

# Uni NEWS

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June 2022



## ON THE GROUND IN TONGA

**Volcanologist Shane Cronin shares his knowledge after the Hunga eruption**

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### OPENING DOORS

Nicole Perry says learning another language can take people on surprising research pathways

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### BRAIN BOX

Student Delshad Kalantary has built a device she hopes could one day be developed to help with memory loss

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### RESEARCH HONOUR

Dame Jane Harding and her dedicated team of researchers win the Prime Minister's Science Prize for their work with newborns

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Just a few of Waipapa Taumata Rau University of Auckland staff and student achievements in the media recently. Email: [uninews@auckland.ac.nz](mailto:uninews@auckland.ac.nz)



Peter Wills

## OUT OF THE SOUP WE COME

Nearly four billion years ago, when the sky was orange, the seas were green, and the world was wildly volcanic, life somehow emerged. Biophysicist Dr Peter Wills (Science), and his collaborators in the US just started a \$2 million project to test the RNA world theory, in which molecules of RNA self-replicated in the primordial soup, kick-starting life on Earth. They speculate that these first primitive genetic coders may have been ancestral versions of enzymes found in all organisms today. Peter talked to Kim Hill on RNZ.

**Link:** [tinyurl.com/RNZ-Peter-Wills](https://tinyurl.com/RNZ-Peter-Wills)



Jane Norton

## EVERYONE'S A WINNER

Professor Jane Norton (Law) featured in the *NZ Herald's* podcast *The Front Page* to share insight on the Grounded Kiwis' court victory against MIQ. Despite the win, Jane said the lengthy judgement actually provided a strong indication that the MIQ system was justified. "Obviously Grounded Kiwis is lauding this as a success for their side and the judge does say they have succeeded," she said. "However, if you look at the entire 140-page judgement, the Government has won on all the major points. In fact, the court rejected most of Grounded Kiwis' submissions."

**Link:** [tinyurl.com/Jane-Norton-front-page](https://tinyurl.com/Jane-Norton-front-page)



Rochelle Constantine

## DOLPHINS AT WAR

Professor Rochelle Constantine spoke to RNZ about Russia deploying military-trained dolphins, explaining that the mammals have featured more often in military conflicts than people may realise. Dolphins, especially bottlenose dolphins, are highly intelligent and very trainable, she says. "There are even reports of training them to attack and kill people."

**Link:** [tinyurl.com/RNZ-Rochelle](https://tinyurl.com/RNZ-Rochelle)



Neal Curtis

## TWITTER FREE REIN A WORRY

Associate Professor Neal Curtis (Arts) talked about free-speech absolutist Elon Musk's buyout of Twitter in the *Sunday Star-Times/Stuff*. Neal says: "Letting ideas just run free is not a good idea because it's not the case that the daylight of open debate acts as a disinfectant."

**Link:** [tinyurl.com/Stuff-Neal-Curtis](https://tinyurl.com/Stuff-Neal-Curtis)



Maartje Abbenhuis

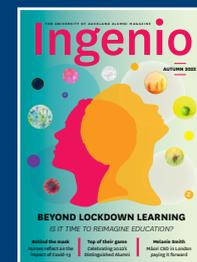
## REASONS TO BE NEUTRAL

A professor of war, peace and neutrality in the history department, Maartje Abbenhuis featured in *The Conversation UK's* podcast on how the role of 'neutral' countries is playing out in the Ukraine war, and the pros and cons of staying neutral.

**Link:** [tinyurl.com/Maartje-neutrals-podcast](https://tinyurl.com/Maartje-neutrals-podcast)

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## INGENIO ONLINE

The Autumn edition of *Ingenio*, the alumni publication of the University, is out now. See the stories online or download the PDF at [auckland.ac.nz/ingenio](https://auckland.ac.nz/ingenio)

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## SPECIAL MOMENTS OF NORMALITY

After a tough nine months off campus, the joy at being able to graduate in person with whānau was hugely evident at the May 2022 graduation ceremonies over three days. (See galleries at: [auckland.ac.nz/2022-grad-pix](https://auckland.ac.nz/2022-grad-pix))

*Pacific lei like these are often made from flowers, seeds, shells and lollies by family and friends who have been part of a student's journey.*



## BROTHERS PAY TRIBUTE TO KURA EDUCATION



The cloaks worn by Haukapuanui (left) and Sonny are family heirlooms woven by their great-great-great grandmother, Mere Ngāhūia Mamaeroa Te Ihu Wai Vercoe. Photo: Folko Boermans

### Brothers Haukapuanui and Sonny Vercoe are on the next leg of their academic journey, as PhD candidates in the Engineering School.

Both have graduated with a Bachelor of Engineering (honours) and credit their full immersion te reo school, Rotorua's Te Kura Kaupapa Māori o Te Koutu, for providing a solid foundation for their academic achievements.

"Our school played a huge part in shaping me into who I am today, my way of thinking and how I conduct myself," says 24-year-old Haukapuanui.

Sonny, 22, agrees: "Attending both kura and school ensured that my foundations are well-rounded for contributing effectively in both Indigenous and Western worlds."

The brothers each have a talent for maths which was developed at school and influenced their choice of career path. Sonny says: "In my penultimate year of wharekura, I decided to enter engineering which gave me two years to knuckle down and gain admission."

He was attracted to Auckland for the "dynamic, fast-paced and motivating environment" he felt it provided, plus the BE (Hons) accreditation to the Washington Accord which makes it a recognisable qualification in many countries.

While at school, Haukapuanui took part in Whāia Te Pae Tawhiti, a programme that gives Māori students from outside Auckland an insight into life at the University. "I met Tamoko Ormsby who was in his second year of engineering and came from a kura kaupapa Māori background. I was very inspired and motivated to see a kura kid make it into Engineering School. He is one of only a handful of engineering students I've met to this day who have come from a kura kaupapa Māori background, and he is now an engineer."

Haukapuanui had only 18 months left at school to achieve what he needed to get into engineering.

"I got a tutor to teach me the material. Some weeks I needed two or three sessions which was a lot of money for my whānau."

But it paid off. He completed three levels of NCEA physics and calculus and started on the

programme in 2016. After his first year, he took up a joint-venture civil engineering cadetship with Rotorua Lakes Council and an iwi affiliation, Ngāti Whakauae. He worked full-time for two years and returned to university in 2019, by which time Sonny had completed his first year so they started their second year at the same time.

For his PhD research, Haukapuanui will look into natural hazards and the vulnerability of Three Waters infrastructure for marae.

"I want to use my engineering qualification to benefit our people and ensure the future of our whenua and taonga. With Three Waters, water supply and wastewater needs of marae will be critical where they are not connected to municipal services," he says. "This research will be an opportunity to explore options that prioritise social, cultural and environmental outcomes."

Strong cultural and social themes also feature in Sonny's doctoral research, which is around seismic assessment and design of Māori building structures.

The brothers also share a commitment to encouraging other young Māori into higher education and careers paths such as engineering.

■ Full story: [auckland.ac.nz/Vercoe-brothers](http://auckland.ac.nz/Vercoe-brothers)

## THIS ONE'S FOR MUM, AND EVERYONE



Meteri Araitia

**Meteri Araitia was going through a bout of imposter syndrome, wondering if she 'belonged' in her degree and if she was good enough to finish.**

That was until she attended a talk by Samoan lawyer Tiana Epati, also an alumna.

"I was in this space when you don't feel smart enough or good enough and then I heard Tiana speak at an event. She said whenever we feel something is scary, we should feel that fear and do it anyway. It changed the way I saw myself and I just said, 'I am going to finish this.'"

Meteri, of Cook Island and Tahitian heritage, has graduated with a BA/LLB conjoint. An Aorere College alumna, Meteri is also a proud South Auckland, residing in 'the 275', Māngere.

While graduation was a reason to celebrate, it was also bittersweet, marking two years since her mother passed away suddenly while working overseas. Meteri was determined to continue the graduation celebrations her mother had planned with and for her extended ānau.

"My mother and I had plans for my graduation and I just wanted to celebrate properly. She was so excited for me and knew I would do it. So this is for her and the village that got me to where I am now."

■ Full story: [auckland.ac.nz/meteri-story](http://auckland.ac.nz/meteri-story)

## LANGUAGE THERAPY TO CHANGE LIVES



Kelly Hayward

**Twenty-five years in the police is an unusual background for a speech language therapist.**

But Kelly Hayward saw the frequent links between people's communication problems and their problems with the law.

She has now graduated with a Master of Speech Language Therapy and her new frontline is the preschools and homes of West Auckland, where she's helping three- to five-year-olds.

Kelly says her police career gave her an in-depth look at the range of communication problems, from misunderstandings turning violent, to youth offenders failing to grasp bail conditions, to witnesses and victims of crime struggling to tell their stories.

"Communication problems are very common among youth offenders," says Kelly. "There's international research to show that youth offenders lag behind their peers in language skills and that over 50 percent of youth offenders have a communication disorder."

For her thesis, Kelly, who also has a BA majoring in linguistics, talked to police about their experiences of communicating bail conditions to youth offenders, and their thoughts on why youth offenders broke the conditions. "It's a big career shift, but so rewarding because I can see the positive difference that speech language therapy makes in the lives of the children."

■ Full story: [auckland.ac.nz/kelly-story](http://auckland.ac.nz/kelly-story)

## ALMOST SIX DECADES OF ACADEMIC SUCCESS



Ebba Olsen and her mum, Professor Tava Olsen.

**An academic winning streak has extended over 59 years for one family whose latest member graduated in May.**

Ebba Olsen won a senior scholarship for top marks in her Bachelor of Science, majoring in mathematics and logic and computation. She was accompanied to the graduation ceremony by her mother, Professor Tava Olsen (Faculty of Business and Economics), who achieved a similar feat in 1990 in applied maths. Ebba's grandfather, Michael Lennon, did likewise in 1963.

"Ebba's grandfather isn't with us anymore, but he would have been so proud," says Tava.

The family's connection with the University is strong. Michael was one of New Zealand's first computer programmers. He taught in the Mathematics Department and the Department of Computer Science and his wife, Dr Jennifer Lennon, also taught in Computer Science.

A tribute after Michael's death in 1999 said: "Whether it was the weakest student in the class ... or the brightest students seeking to extend their grasp of the discipline, Mike was there, bringing the best potential out of them."

The 59-year winning streak couldn't go back further because neither of the great-grandparents went to high school, says Tava, who is known for her expertise in supply chain management. "Ebba's great-grandfather couldn't go because of the Great Depression and her great-grandmother couldn't attend because her father didn't believe in education for women."

Ebba has now begun her career as an actuary, for PricewaterhouseCoopers.

■ Full story: [auckland.ac.nz/Ebba-story](http://auckland.ac.nz/Ebba-story)

For other inspiring graduation stories from May 2022, see [auckland.ac.nz/grad-stories](http://auckland.ac.nz/grad-stories)



Dr Simone Rodda

## SWEET FUNDING FOR SUGAR STUDY

**A study aiming to settle the question of whether sugar is addictive has won a Health Research Council (HRC) Explorer Award.**

Addiction specialist Dr Simone Rodda from the School of Population Health will examine an innovative approach to understand why some people find it difficult to moderate their sugar consumption.

Simone's study will look at whether sugar is an addictive substance that produces similar symptoms to those experienced with nicotine, alcohol or caffeine, such as craving, withdrawal and loss of control.

More than half of all New Zealanders consume more than 10 percent of their daily energy intake as sugar. This compares to the 5 percent recommended by the World Health Organisation for good health.

Simone and her team will recruit people who consume more than 10 percent of their daily energy intake as free sugar and ask them to reduce their sugar intake considerably.

She will use a tool called the Ecological Momentary Assessment to track patterns of sugar consumption, withdrawal, craving and relapse, in real time. It will deliver multiple mini surveys across a 24-hour period via smartphone to establish any direct relationships between sugar consumption and addiction symptoms.

The study has received \$150,000 for 24 months.

■ Read more and see other HRC grants to University of Auckland: [auckland.ac.nz/HRC-sugar-study](http://auckland.ac.nz/HRC-sugar-study)

## CLIMATE CHALLENGE TACKLED IN SPACE

**Experts working on New Zealand's first national space mission MethaneSAT talked about science and technology behind the project at a Techweek event in the Space Institute – Te Pūnaha Ātea, Faculty of Engineering, on 20 May.**

Attendees and those watching online heard from Rocket Lab's Leigh Foster, the Space Institute's Chris Jackson, Dr Sara Mikaloff-Fletcher from NIWA and Peter Vedder, from US-based MethaneSAT LLC, who joined the panel on screen.

The aim of MethaneSAT is to solve a climate change challenge by reducing methane gas leaks around the world. The state-of-the-art satellite will identify, monitor and report emissions, mainly from gas and oil industry pipelines and industrial agriculture, from an orbit 585km above Earth.

Initially, the satellite will be operated by Rocket Lab from the company's Mt Wellington base. Once established, spacecraft operations will pass to the University of Auckland where it will be controlled

from the Mission Operations Control Centre in Te Pūnaha Ātea.

The mission will deliver data on oil and gas sector emissions to a research team from Harvard University. Data on agricultural methane emissions will be delivered to a New Zealand science team led by Sara. Says Chris, mission operations director at the Space Institute: "There is a growing new space movement around the world with young players working alongside global entities such as NASA and the European Space Agency. New Zealand wants to be part of that movement.

"MethaneSAT will be a real catalyst for our growing space sector and the university's partnership on the mission will bring a huge benefit to the education and training we can offer young engineering and science students.

"It will provide real life experience of working in the space industry which they can take, and then go on to help build the industry in New Zealand."

■ Alison Sims

L-R Chris Jackson from the Auckland Space Institute, Dimitri Geidelberg from NZ Space Agency (MBIE), Rocket Lab's Leigh Foster and Dr Sara Mikaloff-Fletcher from NIWA. Peter Vedder, from US-based MethaneSAT LLC, was also a speaker and joined the panel on screen. Photo: Billy Wong





*Distinguished Professor Dame Jane Harding with the 2022 Prime Minister's Science Prize.*

## JANE HARDING'S TEAM HONOURED

The work of researchers helping improve outcomes for newborn babies has been recognised with a top award.

**The Prime Minister's Science Prize has been awarded to a multidisciplinary team led by Distinguished Professor Dame Jane Harding.**

For more than 20 years the Neonatal Glucose Studies Team has been investigating abnormal blood-sugar levels in newborns.

"Sugar imbalances are really common in babies," says Jane, a leading neonatologist in the Liggins Institute. "About four out of five very pre-term babies has high blood sugar. About one in six babies has low blood sugar. That's around 12,000 babies a year. We know that, in some babies, low blood sugar can cause brain damage. Looking after those levels is an important challenge."

The Prime Minister's Science Prize recognises 'transformative science', that has had a significant social, economic, health or environmental impact.

The team's research has investigated why high and low blood-sugar levels occur in newborns, how to monitor those levels, how they affect a child's development, and what to do.

"One of the satisfying things is making a

difference to babies," Dame Jane says. "A simple sugar gel rubbed inside the baby's cheek helps improve low blood-sugar levels, meaning they don't need to go to intensive care. It has become a first-line treatment around the world."

Dame Jane has been with the Liggins Institute since its inception – 21 years this year. Many of the members of the team have been working together for more than 15 years and Jane says respect and trust are critical to their work.

"Babies are complicated creatures. Their growth and development is complicated. We need a big multidisciplinary team who can bring a lot of different skills and expertise to the problems, because they are hard to tackle," she says.

"We have brought together experts that include a bioengineer, vision scientist, psychologist, educationalist and other disciplines. That can be challenging because we think about things in different ways. We don't always speak the same language, so having to learn each other's ways of thinking has been an interesting challenge."

A matauranga Māori approach is increasingly embedded into the research to ensure Māori are recruited and retained in studies.

Another challenge has been the long timeframes involved in some of the research.

"If you want to know the long-term impact of anything that happens around the time a baby is born, you have to wait until they go to school to find out. We've just finished one study on babies we enrolled at birth and have just seen them when they were ten. We have to be committed long-term."

**"What could be more special than being involved at the birth of a baby?"**

– Dame Jane Harding, Liggins Institute

The team approaches mothers who are likely to have a baby born at risk of sugar imbalances, at antenatal clinics or in the hospital. Jane does get to interact with some of the families involved.

"But mostly that's done by the fantastic team of research nurses, midwives and the clinical staff looking after the mother and baby. They have most of the contact. It is so important that the families know their trusted clinicians are supportive of our research if they are to consider taking part."

There have been numerous spin-offs from Dame Jane's research, including a new non-invasive glucose-monitoring device that's undergoing testing and will reduce painful and distressing heel pricks used to collect baby's blood.

The team has also developed a new method of assessing vision in very young children, which has been adapted to test the vision of Paralympians.

The ongoing importance of their work is evidenced by the recent publication of two papers in the same issue of *JAMA* – a globally leading journal.

Dame Jane is particularly thrilled the prize is awarded for the efforts of the entire team and says all are enormously honoured to be recognised. They plan to use the \$500,000 prize money to continue following up the babies and to develop national best-practice guidelines.

Dame Jane says she has always found working with babies and children rewarding. "What could be more special than being involved at the birth of a baby? The vast majority get better and go home and start their lives.

"It's an area I've been interested in for many years, mostly because these are such common problems, but we haven't really had enough information to know the best way to manage them. We are talking about trying to prevent brain damage in newborn babies, which is so obviously important."

■ Jodi Yeats

## THE RESEARCH TEAM

**Distinguished Professor Dame Jane Harding,** neonatologist, Liggins Institute

**Associate Professor Jane Alswailer,** neonatologist, FMHS

**Distinguished Professor Geoff Chase,** bioengineer, University of Canterbury

**Dr Richard Edlin,** health economist, FMHS

**Greg Gamble,** statistician, FMHS

**Dr Deborah Harris,** neonatal nurse practitioner, Victoria University

**Associate Professor Chris McKinlay,** neonatologist, FMHS

**Jenny Rogers** (Ngāi Tahu), kaiarahi, follow-up team leader, Liggins Institute

**Dr Ben Thompson,** vision scientist, University of Waterloo

**Dr Phil Weston,** neonatologist, Waikato Hospital

**Professor Trecia Wouldes,** developmental psychologist, FMHS



*Associate Professor Chris McKinlay, Professor Jane Harding and kaiarahi Jenny Rogers are three members of the winning team.*

# BRAIN BOX

Doctoral student Delshad Kalantary has adopted a Kiwi DIY attitude and built a light-therapy box she hopes one day could help with memory loss.

**Painstakingly building a state-of-the-art scientific machine was far from Delshad Kalantary's vision of a career in neuroscience when she was younger.**

However, her dream of helping humanity almost certainly sprang from a background of hardship. Delshad grew up in Mumbai as a child of parents who had left Iran to start a new life, with little by way of money or education.

Delshad's doctoral project has involved building a platform that beams light onto the brain to potentially reverse memory loss, the main symptom of Alzheimer's disease.

"I wanted to do a PhD in something meaningful," she says. "Finding a cure for something would add meaning to my life. I wake up every day and I look forward to going to the University."

More than 55 million people worldwide suffer from dementia, an umbrella term for conditions including Alzheimer's, and 70,000 Kiwis have the incurable degenerative condition. Drugs are being trialled to slow the progression of the disease, but no one has been able to find a cure.

"This is an opportunity for me to give back to the country," Delshad says.

Delshad arrived in Auckland in 2018 following an undergraduate degree in the United States where she first heard about optogenetics and fibre photometry techniques. When she submitted her research proposal for her PhD in Biomedical Sciences, under the Department of Medical Imaging at the Centre for Brain Research (CBR), her supervisor, Dr Andrea Kwakowsky, said no one had ever built a machine like the one she was suggesting.

"The main problem with fibre photometry is you can only analyse it through coding," says Delshad. "That's why people, specifically neuroscientists, are scared to use it, because they don't have a background in engineering. I've always loved to code. So, I told my supervisor 'that won't be a problem.'"

Delshad speaks slowly when explaining the complex process, as well as producing a helpful 'dummy' diagram. "The word 'opto' basically means light and 'genetics' means genes. So, in optogenetics we transport a specific gene into a specific brain cell. In this case, the gene is a piece of DNA that instructs the brain cells to produce light-sensitive proteins. Using the light, I can



PhD student Delshad Kalantary with Distinguished Professor Sir Richard Faull who says she has all the attributes of a world-leading researcher. Photo: Billy Wong

manipulate and reverse the activity of specific brain cells – those involved in Alzheimer's. Ultimately, doing this could potentially reverse memory impairments. It's a cutting-edge technique that could become a therapeutic approach to treat the disease."

Delshad built the optogenetic and fibre photometry machine from scratch and it was funded as part of her research by the Freemason's Foundation, longstanding philanthropists for the University. The machine has a patch cord, which is a single strand of optical fibre, that can be attached to the hippocampus of a mouse model of Alzheimer's disease, into the region of the brain primarily affected in humans.

"The patch cord has LED lights and when we switch on the machine, it sends light into the region where the gene is present.

"The gene basically turns the cells on and off. The light energy is converted to electrical activity, which is the language of the brain."

It is still quite confusing for the average person, but, "basically what this machine could ultimately do is allow us to 'hack' into brain cells and eavesdrop on brain activity".

The fibre photometry analyses the electrical activity of the brain in code, which is where Delshad's passion for maths and coding comes into play.

Over the past four years, Delshad has had the twin challenges of conducting challenging research and enduring Covid-19 lockdowns and isolation. There have been times when she considered giving up and returning to Mumbai.

"But this research is my dream and I kept holding on to that dream. The biggest challenge is definitely emotional support because when you do a PhD, you don't get those constant dopamine hits. You have to come home and there's no one to talk to. It is really, really hard."

The next stage of her research is to develop an experimental plan. "The machine is good to go, so the experiments will involve mouse models of

Alzheimer's disease, followed by fibre photometry recording and optogenetic manipulation to reverse the memory loss."

Delshad hopes to have completed her PhD in 2023. She says the CBR has been a supportive environment and director Distinguished Professor Sir Richard Faull has been a mentor and father figure.

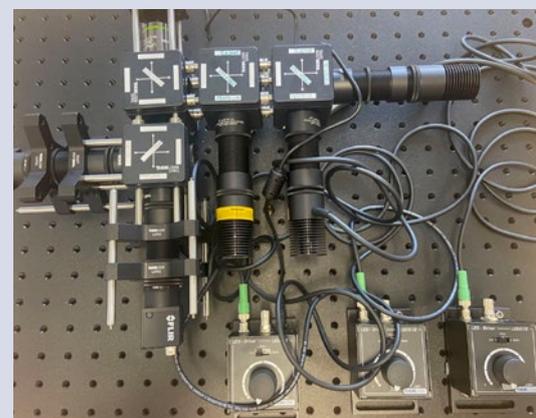
Sir Richard says Delshad has all of the attributes to become a world-leading researcher.

"She has a scientific mind, she's a genius at maths and physics, she wants to do her very best and she has the commitment to never give up."

Delshad's hope is she will continue to develop the potential for her platform as a postdoctoral researcher, as well as provide a base for future generations of researchers.

As Sir Richard puts it: "Delshad has a dream of helping people and she's going to do her very best to make that dream come true."

■ Jodi Yeats



## Delshad's DIY device

In 2021, Delshad received training from optogenetic pioneer Professor Karl Deisseroth at Stanford University. She then ordered the 150 parts needed to build the optogenetic and fibre photometry device over three months. Delshad also wrote a user-friendly programming toolbox to help other neuroscientists analyse the data without requiring programming experience.

The tsunami reached heights of more than 20 metres on Nomukeiki Island in Tonga, wiping out all in its path.

## MOTHER NATURE'S EXPLOSIVE LESSON

Volcanologist Professor Shane Cronin's data from Tonga provides new paradigms and tools for responding to volcanic eruptions.

**For the past few months, Professor Shane Cronin has been like a pig in the proverbial, analysing volcanic data on location in Tonga, following the eruption of the Hunga Tonga-Hunga Ha'apai volcano on 15 January.**

Shane was the first international volcanologist to arrive in the Kingdom of Tonga, after the Hunga eruption and resultant tsunami cleared many islands of any form of habitation. Ash has lain thick on the ground affecting crops, as well as the ocean and marine life. Some airborne ash is still to settle on the seafloor completely.

Shane has been working with Tonga Geological Services (TGS) on the ground, and at sea in research vessels, analysing the geological impact alongside NIWA and others. He has helped strengthen local skills in geological field mapping, deposit description, tsunami surveying and marine ocean-floor survey techniques.

Shane finally returned home to New Zealand on 25 May, with his final job, for now, being to hold a press conference with the Minister of Lands and Natural Resources, Lord Tu'i'afitu, before a briefing with Prime Minister Sioasi Sovaleni.

On the Sunday prior, a church service was delivered by Lord Tu'i'afitu, who said Tonga was grateful to have had the help of the University of Auckland scientist. Shane says he has been impressed by the Tongan people's response.

"This eruption was a terrifying experience. People are still scared. But what saved lives is that they were responsive. While there were fatalities, and infrastructure and housing damage, the reason it wasn't worse was because people fled the ocean and made for high ground."

Adding to the terror was that the eruption also caused the greatest number of lightning strikes ever detected for any natural event in the world.

Shane and TGS have collected a mountain of new information in Tonga through volcanic ash

surveys, impact assessment, tsunami run-up surveys and marine/ocean floor mapping. The data confirms that the explosive energy released from the Hunga submarine volcano was the largest recorded anywhere in the world for more than 140 years. Its plume, at more than 58km, and the spread of the eruption cloud were more than double that of the next largest event on record, the 1991 Pinatubo eruption in the Philippines.

Ash was spread far and wide at a much greater volume than first thought. Shane, TGS and other scientists measured it at more than 130 sites on Tongatapu, Ha'apai and outlying islands. There was also deep ocean sampling of ash and the measurements from both show the eruption was up to five times larger than thought. Ongoing simulations of the ash dispersion will improve new hazard models with collaborating scientists from United States Geological Survey.

Shane and the scientists also measured the flow heights of the tsunami generated by the eruption. The tsunami reached more than 18m along the western Kanokupolu coast and more than 20m on Nomukeiki Island. Many locations had waves exceeding 10m at distances that were more than 85km from the volcano, equivalent to the distance from the Auckland City Campus to just past the Leigh Marine Laboratory. That makes it one of the most widespread and destructive tsunami events known from a volcano.

"When I arrived and went to the west, the scenes of damage were apocalyptic. With no resorts, buildings or trees remaining, the coast is now more vulnerable than ever."

He says one of the things they discovered was where trees had been planted, they broke the impact of the tsunami, so this could be a simple protective measure for the future.

From 17-19 May, a Tongan-based marine survey supported by ENL Ltd (New Zealand) used a WASSP Multibeam mapping system on the *MV Pacific Horizon* to scan the seafloor on and around the Hunga volcano. It mapped the entire caldera produced by the eruption. The caldera is a deep depression in the top of the volcano, where the centre collapsed inwards on itself after the violent eruption removed the magma. The survey showed the base of the depression is 860m below sea level, and the 4km-wide caldera has filled with an unknown depth of fresh volcanic materials that fell inward.

The islands of Hunga Ha'apai and Hunga Tonga are now less than 25 percent and less than 10 percent of their pre-eruption size, respectively. Around 6.5 cubic kilometres of material has gone from the central volcano compared to when Shane surveyed it last, in late 2015.

With so much of its magma gone, there is now a much lower risk. "There's still an ongoing source of magma at Hunga, so future activity is inevitable. But I would expect there to be none of this scale for many hundreds of years ... the caldera is so deep now that small events won't have an impact."

Asked about the ongoing activity, he explains: "The small eruptions still going on are like geysers. Because the caldera is really deep, they won't cause a problem away from the volcano. We went across them in a boat many times and didn't even notice them until we saw them on the sonar. They are like a safety valve on a pressure cooker."

However, he says complacency around volcanic eruptions and tsunami should not set in.

"There are at least ten equally large volcanic centres both north and south of Hunga, including Tofua, Kao, and Fonualei, along with other major shallow submarine calderas such as Late'iki (Metis Shoal) and Home Reef."

Shane has provided data to other scientists who have created three tsunami models to help the Kingdom of Tonga with its land-use recommendations in the future.

He says the eruption also opened people's eyes to how pyroclastic density currents under the sea caused breakages of the submarine cables, and the work that needs to be done to safeguard against these "sideways waves" in the future. "The eruption has opened our eyes to that problem."

At the press conference, on Shane's last day in Tonga, Lord Tu'i'afitu thanked him for his work.

"You have sacrificed your time and energy to undertake this critical role and have transferred your knowledge and skill to our local people. This knowledge will stay with us ... and inspire scientific investigation for a safer Tonga."

Says Shane: "This was a once in a century eruption on our doorstep. I am so grateful for the opportunity to work so intensively to learn from it, alongside such a warm and engaged group of colleagues in Tonga." – Denise Montgomery

■ Watch mapping on *MV Pacific Horizon*: [tinyurl.com/Hunga-mapping](http://tinyurl.com/Hunga-mapping). Press conference: scroll to 29:20, [tinyurl.com/Tonga-presser](http://tinyurl.com/Tonga-presser)

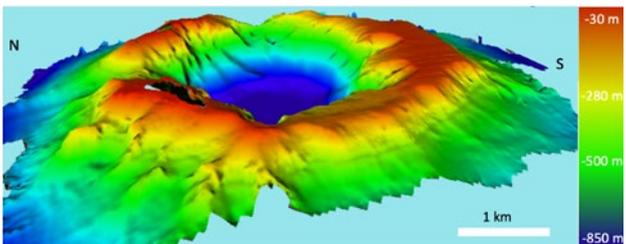


BEFORE



AFTER

Above: Fafa Island Resort, around 7 kilometres from mainland Tonga, before and after the tsunami caused by the eruption of the Hunga Tonga-Hunga Ha'apai undersea volcano on 15 January 2022. Clockwise from left below: The tsunami was up to 20 metres on the western side of Tonga. This image shows Professor Shane Cronin on Tonumea, in the Ha'apai group of islands next to a 12-metre erosion; Tonga's Prime Minister Siaosi Sovaleni with Shane on the last day of Shane's two-and-a-half month scientific mission; Shane sharing his knowledge with locals, including Ma'ake Kolo'ofai from Tonga Geological Services; Shane and the Tongan research team on Mango Island; Shane's graphic representation of the Honga volcano as it is now. The caldera, in blue, is now 850 metres deep, meaning there's very little chance of a repeat eruption of the scale of January's for several hundred years. The width of the caldera is 4 kilometres and around 6.5 cubic kilometres of material has gone from the central volcano. Photos: TGS and Shane Cronin





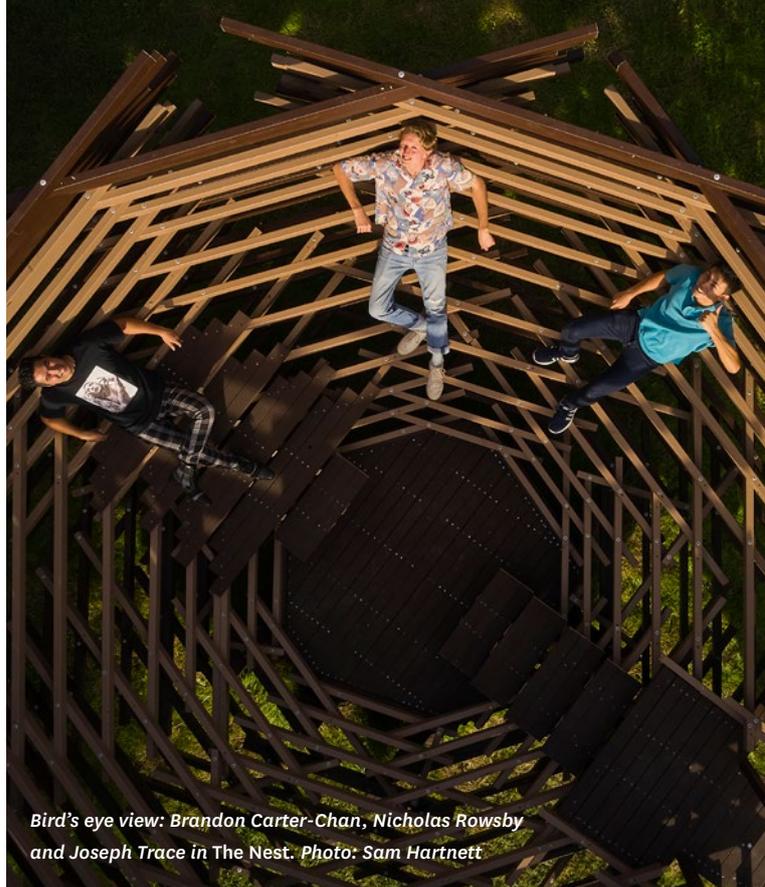
Nicholas Rowsby, Brandon Carter-Chan and Joseph Trace at the opening of *The Nest* at Brick Bay Winery. Photo: Tom Klocksneith



The 2019 Folly winner, *The Wood Pavilion*. Photo: Sam Hartnett



*The Nest* in stunning natural surroundings. Photo: Sam Hartnett



Bird's eye view: Brandon Carter-Chan, Nicholas Rowsby and Joseph Trace in *The Nest*. Photo: Sam Hartnett

## NESTING ON THEIR LAURELS

**Sustainability is the name of the architectural game and that also applies to sculpture.**

And so, three Master of Architecture students used an upcycling approach to build the award-winning structure that took first place in the recent Brick Bay Folly competition.

The competition started in 2016, open to architecture students and recent graduates to design and build a folly at Brick Bay in Matakana. It provides the chance for emerging architects to test their ideas on a real-life project, manage construction, solve contingencies and participate in physical construction. A folly is an experimental structure without specific purpose or restrictions, therefore it can be whimsical, humorous, decorative or boundary-pushing.

The students – Nicholas Rowsby, Brandon Carter-Chan and Joseph Trace – created their winning structure *The Nest* in 2021, in the final year of their masters at Auckland. They repurposed wood used in a previous Folly-winning work, *The Wood Pavilion*, built by four architecture masters students in 2019.

Being created entirely out of the recycled timber, *The Nest* showcases how architecture can rise to some of the challenges of our times – such as how to create without waste, and how to design for, and work with, wood amid a timber shortage.

Folly judge and one of the event's sponsors Pip Cheshire (Cheshire Architects) says the creative process has evolved over time to more closely consider sustainability and reuse. "What you're seeing here is a really interesting evolutionary view that materials are scarce resources.

"This idea of reuse, and circular use of

the timber that is milled and then made into something, then disassembled and made into something else again, is a really exciting development in how timber is used."

Nicholas says the idea for *The Nest* came from a site visit to Brick Bay Winery in June 2021, home to the well-known Sculpture Trail. "We didn't want to see the material of *The Wood Pavilion* discarded," he says. "We were also inspired by the abundance of pīwakawaka on the site; it led us to approach the design the same way a bird would build its nest from the resources in its immediate surroundings – what I think of as nature's most contextual architecture."

The sculpture is also a nod to its surroundings at Brick Bay Winery and references the delicate stacking and weaving of twigs.

"There's the practice of collecting grapes in a basket woven from their vines ... it inspired us to invoke the bowl-like form of a bird's nest."

Having been in the same university year group as the designers of *The Wood Pavilion*, they approached them for its dimensions.

"Much of the design phase took account of the component dimensions in *The Wood Pavilion*, with many of the pieces staying the same size in the structural scheme of *The Nest*," says Joseph.

The challenge came in trying to maintain each piece of timber in their full lengths while also allowing for the weathering of timber exposed to the elements over two years. There was also the potential damage that could be incurred in the process of dismantling it, so the team devised a method of deconstruction that would cause minimal damage, using a pulley system.

"We carried the segments to another section of the site to carefully dismantle it. This involved every screw being unscrewed mostly by hand with vice grips or an Allen key and metal rod. Some sections we even needed crowbars or couldn't physically pull apart as the 2019 team had fixed them together so well."

They were able to salvage around 797 linear metres of timber and used 746 metres of it for *The Nest*. Timber too damaged to use was cut down and repurposed for smaller elements such as seating or stairs.

"There were many large bolt, screw and nail holes as well as crowbar denting left in the reclaimed timber which comprises *The Nest*," says Nicholas. "At one stage we contemplated trying to minimise traces of reuse, but in the end, we realised that these imperfections capture the history of the material and are desirable visual and tactile qualities in their own right."

There were other challenges; the deconstruction of *The Wood Pavilion* took place in October 2021, during lockdown and under strict Covid rules, with no access to workshops and limited access to supplies.

The project demonstrates that the recycling and repurposing of wood does not mean compromising beauty, adds Brandon. "It is still very possible to achieve beautiful architecture from reused building materials without costing an arm and a leg. We managed to achieve this build with the restrictions of Covid and a full-time masters thesis. We can do so much with timber, and we encourage everyone to keep thinking of new, sustainable solutions."

*The Nest* will stay on display at Brick Bay for two years. It is a part of the sculpture trail walk showcasing more than 60 sculptures. ■



## SHIFTING GROUNDS A WINNER

**Lucy Mackintosh's book *Shifting Grounds: Deep Histories of Tāmaki Makaurau Auckland*, has been named co-winner of the 2022 Ernest Scott Prize for History.**

The prize is awarded annually to the most distinguished written contribution to the history of Australia or New Zealand, or to the history of colonisation. Lucy shares the award with Emeritus Professor Janet McCalman (Melbourne University) for her book *Vandemonium: The Repressed History of Colonial Victoria*.

Lucy has a PhD in history from the University

of Auckland and the book stemmed from the research she conducted during that time. *Shifting Grounds* (Bridget Williams Books) draws on geography, archaeology, mātauranga Māori, botany and material culture as well as written sources. Lucy explores moments in the histories of three Auckland places – Ōtuataua Stonefields Historic Reserve at Ihumātao, Pukekawa/Auckland Domain and Maungakiekie/One Tree Hill. "These places tell multi-faceted and nuanced stories that are important to know alongside the more familiar histories of the city," says Lucy.

The judges shortlisted five books from 77 submitted for consideration. In awarding the prize, they praised *Shifting Grounds* as a "beautifully produced, absorbing book that is a treat to read. Lucy Mackintosh delivers immersive deep histories of three Auckland sites and its peoples with care and compassion."

■ Read more about Lucy's book: [auckland.ac.nz/ Lucy-Ingenuio](http://auckland.ac.nz/ Lucy-Ingenuio)

## VĀ AND VIDEO ART



Sione Faletau  
Photo: Joe Hockley

**Artist Sione Faletau, who recently graduated with a PhD from Elam, is exhibiting new artwork at the Gus Fisher Gallery.**

Sione's video installation is part of the exhibition *Turning a Page, Starting a Chapter* and is informed by his interest in the symbolism of vā. For Moana Oceania people, vā is the space between things. It also means to care for, maintain and nurture relationships. Sione uses the word vā to create Tongan kupesi patterns and the resulting patterns reference those seen in the Tongan craft of ngatu (bark cloth) and lalava.

Sione was commissioned by curator Lisa Beauchamp to create a new video that he has titled *Ongo Ongo*, a Tongan phrase that means

news, while the word *ongo* on its own means sound, feel and feeling. To make his video, Sione extracted the audio wave spectrum from a recording he made in the gallery and created patterns that reflected the sound of the room.

The patterns recall the surrounding Art Deco architecture, while the audio traces the sounds of the gallery; each footstep and door shutting evokes a change in the visual frequency.

Through his work, Sione wanted to honour the building's broadcasting history as the former home to Radio 1YA and TVNZ and its transmission of news reports, sound waves and frequencies.

Alongside *Ongo Ongo*, Sione is exhibiting an existing one-minute 52-second video work called *Tolu Katea* (2021) with an audio extract from *Himi 114 'Eiki koe 'Ofa A'au* performed by Tonga's Tupou College Toloa students. In *Tolu Katea* a choir activates the patterns' motions, with voice frequencies represented in digital form. *Tolu Katea* represents three interconnected canoes that keep each other afloat on the deep moana.

■ Sione Faletau exhibits at Gus Fisher Gallery until 9 July. Admission is free.

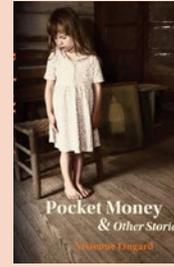
See [gusfishergallery.auckland.ac.nz](http://gusfishergallery.auckland.ac.nz)



Sione Faletau, *Ongo Ongo* (video still) 2022.  
Courtesy of artist and Gus Fisher Gallery

## ART & CULTURE

### BOOKS



#### **Pocket Money & Other Short Stories**

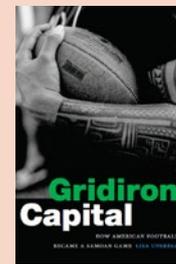
A short story collection by creative writing alumna Vivienne Lingard shines light on human character, conveying microcosms of everyday life, but with a sting in the tail. An example:

an academic and his wife are on holiday in Rome. He has a secret to reveal but, as he is soon to discover, so does his wife.

**Vivienne Lingard, Artistry Publishing, \$38**

**WIN! We have one copy to give away.**

**Email: [uninews@auckland.ac.nz](mailto:uninews@auckland.ac.nz) by 30 June.**



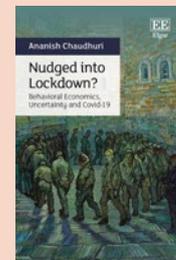
#### **Gridiron Capital:**

#### **How American Football Became a Samoan Game**

Dr Lisa Uperesa is a senior lecturer in Pacific Studies at the University and this book charts the cultural, historical, and social dynamics that have made

American football so central to Samoan culture.

**Lisa Uperesa, Duke University Press, \$42**

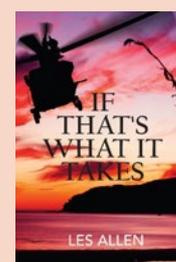


#### **Nudged into Lockdown? Behavioral Economics, Uncertainty and Covid-19**

Ananish Chaudhuri is a professor of experimental economics. This book employs research in economics, psychology, neuroscience and

evolutionary theory to provide his critical perspective on the role of cognitive biases in decision-making during the Covid-19 pandemic; with particular regard to social distancing.

**Ananish Chaudhuri, Edward Elgar Publishing, hardback, e-book or hardback**



#### **If That's What It Takes**

Business and Law alumnus Les Allen has written a novel about an unlicensed private investigator who teams up with a small-town lawyer to fight against dirty tricks, from

Northland's rugby fields to dusty courtrooms. The book draws on Les's career in law and is set mainly in Northland in the early 1980s.

**Les Allen, Illustra Press, \$38**

## HOW LANGUAGES WILL OPEN UP YOUR WORLD

**The most common question I had to field while completing my PhD in German Studies at the University of Toronto was, “What are you going to do with that?”**

While I was able to stave off that line of interrogation while in Toronto, when I moved to a new home in Vienna, ahead of taking up my role at the University of Auckland, the question seemed to be one bordering on wonderment: “How did a woman from the backwaters of British Columbia come to study a German-American topic in Austria and then get a German Studies position in New Zealand?”

My answer is always this: by learning another language.

My academic adventure began aged 17 as a Rotary exchange student in Altena, Germany. This is in a region called Sauerland, which means ‘sour land’ largely because, as my host father explained to me, it rains so much there. It was there, in the midst of all that rain, that my life would change. Living abroad and negotiating teenage friendships and experiences in another language was daunting, as was having “the talk” about national socialism and the post-war era in Germany with my host mother, Monika. It was a year of ups and downs, but I returned to Canada, in love with another culture and language, continually exploring the similarities while appreciating the differences.

That year, my host parents apparently thought I was homesick so they sent me and another Canadian exchange student to an open-air theatre featuring Germany’s most famous Blood Brothers: the Apache Chief Winnetou and his German immigrant friend Old Shatterhand. The blatant clichés of the wild west and overt racism, even when positively construed, were hard to take. The better my German became, the more I started to ask questions and discover that Karl May’s 1893 *Winnetou* series was more widely published than anything else short of the Bible and that there were even film genres known as Sauerkraut and Red (East German) westerns.

With my intellectual curiosity piqued, I analysed these novels in my MA, and my PhD examined the German representation of North American Indigenous peoples from 1798–1910. The epilogue of my dissertation, which focused on how Indigenous artists reclaim and reappropriate this image, earned me a Lise Meitner Postdoctoral Fellowship at the University of Vienna.

When I returned to my hometown, Penticton,



Photo: Elise Manahan

*“The blatant clichés of the wild west and overt racism, even when positively construed, were hard to take.”*

– Dr Nicole Perry,  
Faculty of Arts

I would often meet with Jeannette Armstrong, an Okanagan woman who was at that time executive director of the En’owkin Centre and is now an associate professor at University of British Columbia Okanagan. Her 1984 work *Slash* is widely considered the first novel by an Indigenous woman from Turtle Island and she is also a Canada Research Chair in Okanagan Indigenous Knowledge and Philosophy, after finishing her PhD at the University of Greifswald, Germany.

Jeannette showed me how to listen, appreciate differences in opinions, and work together towards a common goal. It was often the unspoken between us that was of more importance than our exchange of words. She also exposed me to what here in Aotearoa New Zealand is called *kōrero* or *talanoa*.

That Indigenous artists and authors, such as Kent Monkman (Cree) and Drew Hayden Taylor (Anishinaabe) are aware of *Winnetou* and its legacies, and actively seek to deconstruct an imagined image, is essential.

While Monkman’s paintings and performance art are often indictments of colonial desires and practices, Taylor’s documentary *Searching for Winnetou*, which has been shown on Māori TV, advocates more for “breaking bannock” and listening to each other to try on some level to understand this strange fascination.

In a way, both Monkman and Taylor’s works are at the heart of intercultural understanding and demonstrate both the power and danger of mythmaking. Similarly to ‘Manifest destiny’ being considered one of the founding myths of America, *Winnetou*, and the imagery of

settling of the West at a time when Germany was pursuing its own imperialist agenda, goes hand-in-hand with Germany’s colonial experiences both at home, through such things as the *Völkerschauen* (colonial exhibitions), and abroad, for instance through Germany in Samoa. Representation matters.

One of the main reasons I love being an academic is working with our students. I learn from them as much as they learn from me; they constantly expose me to new ways of thinking about the world. In the Faculty of Arts, I am part of a group of academics and professional staff actively working and contributing towards our Arts Gen 103 ‘Ko Wai Tātou? Who are we?’ course, an initiative built on the concept of *wanaungatanga*. The course seeks to expose students to the diversity of disciplines in our faculty, centred around big themes while upholding our faculty values, most importantly *kia whakamana i te tangata*. I’m looking forward to exploring and working together with both colleagues and students to contemplate who we are as a faculty and what our relationship is to where we find ourselves – in Tāmaki Makaurau, Aotearoa – and globally.

Of late, I find a new question is often posed to me: “Why are you here?” And to that, I respond: “I am exactly where I am meant to be.”

■ Dr Nicole Perry is a senior lecturer in German and Comparative Literature in the School of Cultures, Languages and Linguistics in the Faculty of Arts.

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