.

He is proud of his team's work each and every day. Walking through the gardens with Stanley is the chance to hear him deliver his dry-as-bark banter with gardening staff.

"I come in early and I walk through the gardens. My staff start in summer at 6am so they can clean the place before people arrive.

Left: The giant Norfolk Island Pine planted by Prince Alfred in 1869. Stanley has added labels to all trees so people can learn about them. Photo: Jason Fell

Stanley Jones, grounds and precinct manager.
Photo: Godfrey Boehnke

"In winter it's 6.30am, out with the leaf blower. It's a lovely time of day.

"I walk a lot, up to 20km a day. The garden is strange. You will plant and plant and then suddenly it goes whoosh!"

There's always fine tuning. The giant redwood, on a lean, is measured regularly to ensure if it ever does fall, it doesn't go through the fence onto the footpath. It's topped to keep it a certain height so it would fall just inside the fence.

Another has branches that need to be trimmed from underneath so they can't be reached because the tree is poisonous.

You can find out these snippets if you go on one of Stanley's garden tours, and there's also a map of the major plants in the garden on a big sign outside OGH.

But it's not just the OGH gardens Stanley is proud of. "I like the perennial gardens down behind the Music School. And there's a nice little tropical garden down at Architecture."

Warned ahead of the interview that Stanley might not have much to say about himself, it turns out that all that's required is an interest in what he does.

Stanley was raised by his grandparents in South Africa. His grandfather was a fruit farmer and Stanley remembers fruit in abundance in his childhood.

His family have all completed masters degrees at Auckland – his wife in education, his son in archaeology and his daughter in fine arts. He has a three-year-old granddaughter whom he worships ... and he can't resist showing me a photo of her on his phone.

He says the lifestyle of many people seems to make it hard to take time to enjoy the sanctity of nature, but being a student or staff member at Auckland, it's an opportunity that's always there.

"I just think most people are four days ahead. We think four days ahead and we get this glazed look because we're all so rushed.

"Some other workplaces are just concrete; it's sad. People stand in the street. But in our gardens you can sit and be calm for a while and just relax."

Worth looking up from your phone.

■ Denise Montgomery

Stanley developed a training patch to grow new plants and upskill the gardening team.

STANLEY'S PLANTING TIPS

ANNUALS: "There are winter and summer annuals but do not buy at the end of each season as the plants will not adapt ... if you buy winter annuals right into summer, they'll be dead soon.

"With annuals you need to buy the plant small, without a flower, so it can grow properly. If you buy it with a flower it's past its prime and is only going to last a few weeks."

TREES: "Various fruit trees have to be bought in pairs because one pollinates the other. They're not self pollinating but people often don't realise that. Also, with trees in general, people tend to buy as big a tree as possible. I say no, buy as small as possible! That small tree will catch up soon. Rather than get a big pot-bound tree, get a small one and be patient."

DON'T TILL THE SOIL: "If you don't want to destroy the soil's micro-organisms, don't dig up the soil too much. So to make a garden base, put edging in, put newspaper down, put soil on top. The paper kills the weeds. We tend to over-fertilise and that gets into the streams and creates algae bloom. If you don't till, you don't need to fertilise. The goodness is there."

BE SENSITIVE: "We need to be more sensitive about how we plant and what we plant. For example, not everything should be in a row. When you plant fruit trees, plant in between. Plant close together and make a microclimate."

RELATED LINKS

tinyurl.com/UoAGardens
tinyurl.com/OGHHistory
tinyurl.com/UoAHistory

LAW TUTOR OFF TO **HARVARD**

A desire to understand and redress society's worst inequalities is what drives Fuimaono (Dylan) Asafo.

The professional teaching fellow from the Auckland Law School is heading to Massachusetts this month on a Fulbright Scholarship, to do a Masters of Law at Harvard.

Dylan was named a Fulbright New Zealand General Graduate Award winner in June. The awards are valued at up to $US40,000 and are for promising New Zealand graduates to do postgraduate study or research at United States institutions in any field.

Dylan graduated with an LLB/BHSc conjoint in 2017 and an LLM (First Class Hons) in 2019. He is a law tutor and former president of the Pacific Islands' Law Students Association, and helped establish the MALOSI Project (Movement for Action and Law to Overcome Social Injustice).

Of Samoan heritage, Dylan credits his mum Liliu Faletoese Asafo for influencing his choices. "Mum left her village of Si'umu, in Samoa, when she was 19 to take up a nursing scholarship in New Zealand. She has always been interested in law as well as healthcare. I combined these topics of study for my undergraduate degree because they are both areas that have failed Pacific people."

Dylan with his parents at the Fulbright ceremony.

Dylan's area of study is critical race theory and minority rights.

"Critical race theory recognises that racism is ingrained in the fabric of society and is pervasive in the dominant culture, including its laws. Many systems in New Zealand fail minority groups, particularly Māori and Pacific people. It's vitally important that we do more than just acknowledge this," he says.

VISIBLE END **IN SIGHT**

Construction of the purpose-built Engineering building is nearly complete.

The new building was designed and is being constructed around the theme of 'visible engineering'. Many research projects that have taken place on site during construction will be on display after the building has opened, illustrating the engineering concepts inherent in the building. This will allow students and visitors to understand its construction and the forces that act upon it. For example, strain gauges installed in the building will display information about the way certain forces are acting on the building, which are ever-present but invisible.

There will also be a virtual reality/augmented reality reconstruction of the building so people can view the interior at various stages of construction, such as before the cladding on the walls was installed.

Building 405 will be ready for students and staff for the start of the 2020 academic year, promising new teaching and research spaces, as well as larger study and breakout areas to encourage student collaboration. Along the way around 3,000 people have worked on the site putting in 800,000 hours.

■ You can see a timelapse video of the construction here: tinyurl.com/EngineeringTimelapse

Now fully enclosed, the Engineering building will open in 2020.

CHAMPION OF **THE ARTS**

Robert Greenberg's love of language, music and maths make him ideal for his role.

Dean of Arts Professor Robert Greenberg was well on the way to becoming a language expert when he halted his studies midway through his doctoral degree to learn another language – and a new way of life.

As well as English, Robert speaks Russian, Bosnian Croatian, Serbian, Macedonian, Bulgarian, Hebrew, French, German, Slovenian and Czech. He's also learnt te reo, Korean and Japanese but doesn't count himself fluent in those – yet.

The break in his studies came while he was doing his postgraduate studies at Yale. It was forced upon him as the retinal degeneration he'd first been diagnosed with at 13 finally took his sight completely.

"I had come in to Yale without using a cane and being able to read most print," he says. "Midway through my degree I started using readers and other technologies more as it became a strain to read. When my central vision went, I took a year off, learned to use a cane and to develop independent skills such as cooking, sewing and Braille."

He returned and completed his doctorate by the age of 29.

Robert says Braille is still helpful – for such things as medicine labels – but computer technology has almost eliminated the need for that language to be used by someone like himself. To demonstrate, he plays me his emails from his phone, spoken so fast it's almost another language in itself. Siri on speed.

For his dissertation he studied Serbo-Croatian, Macedonian and Bulgarian by heading to the Balkans on a Fulbright scholarship.

"Languages are hugely important," Robert says. "Lots of doors open for you if you can speak a language. I've been to China twice with [Director of Global Studies] Hilary Chung, and her expertise in Mandarin and ability in Cantonese means she can do so many more things and leave such a good impression.

"People are delighted when someone has bothered to learn their language. I was in Russia this year for a keynote conference address which I gave in Russian. It was such an amazing experience because you can connect with other people in other cultures. You become a cultural ambassador by speaking their language well."

Robert came to New Zealand in February 2013

Professor Robert Greenberg, Dean of Arts. Photo: Billy Wong

'In Arts, you grapple with human problems and social problems and knowing those problems will make you a much better member of society.'

from the United States, where he was Dean at Hunter College of the City University of New York.

"I had no experience in the southern hemisphere before I took this job. So it was a new country, new university system, new funding model – everything was so different, even the acronyms. But I was looking for a new challenge.

"The first-year cycle was probably the most challenging as you go through every process for the first time. But people were extremely welcoming; inviting me over to get to know me. It was a very exciting year."

He says it takes two to three years to start making a difference in a Dean's role, which requires not just building a team and ensuring student numbers are healthy, but also being involved in raising funds for the Arts faculty through philanthropy.

"It started ramping up with the For All Our Futures campaign and it's a requirement of my role to go out and meet donors and alumni overseas. But nothing prepares you for those 12-hour flights plus another 12-hour flight. Suddenly my past trips from New York to London seemed like a picnic."

He is proud he could help the faculty meet its target for the campaign, leading to the funding of several academic roles because of it. On top of that, Robert's vision for Arts has helped in the steady increase of his faculty numbers after a long period of decline through to 2016.

He has previously written and talked about the benefits of an arts degree, not just for language learning, but for communication, critical thinking, and learning about history, social sciences and politics.

For example, the Global Studies degree has been particularly successful in the two years it's been running, but there has also been growth in social sciences, Māori Studies and Pacific Studies as well as in taught Masters programmes such as the Masters of Public Policy.

He says a BA can be combined with other sets of skills such as law or business in the conjoint degree – BA/LLB, BA/BCom – where students gain specific skills with a broader worldview that enhance their opportunities in the world market. He says knowledge gained in a BA, whether it be in language, politics or history, can even help people distinguish between real and fake news.

"Researchers have been looking at algorithms to identify certain patterns of speech that are typical in fake news stories. So language matters, right?"

And he says the humanities are important for reasons other than career paths.

"People's wellbeing is dependent on many things other than their work. It's about how well-informed they are about the world so they know how to deal with it. It's about building resilience.

"In Arts, you grapple with human problems and social problems and knowing those problems will make you a much better member of society."

Robert's commitment to the faculty is paying off. "We've been working really hard. When I came, we were in a downward trend. We put in a whole lot of work to stabilise the numbers and to grow them. It's a team effort on the part of senior leadership and all the staff in the Arts faculty.

"We put in an art scholars programme – 50 spots for high achievers – and we hadn't had anything for high achievers before. We've also improved retention rates among our students.

"I started Dean-student forums. I meet students two or three times a semester and also send out a newsletter so they're aware of what's going on with the faculty and with scholarships."

This year, the faculty also began mentoring programmes for first-year students including the Ako programme which embeds Māori and Pacific worldviews in large, stage-one lectures. The faculty's kaiārahi has been leading much of this work and other initiatives have included free tikanga and te reo classes for staff. These have filled up within 45 minutes of being announced.

Asked how someone with such an affinity for languages and music – he is an accomplished classical pianist and sings in a choir – can deal with balancing the books, he reveals another string to his bow.

"Languages, linguistics, music and maths are my strengths," he says. "My father was an academic, a mathematician, and I really love numbers and mathematics.

"When the numbers and the budget formulas are positive, it's really fun and you get to dream things up. But when there's a budgetary challenge, it's never easy to make difficult choices. I view it a bit like a necessary correction – we just have to be patient. One of the strategies was an austerity budget for a few years where we had to be very cautious about hiring.

"We've really worked hard to increase the profile of Arts among our alumni friends and donors. It's been pleasing to see us go from very limited philanthropy to securing donor funding for positions in the humanities such as art history, theological and religious studies. That's been really positive.

"Now budgets are looking more positive and we can actually start more targeted hiring for 2020. I'm still cautious but hopeful."

■ Denise Montgomery

OBITUARY

MATTHEW **TRUNDLE**

12 OCTOBER 1965 – 12 JULY 2019

An extraordinary capacity for friendship is the common theme of all the accolades that have been offered about Professor Matthew Trundle since his untimely death.

Matthew was appointed Professor of Classics and Ancient History in 2012 and proved a hugely supportive leader among his colleagues in the discipline and in the School of Humanities, as well as an immensely popular lecturer.

All his relationships were characterised by his personal interest in people as well as his devotion to the highest academic ideals. The greatest loss will be felt by his wife Catherine, herself an academic at Victoria University, and their young son, Christian. But all who knew him in Auckland are also deeply affected by his passing. Many of us have to remind ourselves he will not turn up on the eighth floor of the Humanities Building each morning, kitted out in his characteristic blue shirt and Indiana Jones hat, his voice and laughter echoing through the corridors.

His name is renowned internationally for his development of two features of ancient Greek history and his exploration of their interconnection; namely warfare and economics. His book *Greek Mercenaries from the Late Archaic Period to Alexander* (Routledge, 2004) is now the standard study of mercenaries in the Greek world. It was while on study leave last year that he was diagnosed with leukaemia, but even from hospital he continued to research and write.

As a person who thrived on human interaction, Matthew never shied away from any teaching task and was as willing to teach introductory language courses in Latin or ancient Greek as to expound his knowledge of ancient history to more advanced students. He went out of his way to demonstrate the relevance of classics and ancient history to the modern world, including through his regular guest spots on RNZ and a series of professorial lectures at the University.

Matthew's funeral was attended by many former colleagues from Victoria and representatives of the Classics departments at Otago and Canterbury, as well as numerous former and current students. None did so out of a sense of duty or expectation. All were there because Matthew touched them personally and they will greatly miss his presence in their lives.

■ Associate Professor Marcus Wilson, Classics and Ancient History, Faculty of Arts

Matthew in his trademark hat with a Lego miniature of himself, a gift from his students.

RESEARCH

OUR BRAINS **IN THE REGIONS**

The Government's Provincial Growth Fund has awarded $6 million to develop Mātai, a not-for-profit medical imaging research and innovation centre in Tairāwhiti Gisborne.

A core focus of the centre's research will be traumatic brain injury (TBI), including concussion and heart disease. TBI, concussion and cardiovascular issues cost the healthcare system millions annually.

Mātai means to investigate or examine. The Mātai whakatauāki, Te Mata Mātai Hura, translates to 'the investigative revealing eye'. Mātai director of research, Dr Samantha Holdsworth (pictured), is a senior lecturer in the Faculty of Medical and Health Sciences (FMHS) and a leading researcher in brain imaging. "Through our work in Tairāwhiti, combined with expert support from our global networks, and by bringing the latest technology to the East Coast, we will deliver health and social benefits to the community and to the country," says Samantha, who hails from Tairāwhiti Gisborne.

Mātai will be located at Gisborne Hospital to enable close relationships between scientists, patients, clinicians and the community.

Pre-eminent neuroscientist Sir Richard Faull, director of the Centre for Brain Research (CBR) and a Mātai trustee, says the work is important.

"Mātai's research in brain injury could help advance the science and treatment of brain trauma, complementing the work under way at CBR and extending research out to the wider community."

The University is supporting Mātai with a multi-disciplinary team of researchers, post-doctoral researchers, and students across FMHS, CBR and the Auckland Bioengineering Institute. Samantha says recent advancements in internet connectivity mean that Gisborne's physical location holds few barriers to research, and to national and global project collaboration.

"We are so excited to be doing this right here, right now; and hugely grateful for all the support we've received," she says.

Mātai is collaborating with the Ngāti Porou Hauora 'Te Rangawairua o Paratene Ngata' Research Centre based at Te Puia Springs, and will also support research initiatives with Turanga Health. It will also help develop career pathways for Tairāwhiti tamariki and rangatahi, along with regional education programmes, scholarships and internship programmes.

As part of a broader community focus, Mātai plans to hold a community Brain Day and Brain Bee modelled on the same successful event held at the CBR. The Brain Bee is believed to have had a significant impact on children, who have gone on to study neuroscience or related subjects.

ARCHIVES **REVEAL RELATIONSHIPS**

A University of Auckland project is investigating how Sir Āpirana Ngata, Te Rangihīroa (Sir Peter Buck) and others transformed outcomes for Māori in the early 20th century.

It is researching old film fragments, photos and sound recordings from 1919-1923, created by Wellington's Dominion Museum. In one piece of archival footage, Sir Āpirana Ngata leads an expedition of Māori and Pākehā to the East Coast to film the traditions and cultural practices of Ngāti Porou.

Distinguished Professor Dame Anne Salmond is project leader, collaborating with Dr Billie Lythberg from the Mira Szászy Research Centre, and scholar and artist Natalie Robertson, a PhD candidate in Māori Studies at the Faculty of Arts. Their research has taken them as far as Hawai'i to recover, retrieve and digitise the valuable documents and images from the Dominion Museum expeditions.

"These films and images weren't restored until the 1980s," says Natalie. "They're such a wonderful interweaving of the relationships that made them possible."

She says that although, for example, the 1923 film *He Pito Whakaatu i te Noho a te Maori i te Tairawhiti – Scenes of Māori Life on the East Coast*, has been criticised for 'ethnographic othering' (viewing Māori through a Pākehā lens) her research uncovered a different story. "The fieldwork, from a Ngāti Porou perspective, was

MAYBE NOT SO GREAT A TOLL

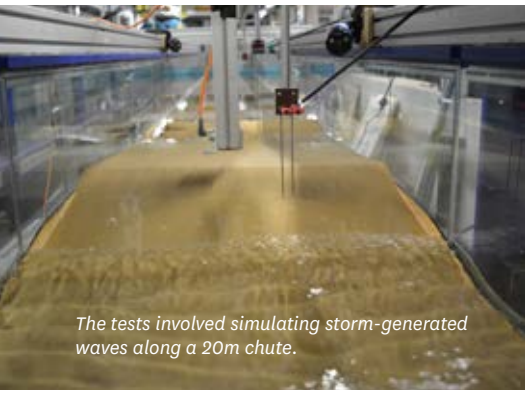
Low-lying Pacific islands in atoll archipelagos such as Tuvalu, Tokelau and Kiribati are likely to adapt to the effects of climate change rather than simply sink beneath the waves.

Tuvalu, Tokelau and Kiribati are widely considered under threat from rising seas and severe storms due to climate change.

Researchers from the University's School of Environment recreated a scale model of tiny Fatato Island, on the southeast rim of Funafuti Atoll in Tuvalu, to test the ability of the real island to withstand predicted climate effects.

The study simulated higher sea levels and storm-generated waves up to four metres in a 20m-long water chute or 'flume' to replicate real-world sea level rises of 0.5m and 1m in a purpose-built laboratory at the University of Plymouth in the United Kingdom.

The team chose uninhabited Fatato as a model because they were able to create an accurate 1:50 scale replica using data collected from previous field surveys and research. In the real world, the tiny island is just 90m at its widest point and 860m long. The scale replica created for the laboratory tests was 0.6m wide and 2.6m long with a high point of 10cm.



The tests involved simulating storm-generated waves along a 20m chute.

Using lasers to monitor changes in the model, and translating those to a real-world scenario, the researchers found the crest of the island – its highest ground – actually increased 1.13m as higher sea levels and strong wave action washed sand and gravel toward it. That elevation was achieved at the expense of lower-lying areas, simultaneously reducing the amount of low-lying land as the crest got higher. But that might not happen in the real world where islands are continually replenished by sediment from the surrounding reef.

Importantly, the island also moved laterally, migrating across the coral reef as sand and gravel shifted position with the action of waves and higher water levels.

Lead author and doctoral candidate Megan Tuck says the findings, along with previous research, have profound implications for understanding the physical vulnerability of reef islands. She says it challenges the assumption that they will simply drown or create 'climate refugees'.

"Atoll islands do not sit inert on the reef. Instead the gravel and sand they are made up of shifts on the reef itself so that the land changes in response to environmental conditions. Interestingly, the elevation of the atoll crest – the highest ground – mirrored the rise in sea levels, which suggests sea level may be an important controlling factor on island elevation."

Co-researcher Dr Murray Ford, senior lecturer in Environment, says the study shows islands are able to change shape or physically adjust to higher sea levels and more severe storms. "While the effect on particular islands of climate-induced changes will vary, there is plenty of evidence to suggest these islands are more resilient than commonly thought," he says.

Megan Tuck and fellow researcher Dr Eddie Beetham work on the purpose-built chute to re-enact impact on an atoll.

"Some areas may become uninhabitable, other areas will keep pace with rising seas. It will be up to governments and communities to decide how to respond over time but this study highlights the fact that nature provides a template for adaptation and island communities may need to adapt too."

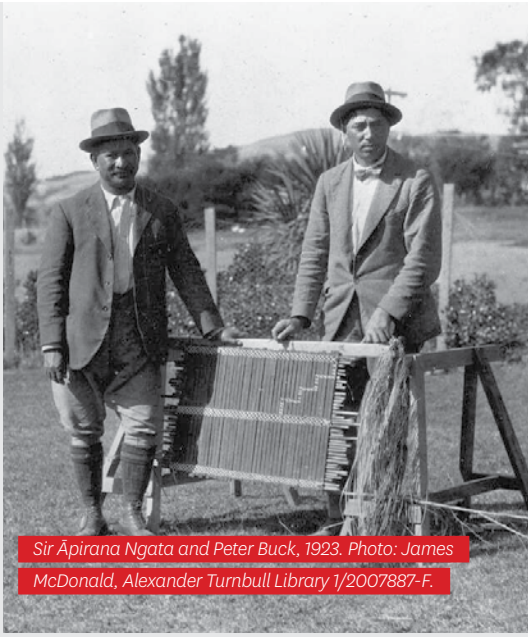
Previous research used aerial photos going back as far as 1943 to track changes to the 101 islands that make up the Tuvalu archipelago. It found that overall there was a net gain in land area of 2.9 percent or 73.5 hectares over the past 40 years.

supported by local people. I was able to trace various relationships, through whakapapa or 'kin networks', of hosting and friendship between members of the documentary team and local people. These are what Āpirana Ngata calls takiaho or relational cords, brought to light so descendants can keep alive these connections through the remaining film fragments, and beyond the frame."

Dr Billie Lythberg, left, and Natalie Robertson.

Billie says the team was delighted to uncover an unpublished document on Māori kinship written by Sir Āpirana Ngata, in the archives of Te Rangihīroa at the Bishop Museum in Honolulu. "We knew Ngata had written several tracts of what he intended to be a doctoral thesis on Māori social organisation … the document in the Bishop Museum explores the terminology of whakapapa through allusions to meeting houses, weaving, twining and fishing techniques. We were able to reunite this manuscript with others from the Alexander Turnbull Library and the Ngata family collection."

Key findings from this Marsden-funded research were published in a special edition of the *Journal of the Polynesian Society*. The society is based at the University and dedicated to the scholarly study of the history, ethnography and mythology of Oceania.



Sir Āpirana Ngata and Peter Buck, 1923. Photo: James McDonald, Alexander Turnbull Library 1/2007887-F.

THE CHARM OF THE MINIATURE

"Whether we're talking about puppies or paper models, little things are charming," says Andrew Barrie, Professor of Design at the School of Architecture and Planning.

He is talking about the little things that make up *In Context: RTA Studio,* an exhibition opening on 10 August at Objectspace. It showcases 20 years of architecture by RTA Studio, the multi award-winning architectural firm founded by alumnus Richard Naish.

Andrew is not only curating the exhibition, but making it, with a team of around 40 students. It features 30 tiny buildings, constructed from thick paper and laid out on sheets of corrugated cardboard, depicting the various locations in New Zealand in which RTA Studio have built.

Architecture exhibitions can be phenomenally expensive. "But using paper means the models cost just a dollar each in materials." And while exhibitions can also "generate a lot of junk" once this show's over, it can be thrown in the recycling bin.

Andrew and his team have spent much of the past six months working out how to make the models, deciding how to lay them out in the gallery, and choosing the right weight and colour of the paper. If he totals his and the student hours involved in building the models, he estimates it would have taken "a year of person-time".

Architectural modelling is a crucial way to explore, understand and refine how a building works. Andrew should know – he's both professor and practising designer.

"It's a way to understand the implications of your idea, but it's also a communication tool – it means your design can sit in people's imaginations the right way."

The paper model-making technique used in his own professional life and for *In Context* is one he has used for national and international exhibitions. That includes *Familial Clouds,* an installation that he and Simon Twose (School of Architecture, Victoria University of Wellington) created for the 13th La Biennale Architettura. It included, among other buildings, the Victoria Clock Tower, Christchurch (1860), Mitchell & Stout's Waiheke Island House (2005), and Andrew's *Home for All* in Tohoku, Japan (2011).

In the 5th Auckland Triennial, at Auckland City Art Gallery in 2013, Andrew and a team of students created *Model Home* using the technique he uses for miniature models, but blowing it up to construct a life-size house.

"We printed out huge architectural drawings and stitched them together to make the walls."

It was displayed on the ground floor of the gallery, and the interior fitted out with familiar domestic items also made of paper – the left-overs of a meal, a pile of washing and so on.

"It was one of the most fun things I've ever done," he says.

Andrew's modelling draws on *okoshi-ezu*, an ancient Japanese model-making technique that uses folded drawings. He discovered it while studying and working in Japan. "These models are a development of that old technique, but mostly it's a cheap, fast way to make models."

There is something idiosyncratically illustrative and playful about Andrew's paper modelling, in the models of the buildings, but also the people, the cars, boats, traffic signals, sheep, trees and so on.

"I suppose it is a bit of an Andrew special, something I cooked up. It sounds a bit silly, but this is what I'm a doctor of – paper models!"

The 30 RTA Studio buildings that will make up *In Context* are located around the country, and the 10-metre display forms an imaginary, spliced-together map of New Zealand, each building captured in situ, "to produce an imaginary New Zealand – as if RTA had designed it".

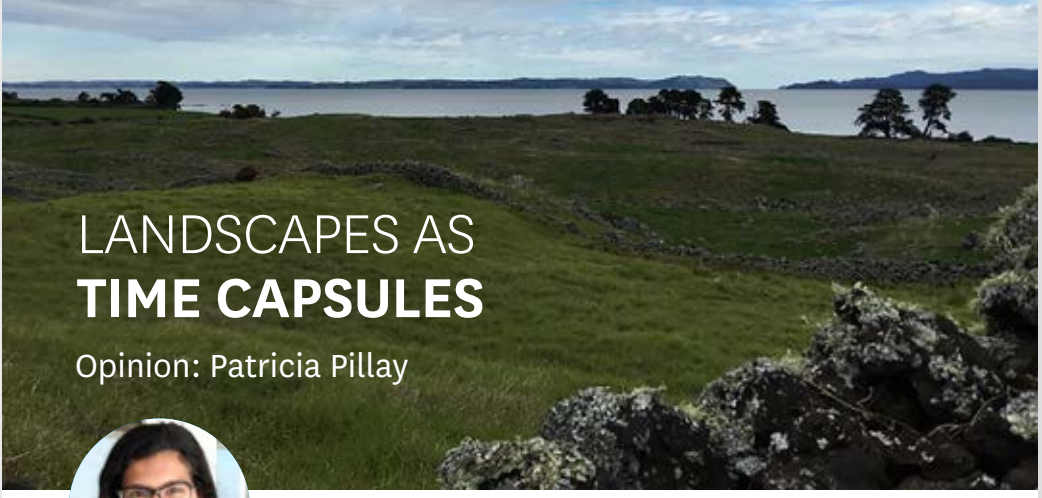
"One of the most distinctive things about RTA Studio is the range of work they do," Andrew says. "From little houses to shops, schools, industrial buildings, offices, apartment blocks, and so on. They've even done work here at the University, including the recent refurbishment of the commerce buildings and the restoration of Waikohanga House, our 1940s apartment block in Symonds Street.

"So while some of New Zealand's best architecture is accessible only to a few, their fantastic work contributes to the lives of many."

■ Margo White

In Context: RTA Studio
Objectspace, 13 Rose Road, Ponsonby
10 August – 7 September

Andrew Barrie's paper models of RTA Studio buildings will form a 10-metre display. Photos: Elise Monahan



LANDSCAPES AS **TIME CAPSULES**

Opinion: Patricia Pillay

When I was eight, I took my first steps into Auckland War Memorial Museum and my curiosity was sparked by the cultural objects on display from the ancient world.

Over the years I became more aware of Auckland's spectacular landscapes. Who were the people who once occupied Maungakiekie pa or the slopes of Maungawhau, Mount Eden, and why was the landscape shaped in the remarkable way that it was? As a fifth-year postgraduate student studying archaeology, I am disturbed by the fact one of our oldest settlements, Ihumātao Peninsula in Mangere, is threatened by commercial development. Recent protests led by Save Our Unique Landscape (SOUL) at the site have made headlines and feelings are high.

Archaeological evidence shows that Ihumātao was one of the earliest occupied landscapes, containing remnants of some of the first people of Aotearoa. The area includes burial caves, refuse areas or midden and fire remains (charcoal), which act as time capsules providing glimpses into early Māori settlement. Radiocarbon dates from the midden and charcoal go back as early as the 1400s with the early Polynesian settlers.

Ihumātao consists of distinct land forms moulded by lava flows. The volcanic landscape has fertile soil with good drainage. It was a productive area for early Māori to cultivate gardens and build a settlement with fortified defences on the volcanic field.

At Ihumātao, around 450 hectares of land was confiscated from iwi under the NZ Settlements Act 1863, and sold to European settlers to be farmed for 150 years. Now, 32 hectares is zoned by Auckland Council to become a Special Housing Area (SHA) where 480 houses will be built. Archaeological authority has been granted to oversee the development by Heritage NZ, supported by the Environmental Land Court.

But this undeveloped area is wahi tapu (a sacred place) to the Te Wai o Hua o Ihumātao (Māori community). Although Heritage NZ granted authority for the development to "exclude areas of burial caves" and remains of historical features, the area still holds archaeological and cultural value, much of which is yet to be discovered. The local iwi, Te Kawerau ā Maki, negotiated eight hectares to be returned to their iwi. The Government says it won't intervene as Te Kawerau ā Maki supports the development. But to wider Māori this landscape represents a living culture and there is high risk of obliterating remaining archaeological and cultural values embedded there. As archaeologist Dave Veart told *The Listener*, "it's like building houses alongside Stonehenge".

While it may be too late to stop this housing development, it's not too late for all New Zealanders to look after other sites. I have deep respect for our unique landscapes and my generation of archaeologists stands with tangata whenua. Should Māori be forced to spare one more acre? What will be left for future generations if all traces of the past disappear?

■ Patricia Pillay is a 2019 Kupe Leadership Scholar doing a masters in archaeology. Applications close for the 2020 Kupe Leadership Scholars on 23 August. Find out more at: tinyurl.com/KupeLeadershipScholarships

TALKS OF NOTE

Better brains or life-long health: is there a trade-off for at-risk babies?
Distinguished Professor Jane Harding, Dr Chris McKinlay and Dr Luling Lin discuss latest mother and baby research at a free public lecture.
WHEN 7 August, 5.30pm
WHERE The Liggins Institute, 85 Park Road

INAUGURAL LECTURES
8 August: Your amazing brain in health and disease (Professor Maurice A Curtis)
14 August: Back to the future – the promise of cell reprogramming (Professor Bronwen Connor)
15 August: A feast of assumptions – a famine of evidence (Professor Susan Morton)
21 August: Rhinosinusitis, antibiotics and unexpected consequences (Professor Richard Douglas)
All 5.30pm-7pm, 505-007 at Grafton campus

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DELEGATING COMPLEX TASKS

On 13 June 1863, Samuel Butler wrote a pseudonymous letter, 'Darwin among the Machines', to the *Christchurch Press*, writes Professor Michael Witbrock.

He described an evolutionary progress of machines towards, and beyond, human capabilities, and suggested that a potential war against such progress might already have been lost.

Now, 156 years later, we are well beyond his 'antediluvian prototypes' of evolved machines, and we have a clear name for that evolution: Artificial Intelligence (AI). AI is the idea that, just as physical tasks have long been largely automated, mental tasks can be too. Seemingly every day, computers that learn have been acquiring skills such as translating natural languages, drawing, playing video games, chess or poker, naming objects and captioning pictures, recognising and producing speech and answering questions.

Increasingly, they are doing so at superhuman levels. We should expect these new learning and perceptual capabilities to lead to rapid improvements in robotics, and thus also in the physical skills machines can acquire. And groups around the world, including my new Broad AI Lab at the University, are starting to use advanced machine learning techniques to give computers the ability to break down problems, solve their parts, and remember and apply what was learned for novel problems. In short, we are attempting to replicate the central basis of complex human thought.

One area where AI should be particularly useful is in dealing with complexity. Humans are limited in attention, in the number of concepts we can consider at once, and in how quickly we can communicate about them. This limited attention and communication is fine for everyday situations, but some of the most important systems that affect our lives, including biology, communications in social networks, complex software systems and economics, are overwhelmingly complex: we have no choice but to oversimplify them and in doing so we all but guarantee mistakes.

With AI, though, we have the potential to fully understand the enormously complex networks of causes and effects in biology and medicine. For example, medical teams will understand a disease fully in its context of an individual patient and design a treatment that will reverse that exact case, minimising harm or discomfort.

The way ahead is human-AI collaboration, with AI systems contributing their ability to access and consider the whole of the medical and biological literature, comparable patient records, and patient and pathogen genomes, and with teams of human experts simultaneously contributing local, specialist, empathy-based and care-based guidance.

Oddly, having only humans as examples, we do not know how difficult such broad, knowledgeable reasoning really is. It's therefore very hard to predict when it might be performed well by machines, but we can be all but certain that broad, and then general, AI will be available before another 156 years pass, and probably much sooner than that.

An Ohio Scientific Superboard II, a computer Michael Witbrock had in high school. Top: With a 1980s Digital Equipment Corp terminal atop a Vax 11/750 computer, also from Digital Equipment Corp.

It's fitting that some of this progress be made in the country where Butler's vision first flourished, and it's vital that New Zealand's economy fully benefits from the 21st century's AI technologies. But these are not the only reasons we should help to develop, adopt and guide increasingly capable AI. As a small country, New Zealand has the complexity of other societies, but is limited in the skills it can apply to problems. Where large countries may have 100 experts, New Zealand may have one, or none. And, in areas from software engineering and building to seasonal fruit picking, we simply lack the flexible, expert labour pool to respond rapidly to changing needs. AI and robotic systems increasingly offer the hope of providing large-country levels of expertise and labour pool flexibility. But this must be done without threatening the benefits – material, social, and psychological – that these roles give people now.

'Humans are limited in attention, in the number of concepts we can consider at once, and in how quickly we can communicate about them.'

One reason I returned home after decades overseas is that I believe New Zealand can lead here. We have an almost unique combination of social inclusion, rapid technological adoption, and technical and financial capability that suits us for discovering how to use AI for societal wellbeing and how to mitigate its risks. We can explore how to move from valuing people for utility, to valuing and rewarding our humanity – our interactions with other people; our contributions to social and cultural life; our ability to appreciate art, culture and the physical environment; and our stewardship of nature and of the earth.

New Zealand has often shaped human civilisation for the better, leading the world in fair wages, votes for women, and, very imperfectly, mitigating colonisation. Let's also help lead humanity towards a better future with AI.

■ **Professor Michael Witbrock is founding the Broad AI Lab at the University, specialising in getting AI to learn to apply skills to new, complex tasks, and maximise the societal benefit of broadly competent AI.**

The views in this article reflect personal opinion and are not necessarily those of the University of Auckland.