HOT SEX IN FRANKFURT
The zine scene

COMPOUND INTERESTS
The uses of NMR spectroscopy

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News from Massey University | Issue 22 | November 2012

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Nation builders
Massey's Timor-Leste connection

A bit of a splash
Rescuing a threatened frog

MASSEY UNIVERSITY
TE KUNENGA KI PUREHUROA
UNIVERSITY OF NEW ZEALAND

THE ENGINE OF THE NEW NEW ZEALAND

CONTENTS NOVEMBER 2012

COVER STORY

PROFILES

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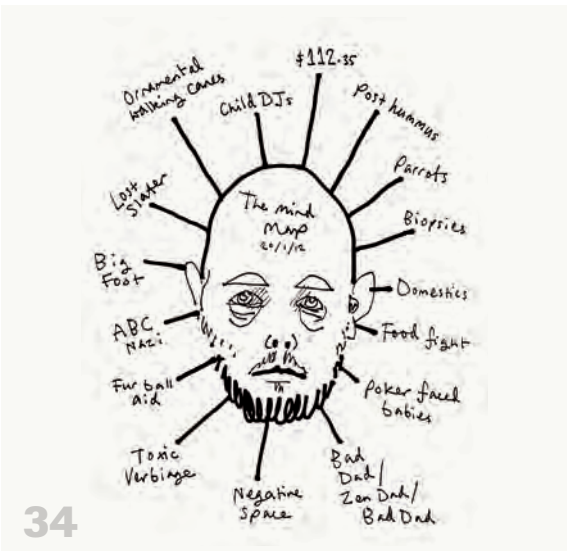


TOOLS OF TRADE

DEPARTMENTS

FIRST WORD

Vice-Chancellor Steve Maharey writes.

How personally significant was the experience of New Zealand to Aurélio? One of his sons is called Zelandini.

Martin Luther King famously once wrote that the arc of the moral universe is long, but it bends toward justice. There have been times when, I think, he may have been right. For me, one was the fall of the Berlin Wall in November 1989; another, the release of Burma's Aung San Suu Kyi after decades of house arrest in November 2010; a third (midway between the two), Timor-Leste's departure from Indonesian rule.

These were occasions that would disarm the meanest cynic, inflection points where history took a new, astonishing and positive turn.

Who would have thought that after all those years of obligatory protest outside any event featuring Indonesia, out of the blue, Timor-Leste would at last be given self-determination?

I remember greeting the news that a referendum on self-rule would be held in Timor-Leste with elated surprise.

I wouldn't have been alone in feeling a lift in my spirits. Like Timor-Leste, New Zealand is a small, island nation, and one aspect of our national character – something to which I will return – is an instinctive sympathy for the underdog.

But for Massey's Timorese community the news would have stirred a mix of emotions. Whatever the referendum's outcome, difficult times would be sure to follow and it would be their friends and families who would suffer.

Massey's extensive ties to Timor-Leste are the result of enlightened foreign policy. In the early 1990s New Zealand became the first Western nation to offer scholarships to students from Indonesian-occupied Timor-Leste, the sole expectation being that, once qualified, the students would return home to make a difference.

The first, Armindo Maia, began his studies at Massey in 1991, graduating with a Master of Philosophy in development studies and education in 1997. In the succeeding decades, more than 100 have come to New Zealand and a great many have also chosen Massey.

One of them is Aurélio Guterres, the subject of this month's cover story. Aurélio spent two periods at Massey – the first began in 1994, when he came to do a masterate, the second in 1999 when he started his doctorate. For his doctoral thesis he chose to look at patterns of rural-urban immigration in Timor-Leste, and during the year 2000 he returned home to spend four months interviewing immigrants for his research – along the way picking up a case of malaria, a disease to which he had mistakenly thought he had some native immunity.

The stories related to him make harrowing reading. Timor-Leste's history is calamitous. First there was colonisation by the Portuguese, with an intermission during which the country was occupied by Japan. Then came the 1975 invasion and annexation by Indonesia and a succeeding period marked by many tens of thousands of conflict-related deaths and 'excess' deaths from hunger and illness, and finally, in 1999 (the year Aurélio returned to Massey) the yes-voted referendum for independence – after which pro-Indonesian militia killed around 1400 people and destroyed much of the country's infrastructure.

New Zealand and Massey gave Aurélio Guterres, Armindo Maia and their compatriots two extraordinary gifts: the time and support to think in a structured educational setting about how to address the needs of their country; and, perhaps just as importantly, the experience of another culture and its values.

Both have been able to put their time at Massey to good use. Armindo was, until the recent national elections, the Minister of Education; Aurélio is now my equivalent at the Universidade Nacional de Timor-Leste.

They are not the only Massey alumni in positions of influence. The Minister of Justice, Deonisio Babo Soares; the Minister of State Administration, Jorge Teme; and the Secretary of State for Art and Culture, Isabel Ximenes, are Massey graduates too.

How personally significant was the experience of New Zealand to Aurélio? One indicator: he and his wife (another Massey graduate) have a son called Zelandini.

How a nation begins is important. Recently I happened to pick up an extraordinary book by American academic David Fischer, *Fairness and Freedom: A History of Two Open Societies, New Zealand and the United States*. Fischer's thesis is that while both societies have values in common, the balance is fundamentally different: in the United States, the scales are weighted towards freedom; in New Zealand towards fairness.

The origins of the difference stretch back to the early colonial years of each country. The US originated as part of the so-called first British Empire, which began in the 17th century and met its demise at the hands of the American War

of Independence; whereas New Zealand is the product of the second British Empire, which began in the late 18th century, reached a zenith between 1890 and 1940, and expired after World War II. The first empire, writes Fischer, was marked by "a clash of dynamic opposites: aggressive rulers and assertive colonists who did not take kindly to being ruled", hence, in part, the present-day emphasis on liberty. In New Zealand, part of what impelled the colonisers were the (not always adhered to) ideals of fairness and social justice.

The subsequent history of each nation has reinforced these different emphases.

One result is New Zealand's egalitarian culture. One of my favourite anecdotes is of the apocryphal reply the New Zealander General Freyberg gave to a senior British officer who complained that the New Zealanders were failing to salute: "Ah, yes, but if you wave to them they will wave back".

An emphasis on fairness is part and parcel of why New Zealand consistently features as the cleanest of the clean in Transparency International's Corruption Perceptions Index.

I would recommend Fischer's book to any Kiwi who has ever tried to make sense of why so many Americans vilify universal health care (which seems, on the face of it, to make such good sense for all sorts of reasons), or defend the right to carry arms (which doesn't), or can, straight-facedly, refer to President Obama as a leftist.

I would also recommend it to those who believe that the answer to all of our problems is to look to overseas models. Certainly we can learn from the examples of others (our values do not always serve to our advantage), but historically and, as Fischer's book shows, even today, the world has often looked to our example.

How does this apply to Timor-Leste? What values will underlie this new nation, now in its own critical formative years?

Timor Leste faces immense challenges, but it has an ace up its sleeve. Vast reserves of oil and gas are known to lie just offshore. But having raw material resources to draw on is no guarantee of a happy and prosperous society. There is such a thing as the curse of oil. In a number of third world countries, oil wealth has led to vast gulfs in income and to endemic corruption. Big Oil creates Big Men; democracies become kleptocracies.

Freedom and fairness. If Timor-Leste succeeds it will be because its founders, people like Aurélio, have found the right mix. ■

In an act of extraordinary philanthropy, Palmerston North couple Kenneth and Elizabeth Powell have left more than $1.2 million to the Massey University Foundation.

The two decided several years ago that they wanted upon their deaths to establish a fund to support the study of technology in engineering and health. Mr Powell, an engineer and specialist in aircraft maintenance, said at the time that as technology and health had been central to their lives they wanted to give young enthusiasts in their home city "an extra edge".

Mrs Powell was a registered nurse, who trained at Wellington Hospital and completed her training as a midwife at Palmerston North Hospital, where she worked as well as at the former Rostrata Maternity Home in the city. She died in October 2006, aged 96. Mr Powell, a World War II veteran who served in the Pacific as instrument fitter with the Royal New Zealand Air Force, died in February this year, aged 88. The couple married in 1958.

foundation.massey.ac.nz

WILDBASE

MASSEY UNIVERSITY

Introducing Wildbase

The birds, reptiles and mammals in its wards will be none the wiser, but Massey University's 10-year-old New Zealand Wildlife Health Centre now has a new name: Wildbase. Nationally, Wildbase is known for its work with injured and sick native and endemic species. Internationally, it commands a reputation for its expertise in the rehabilitation and release of birds and marine mammals caught in oil spills. Wildbase staff led the wildlife response to last year's *Rena* shipwreck in Bay of Plenty. Wildbase plans to partner with the Palmerston North City Council to build a wildlife rehabilitation centre on Victoria Esplanade, giving the public the opportunity to witness its staff at work and to come to a greater appreciation of New Zealand's extraordinary wildlife.

wildbase.massey.ac.nz

Talking points

We estimate that land ecosystems provide an annual value of around $52 billion. If the current export growth and additional growth strategy diminish that value, we will reach a point where this strategy becomes uneconomic; the costs of exports are higher than the benefits.

Which brings me back to my original point. The *Call to Arms* strategy must include a clear blueprint for defensive action and the means of monitoring to ensure that future growth remains 'economic', ie the cost of export growth doesn't exceed the benefits of export growth.

While about 300 employees at NZ Statistics monitor economic activity (GDP), we know only three people monitor environmental statistics.

Marjon van den Belt, Director of Ecological Economics Research New Zealand, in the pages of *The Dominion Post*, responding to the Riddet Institute's *A Call to Arms: A Contribution to a New Zealand Agri-Food Strategy.*

definingnz.com/calltoarms

"like a drunken rhino", "knocked for six", "I wonder how many sets of goal posts he's looking at now?", "he will take the knocks but he will keep getting up", "brave fella", "he was milking that", "think he's just thirsty", "bit of ice, won't feel a thing", "smelling salts; that ought to do the trick"

Excerpts from commentary on the free-to-air Māori channel during the 2011 Rugby World Cup (RWC) after likely concussion incidents, as noted by psychology student Natasha Bauer. Bauer compiled the excerpts as part of her honours clinical psychology dissertation. Since the RWC, the New Zealand Rugby Union, which has conducted its own research, has introduced further measures to make sure that players do not continue playing if concussed.

So, for a small country in the middle of nowhere, the benefits of being part of a larger economic zone are obvious. Already many New Zealand firms either operate below an efficient scale or need to export to survive. A common currency could help many small firms make that first big step into exporting. New Zealand has more than 470,000 small and medium-sized enterprises, so encouraging more of them to grow their businesses to export level would be an important boost to the New Zealand economy.

Professor Christoph Schumacher puts the case for Australia and New Zealand adopting a common currency.

The New Zealand Herald, 8 October 2012

27

The 2012 London Olympics medal-count ranking that Massey would have if it were a country.

During a visit to the Manawatū campus, cyclist Simon van Velthooven displays the bronze medal he won in the London Olympics men's keirin. Van Velthooven, a Bachelor of Applied Science student, is now in Japan racing on the professional keirin circuit.

48%

The percentage of New Zealand nurses who have considered quitting after struggling with moral issues beyond their control.

From a 'moral distress' survey of 400 hospital-based nurses conducted by Massey University School of Health and Social Services researchers.

Good eating

In September the cream of New Zealand's food industry gathered at a gala dinner in Auckland to mark the 2012 New Zealand Food Awards. Among the companies and products honoured this year were Auckland-based Paneton Bakery with its Ready to Use Flaky Puff Pastry, which took out the Massey University Supreme Award and the Ministry of Primary Industries Bakery Award; South Island artisan honey maker J.Friend and , which won the New Zealand Herald Viva Gourmet Award and the KPMG Export Award; and fledgling food enterprise I AM SAUCE, which won the Villa Maria Other Food and Beverage Award and the Foodbowl Value-Added Processing Technology Award. The panel of judges included Ray McVinnie, Geoff Scott and Nici Wickes.

A full list of award winners can be found at www.foodawards.co.nz.

London Paralympian gold medallist and world record breaker Mary Fisher is back to the books on Massey's Wellington campus. But first, there was a celebratory afternoon tea with a cake baked and iced for the occasion. The gold medal Fisher won for the S11 200-metre individual medley in a world-record-breaking time was a particular audience pleaser. Fisher, who is visually impaired, also won two silver and a bronze medal in the swimming events. Fisher is in her first year of a Bachelor of Science majoring in psychology.

The LA Brooks Cup has a long history. The rugby fixture between Massey and Lincoln Universities began in 1952, when both institutions were rival agricultural colleges and, following a 39-year hiatus after 1966, the event is again going strong, with netball joining rugby as part of the inter-university competition. This year the netball teams competed for the inaugural Enid Hills Memorial Trophy, donated by the family of Enid Hills to commemorate Massey's first woman student, who died in June 2012, aged 99.

And the 2012 results? In the rugby Massey managed an 11-7 win, its third since 2005. In the netball the Massey agriculture team won 36-34, pulling ahead in extra time.

Gannet-eyed

Dividing life between water and air brings its challenges. One is with vision. In a phenomenon called refraction, when light travelling through air hits the surface of the eye, it bends more markedly than if it were travelling through water. Hence, the eyes of fish are much more spherical than the eyes of land dwellers, and penguins and seals have evolved mechanisms to adapt their vision as they move between air and water. But seals and penguins move between land and water at a leisurely pace. For a diving gannet, the adaptation in eyesight needs to happen near instantaneously.

"Gannets are able to make this switch between air and water in 80-120 milliseconds," says Gabriel Machovsky-Capuska, a biologist at the Institute of Natural Sciences at the Albany campus. "They are able to see in environments that are physically and chemically completely different." Now Machovsky-Capuska has shown just how this is done.

Working alongside his doctoral supervisor, Massey's Professor David Raubenheimer, and with the collaboration of Professor Gadi Katzir, a biologist from the University of Haifa, Machovsky-Capuska has used a variety of techniques to film gannets from the Cape Kidnapper gannet colony diving into the water held in an enclosure, capturing the change in eye shape from oval to spherical.

The work forms part of a broader study of the foraging and feeding behaviours of the Australasian gannet.

The resulting paper made the cover of the United Kingdom's *Proceedings of the Royal Society B: Biological Sciences*.

Above: Third-year industrial design student Ben de la Roche (at left) was shortlisted for the international Electrolux Design Lab 2012 Award for his design of an open refrigeration wall, and Sweden-based industrial design graduate Nick Ross (at right) from Wellington has won a James Dyson Award with Axolotyl, his concept for a tree-harvester that cuts and separates tree trunks, branches and foliage on site.

In October de la Roche travelled to Milan to present his concept design to a panel of judges, coming in as runner-up. Ross is to travel to the UK, courtesy of the British Council New Zealand, to compete in the international James Dyson Award, the winner of which will be announced in November.

Third-year fashion design student Jack Hill was the winner of the Westpac Young Fashion Designer competition - an event in which all three finalists were graduates or students from the College of Creative Arts. The award, which includes a $5000 prize, was presented at New Zealand Fashion Week in September.

$5.5 million in Marsden round

More than $5.5 million has been awarded to eight Massey research projects by the Royal Society-administered Marsden Fund as part of its 2012 funding round. This includes two Fast Start grants, made to outstanding early-career researchers.

Dr Phil Battley (pictured above): *The genetics and epigenetics of bird migration timing* ($920,000)

Associate Professor Mary Morgan-Richards: *Punctuated evolution: is rapid morphological change linked to speciation?* ($690,000)

Distinguished Professor Gaven Martin: *Modern analysis and geometry* ($615,000)

Dr Paul Plieger: *The good without the bad: selective chelators for b eryllium* ($930,000)

Professor Regina Scheyvens and **Associate Professor Glenn Banks**: *Harnessing the power of business: the contested involvement of corporations in community development initiatives in the Pacific* ($890,000)

Associate Professor Helen Moewaka-Barnes: *Affective practice, identity and wellbeing in Aotearoa* ($850,000)

Dr Oleksandr Fialko: *Understanding quantum thermodynamics with the smallest heat engine* ($345,000 Fast Start grant)

Dr Imran Muhammad: *Institutional change, path dependence and public transport planning in Auckland* ($345,000 Fast Start grant)

The Marsden Fund supports projects in sciences, technology, engineering, maths, social sciences and humanities. Eighty-six projects were funded in the 2012 round.

Demography, disaster resilience and more...

Five Massey projects are to be funded as part of this year's science investment round announced by Science and Innovation Minister Steven Joyce. In total, the projects will receive $3.8 million. The research contracts take effect from October and extend for between two and six years.

A project led by **Professor Murray Patterson**, from the School of People, Environment and Planning, is to use Tasman Bay as a test-bed to develop a framework to characterise, quantify, map and place an economic value on coastal-marine ecosystem services. These are benefits derived from ecological processes occurring in the natural and human-modified world that often fall outside the notice of economic decision-making: the likes of nutrient recycling, climate regulation, carbon sequestration and food provision. The project has been granted $1 million.

A study headed by **Professor Paul Spoonley** from the College of Humanities and Social Sciences has been granted $800,000 to investigate the regional impacts of demographic and economic change. The work is timely. Mobility (immigration, emigration, internal migration) is combining with an ageing population, affecting the labour supply, community development and people's sense of belonging or attachment. These demographic and economic changes vary considerably by region, with quite different outcomes for rural and urban communities. Professor Spoonley will model these changes at the regional level between 1986 and 2013 and will provide projections out to 2036.

Professor David Johnston, from the Joint Centre for Disaster Research, will study the factors that build resilience in New Zealand. The project, awarded $796,000 over two years, will consolidate and add to knowledge about resilient communities in New Zealand, across the continuum of hazard mitigation, preparedness, response and recovery. Indigenous knowledge will be a particular focus. Building on research on the Canterbury earthquakes, the *Rena* oil spill, responses to economic shocks, and recovery from natural hazard events, the research will investigate post-disaster community resilience in urban, rural and Māori communities.

A project led by **Associate Professor Chris Stephens**, from the School of Psychology, received $598,629 over two years to provide answers to questions about older people's aspirations for independent living, their contributions to paid and voluntary work, and their opportunities to use digital media. The *Inclusion, Contributions and Connections* study will survey 3200 baby boomers aged 63-78 years, and the findings will be used to develop digital information services, housing provision and employment support policies.

Associate **Professor Robin Peace** from the College of Humanities and Social Sciences will head a project creating a social research knowledge space. The project, also granted $598,629 over two years, will launch a website eSOCSCI Hui Rangahau Tahi (engaged social science) to act as a virtual platform for dialogue. The site will improve shared access to social research and knowledge and help researchers, scientists, policy-makers and communities to further research, evaluation and policy formation and implementation.

Healthy living

A health research project led by Massey epidemiologist Associate **Professor Barry Borman** of the Centre for Public Health Research has been awarded $1.5 million by the Ministry of Health.

The environmental health indicators project is monitoring how environmental factors affect the health of New Zealanders. The factors include air and water quality, transport, energy consumption, housing and chemical exposures. Dr Borman says the project will also investigate such things as how dairy run-off into rivers affects people's health and the long-term health effects of natural disasters, such as the Christchurch earthquakes.

The research is being carried out over three years with the support of Massey's Institute of Veterinary, Animal and Biomedical Sciences.

As part of the project a hazard surveillance system will be established to track how many New Zealanders have been exposed to dangerous goods and chemicals. This will draw on data collected in partnership with the Best Practice Advocacy Centre Inc from general practices throughout New Zealand.

The Environmental Protection Agency and the Ministry for the Environment supported the centre's funding application to the Ministry of Health.

Building a better battery

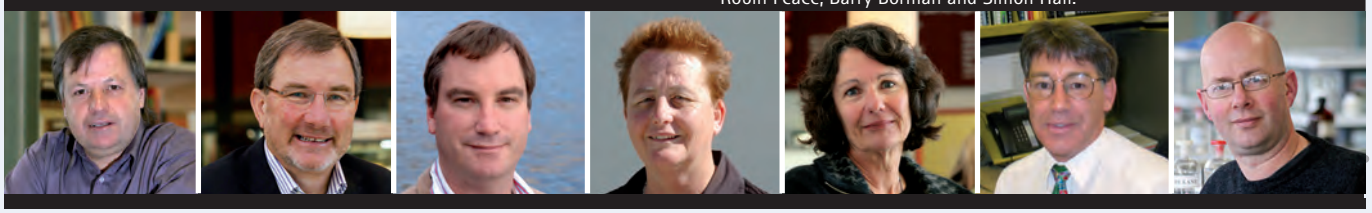
Advocates of alternative sources of energy, such as wind and solar have a problem: while the wind does not always blow or the sun always shine, people always want constant access to power. Advocates of the electric car are similarly challenged. Quiet and cheap to run though they may be, electric cars are expensive and have limited ranges.

The problem is energy storage: the world needs better, cheaper batteries. Where will they come from? Perhaps, in part, from research being conducted by P**rofessor Simon Hall** of the Institute of Fundamental Sciences, and his colleagues **Dr Mark Waterland** and **Dr Gareth Rowlands**. For some years now, initially part-funded by the MacDiarmid Institute for Advanced Materials and Nanotechnology, the three have been working on developing a better zinc-based cathode, along the way achieving some success.

Now the team have had further validation of the promise of their work with the announcement by Science and Innovation Minister Steven Joyce of $964,050 over two years from the Ministry of Business, Innovation and Employment.

A company, Synthodics Ltd, has already been formed by Massey and its commercialisation partner the BioCommerce Centre to commercialise the team's findings.

The global stationary battery market is estimated to be worth $4.9 billion, while that of the global electric vehicle market is estimated to be $30 billion.



Left to right: Murray Patterson, Paul Spoonley, David Johnston, Chris Stephens, Robin Peace, Barry Borman and Simon Hall.

These Rough Notes is a performative Antarctic-themed song cycle created by photographer Professor Anne Noble from Massey's School of Fine Arts, jazz musician Associate Professor Norman Meehan from the New Zealand School of Music and poet Professor Bill Manhire from Victoria University of Wellington. The title is drawn from Captain Robert Falcon Scott's last diary. The cycle, with vocals performed by School of Music graduate Hannah Griffin, has been performed in Wellington and Christchurch, and most recently formed part of the Frankfurt Book Fair in Germany, where New Zealand was this year's guest country of honour.

It's fab and it's a lab

Australasia's first Fab Lab is open for business and busily fabricating. The lab was opened during Fab8NZ (the eighth annual meeting of the international Fab Lab network), an event hosted by Massey and MIT (the Massachusetts Institute of Technology).

Fab Labs began as an outreach project from MIT's Center for Bits and Atoms in 2003, and the Massey Fab Lab is officially MIT-affiliated – meaning that it adheres to a common set of operating principles and offers a standard range of equipment, including laser cutters, milling machines and 3D printers.

Industrial design lecturer Chris Jackson hopes the lab will be a catalyst, giving individuals and small firms access to technology and promoting multidisciplinary and cross-industry links.

Fab Lab Wellington will be open for use by the general public during designated hours and will be the venue for industrial design workshops.

At left: A hoverboard from the Fab Lab competes in a flying machine competition at the close of Fab8NZ. Below: The Fab Lab itself, with industrial design lecturer Lyn Garrett.

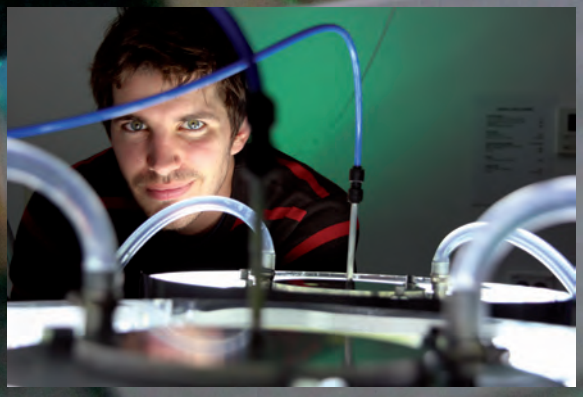
Rise from the Ruins, a garment constructed from paint tin lids collected in post-earthquakc Christchurch, has won 24-year-old third-year fashion design student Nicole Linnell the Shell Student Innovation Award at the 2012 Brancott Estate World of WearableArt Awards Show (WOW).

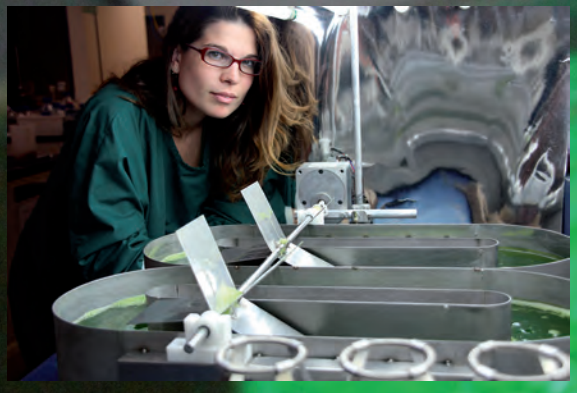
Linnell has earned her success. *Rise from the Ruins* was her fourth entry in WOW (in 2011 her entry *Proud to Wear the Pinny* picked up third place in the American Express Open section), and she deliberately chose the lids as a difficult-to-work-with medium.

Other Masseyites who acquitted themselves with distinction were fashion design graduate Rebecca Maxwell and fourth-year student Sally Spackman, both first-time entrants.

Maxwell won the WOW Factor Award for *Noor Reverie* and Spackman was placed third in the Air New Zealand South Pacific section for *Powelliphanta Pine*.

Linnell's win brought with it an award of $5000, as did Maxwell's. Spackman received $1200.





No laughing matter

Nitrous oxide emissions threaten algae's environmental credentials

It thrives in fresh, brackish or salty water in places too hot, dry or infertile for other forms of agriculture. It grows many times faster than conventional crops, consuming quantities of carbon dioxide (CO_2) as it does so. And it can be used to produce a form of 'green crude', freeing societies and nations from their reliance on fossil fuels.

So why aren't we topping up our tanks with green biofuel produced from algae? Price. As yet, algal biofuels are many times more expensive than the conventional kinds.

But price may not be the only barrier. There is also the matter of algae's environmental credentials, which, it turns out, are not entirely impeccable.

In 2009 Associate Professor Benoit Guieysse and colleagues at Massey's School of Engineering and Advanced Technology were surprised to find that nitrous oxide (N_2O), also known as laughing gas, was seeping from a batch of microalgae.

This was not a good thing. Algae may be good at consuming the greenhouse gas CO_2, but per molecule N_2O has 310 times the ability of CO_2 to trap heat in the atmosphere, and it is also an ozone-depleting pollutant.

Guieysse was intrigued and concerned. "So I did a couple of simple calculations, which showed that the emissions seemed significant. Then I looked for confirmation."

He found that the algae were indeed producing N_2O, and, subsequently, that by changing the parameters he could vary how much of it was produced.

Adding nitrite, for example, increased the production of N_2O and incubating the algae in the dark increased it further still.

"When the experimental microalgae were deprived of light and fed with nitrite, the emissions of N_20 increased by a factor of 40."

Not only does the finding have worrying implications for the use of algae in biofuel production and wastewater treatment, but it could upset the scientific consensus that most atmospheric N_2O originates from bacteria involved in the nitrogen cycle.

Guieysse's challenge is now to work out how to cultivate algae in a manner that minimises how much N_2O is produced.

He and his colleagues have begun screening algal species and postgraduate student Quentin Bechet is working on a computer model that will incorporate various parameters to predict the scale of N_2O emissions resulting from the full-scale outdoor cultivation of microalgae.

Guieysse does not regard the N_2O problem as insurmountable. He believes that as universities, such as Massey, and private enterprise tackle the problems one by one, algal biotechnologies will become cheaper and more environmentally friendly, forming the basis of new industries. Whether one of these will be a major biofuel industry remains to be seen.

Guieysse's project *Is algal photosynthesis sustainable?* is funded by a 2011 Marsden allocation of $774,000.

Associate Professor Benoit Guieysse and, inset from top, PhD student Quentin Bechet and visiting PhD student Cynthia Alcántra.

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NOMINATE TO WIN $100
QUOTE OF THE YEAR 2012

Entries are open to nominate a quote for the annual list of top 10 New Zealand quotes.

You're invited to send in any rousing, amusing or otherwise memorable one-liner said by a New Zealander during 2012. The quote can be from any public source, including movies, TV, stand-up comedy, speeches, advertisements, and news reports.

The first sender of the best quote will receive $100. You can send in more than one quote.

We'll be keeping nominations open until midnight 1 December 2012.

Any questions? Contact Heather Kavan: h.kavan@massey.ac.nz. To check out last year's top 10, find out more information and nominate a quote, head to:

MASSEY.AC.NZ/QUOTES

THE ENGINE OF THE NEW NEW ZEALAND

A bit of a splash

Jennifer Little talks to frog conservationist Virginia Moreno.

Virginia Moreno has a thing for frogs and for one frog in particular: the Nahuelbuta mountain frog, *Telmatobufo bullocki*. Moreno first met *T. bullocki* – a brownish, eight-centimetre-long, yellow-eye-lidded frog with a distinctively knobbled back – in 2011 during a field trip to Chile's coastal mountain ranges and had a moment of communion. "When I found the frog, he looked at me as if to say: 'this is your destiny – here's your PhD'."

The sighting was good news, for life has not been easy for *T. bullocki* or Chile's fauna in general. Over the years, Chile's coastal ranges have been cleared for cattle farming and then, partly driven by government subsidies, planted out in pine and eucalyptus, leaving scattered native bush remnants to support species such as Darwin's fox, native deer, puma and the black woodpecker.

"My sighting was one of the few in the past decade. A lot of people thought they were extinct, or close to extinction."

Moreno and her colleagues went on to find three more populations – one of them in pine forest. But the species' status is far from secure.

T. bullocki breeds in fast-flowing streams, the tadpoles attaching themselves to rocks with specially adapted suction mouths and feeding on algae until they metamorphose into adult frogs and return to the forest.

Hence, it is not just forest disturbance or harvesting that threatens the species, but the degradation of stream water.

"Stream water gets silted after heavy periods of rain, as erosion is greater in exotic plantations than in native forest. This sedimentation makes it difficult for the larvae to feed and survive. Sedimentation causes a whole lot of problems too. Then there are the pesticides and fertilisers in the water."

For her PhD thesis, Moreno is performing a census of *T. bullocki* in native and pine forests, establishing what makes good frog habitat, using tiny radio transmitters to map the frogs' movements between forest and streams, and establishing their breeding habits.

One of the frog populations found by Moreno is perilously situated in a soon-to-be-felled pine plantation, and Moreno has been negotiating with a forestry and pulp company to hold off the harvest until she has worked out the feasibility of performing a translocation to a protected habitat.

"It's easy to be a conservationist and say 'no, no – we don't want pines'. But it's not the reality. You have to accept economic factors. So if I want to make a difference, I really need to work with them, and not against them." Working in her favour is the consumer demand for companies to exercise environmental responsibility to achieve Forest Stewardship Council certification.

Moreno came to New Zealand in 2007 with her boyfriend, who is pursuing postgraduate study at the University of Waikato. A Google search led her to Associate Professor Dianne Brunton's Ecology and Conservation Group at Massey's Albany campus. It was here that she did her Master's, taking as her subject New Zealand's Hochstetter's frog, the most common of New Zealand's native frog species. (One legacy of her masterate is a programme monitoring the population dynamics of Hochstetter's frog in the nearby Waitakere Ranges, as well as checking for the presence of the introduced chytrid fungus that in other countries has pushed a number of frog species into extinction.)

New Zealand, she says, has a strong culture of environmental awareness. By contrast, her fellow Chileans are just beginning to be more aware of environmental issues. Before coming to New Zealand, Moreno used to spend her spare time fleeing the bustle and noise of Santiago for the tranquillity and beauty of Chile's national parks. But most of her fellow city dwellers did not have the means to travel. However, as Chile has become more prosperous, things are changing, and she has noticed more locals – not just tourists – visiting parks and experiencing the natural world first hand, something she believes is the key to conservation.

"Once you experience nature, you can't do anything else but love it. And once you love it, you start to care about it."

Moreno's work is supported by the European Association of Zoos and Aquaria Amphibian Conservation Fund, the Mohamed bin Zayed Species Conservation Fund, and the New Zealand Society for Research on Amphibians. She has a PhD scholarship from the Chilean Government and in September she became an inaugural recipient of Massey's Sir Neil Waters scholarships.

At right: Virginia Moreno at work in the forests of Chile. At left: A female *T. bullocki* photographed by Danté Fenelio of the Atlanta Botanical Garden. The Atlanta Botanical Garden and the National Zoo of Chile in Santiago are allies in the Darwin's Frog Conservation Initiative, which, in the past year, has set up a *T. bullocki* breeding colony at the zoo and is currently working with Moreno to determine the incidence of disease in the wild.

Life lessons

Heather McRae kicked off her career with a science degree at Massey, and since then has been a teacher, worked on major curriculum projects, established new schools in Asia and been a principal in the state system. Today she runs one of the country's leading private schools for girls, where she remains a keen advocate of studying science. She talks to **Bevan Rapson**.

"There's a certain logic attached to science, and a certain creativity. A lot of it is conceptual thinking and I love that side of it," she says.

Three and a half years ago, Heather McRae made a remarkable transition, jumping education's state-private divide. She left Pakuranga College in suburban east Auckland, where she had been Principal since 2006 and Associate Principal for two years before that, to take over at Diocesan School for Girls, in the leafy, old-money heart of the isthmus.

It was a switch from a co-ed to a girls' school, from middle New Zealand to an institution steeped in tradition, and from the constraints of Ministry of Education priorities to the freedoms of the private sector.

In her sun-drenched office in a heritage building set in Diocesan's manicured grounds, McRae seems entirely adjusted to the demands of a different kind of school, diplomatically batting away thornier questions with practised ease. Working at Diocesan has been her first time in a predominantly female environment and that's been "interesting", she says with a chuckle. In fact, about a third of the staff are men and while the organisation works a little differently, "people are people regardless of gender".

But then, changes of direction are nothing new for McRae. Her path to the prestigious Diocesan job was far from a conventional progression through the teaching ranks.

Raised on a farm in rural Wairarapa, McRae's own secondary education was at a state co-ed, Tararua College, where she developed a passion for science first sparked by stories in her parents' *National Geographic* magazines. While there was a family connection to Diocesan in far-off Auckland – one of her grandmothers attended the school – it was the subject only of an unrealised threat. "My mum used to say to me, 'If you don't toe the line we'll send you boarding at Dio'."

McRae preferred farm life with her brothers and toeing the line appears not to have been an issue: she became head girl of Tararua before moving on to study science at Massey, where her degree was a double major: chemistry and biochemistry. Thirty-five years on, she still considers herself a scientist and does her best to encourage students into science subjects. "There's a certain logic attached to science, and a certain creativity. A lot of it is conceptual thinking and I love that side of it," she says. She believes that New Zealand doesn't train enough scientists. "I think it is a fantastic degree for giving students a whole range of views about the world."

From Massey, she went on to train as a teacher and taught at Fraser High School in Hamilton for four years before motherhood intervened (she has three grown-up children). After several years teaching part-time, she was head of science at Awatapu College back in Palmerston North, then became a science advisor before being seconded to the Ministry of Education to work on curriculum development.

From there she joined the Multi Serve consultancy, which led to curriculum work and school review projects in Asia. She helped to establish a new international school in Brunei and also worked on projects in the Philippines, China, Indonesia, Japan and the Pacific before taking up the role of Establishment Principal of a new school in Beijing, where she lived for two years from 2002, relishing the chance to experience first-hand the pace of growth at that time. "Being up there was incredible," she says. She picked up "very basic" Mandarin – a language that she moved quickly to introduce to the curriculum at Diocesan when she arrived.

McRae returned to New Zealand in 2004 and soon landed a job at 2200-pupil Pakuranga College. One obvious difference between Pakuranga and Diocesan is that Pakuranga – like any similar school – has to deal with around 120 suspensions and stand-downs each year, of which 90 percent involve boys. While she actually misses the engagement with boys, McRae detects clear benefits for girls in an environment free from the distractions of those discipline issues.

This hadn't been her perception during her state school years. "To be honest, I probably had to be convinced about that." While holding to the view that "good teaching and learning is good teaching and learning, wherever you go", she admits she's something of a convert to the advantages of single-sex schools. "Once you see it in action, you see the level of input you can have that is focused on your core business."

At Pakuranga she helped to lead an attempt to identify at an early stage those students who were likely to run into serious discipline problems, so that support programmes could be put into action. "When they walk in the gate, you can often spot them." Frustratingly, by the time they reached high school it was hard to change students' directions. "Whatever we do for these students, we have to get in earlier than Year 9."

Pakuranga College joined nearby primary schools and the local intermediate to put forward a project to address this shared problem. They won Ministry of Education funding and devoted time and resources for two years, but after the change of government in 2008 the initiative was scrapped. "Every time you get a change of government you get that whole change of strategy," says McRae. The decision clearly still rankles. "The one criticism that I'd have of the state sector in New Zealand is the lack of co-ordination and continuity in the way that different governments approach educational strategies."

Since her arrival at Diocesan the school's curriculum has been overhauled, as has its physical environment, with the construction of a multi-million-dollar hockey turf and an underground car park. While those projects were conceived by others, the campus has been transformed on her watch. Along with the introduction of Mandarin, her review of the school's curriculum introduced dance for the first time and she has also led the introduction of a leadership programme, an ethics centre and a new digital design faculty.

Her arrival has coincided with tough economic times, which have affected the number of parents who can find the money for a private school. But while that has presented challenges, McRae has also enjoyed being free of the constraints of the state system, where funding formulas limit schools' ability to find their own solutions. "The problem with the Government is that it says, 'We want this vision for education but we're going to give you this much money to carry out the vision', and the two don't meet by a very large stretch," she says. "In the private sector I like the fact that I've got total independence to be able to provide a school that the community is demanding or requires."

One of McRae's initiatives has been to grow the number of international students, hiring a director to take greater advantage of that market. "It's an area in which we could do very well," she says. Diocesan has only about 16 international students – compared with about 120 at Pakuranga College – and the Principal believes that could grow to an ideal of about 40.

The school has plenty of immigrant students – the second largest ethnic group after Europeans is Chinese – reflecting the demographics of the Auckland isthmus. Eighty percent of its roll comes from the local area, while 36 boarders come from further afield. Twenty girls from lower-income families attend Diocesan through the Government's Aspire Scholarship.

Soon after her arrival McRae got a taste of how the media spotlight can turn on what is perceived to be a 'top school'. Several Year 10 girls were stood down after making derogatory remarks on Facebook about a teacher and a student. A story duly appeared in *The New Zealand Herald* quoting the Principal, but also quoted a "well-placed source" who questioned the school's right to act on comments made in a supposedly private forum in the girls' own time. McRae is unrepentant about her tough line: "Being prepared to take a stand about things definitely makes a difference," she says.

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"The one criticism that I'd have of the state sector in New Zealand is the lack of co-ordination and continuity in the way that different governments approach educational strategies."

She has also been part of a move to discourage school ball after-parties, which have become a hot-button issue for many Auckland schools. "I think it's great that the Police have taken a stand and provided some support for us as principals," she says. "Schools were getting all the bad press around what happened [after balls]. We couldn't have our staff following kids around until four in the morning."

There is also a perception that the balls themselves are the cause of extravagant spending by wealthy girls at private schools, but McRae says that issue is overplayed. "I haven't noticed any difference really between Pakuranga and here. One might say the girls here have got much more money to spend, but actually that's not necessarily the case." She says many parents work two jobs to be able to send their girls to Diocesan and don't have disposable income to splash out extravagantly. "People make these huge assumptions about families in schools like ours."

Another consistently contentious issue among Auckland schools is that of 'poaching', when top athletes and scholars are attracted from one school to another, with state schools in poorer parts of town often pointing the finger at independent schools. McRae has seen the issue from both sides. Yes, Diocesan has sports scholarships, along with others based on academic ability and achievement in the arts, but she says the school abides by rules agreed between the region's schools. "We don't go out and shop for girls."

McRae, who chairs of the Auckland Secondary Principals' Association, admits there are grey areas but feels strongly that a minority of schools shouldn't be allowed to dominate sporting codes through poaching. "I think it is about looking at what is best for the kids, the big picture behind that, and not letting egos or agendas drive that, and sometimes that's where it goes. We've all got to step back and say, 'What's best for the students across the whole of the Auckland region?'." So when is it okay for a school like Diocesan to give a scholarship to a talented young sportswoman? "For instance, she may be a premier-quality player, but her school only has a team in the B Grade [so] she's probably never going to get looked at or developed or experience a higher level."

While we're discussing contentious issues, it's impossible not to touch on the NCEA (National Certificate of Educational Achievement) versus Cambridge exams debate that raged a few years ago. McRae advocates strongly on behalf of the NCEA system. Diocesan gives its girls the option of doing International Baccalaureate, but less than a quarter of students opt for it. Yes, NCEA had teething issues, she says, "and it was getting a lot of mud slung at it from Cambridge schools for political agenda reasons, really". But it has become a "fantastic qualification" that wins top scholars places at international universities. "That's kind of quietened everyone down, really, because it speaks for itself."

She also rates New Zealand's teacher training. While in China she recruited internationally and the best teachers, she says, were New Zealanders and Australians.

McRae returned to Massey in the 1990s to do MBA papers, then completed a Master's in educational administration. She relished the mix of people from different fields she encountered and calls it "the best professional development I ever had".

She believes her varied career path has brought many benefits. "What I would like to see in education is that we encourage our people to have that range of experiences. Go and do different things – you don't have to go through being a teacher, to a head of department, to a deputy principal, to a principal."

She rejects the idea that we 'lose' people overseas. "We can't think globally if we then say we don't want that to happen." She says teachers who have worked in different countries "understand all the different cultural intonations that make learning rich and valuable".

She doesn't rule out heading overseas again herself in future, although she is keen to see various projects at Diocesan through to fruition first. "Because I've worked internationally before, that's not out of the question."

The evening before our interview with McRae, she hosted the school's Scholars' Dinner, with girls returning from their first year at university. Lizzy Chan, an old-girl who was a finalist in the Young New Zealander of the Year awards earlier this year, was a speaker, and the Principal sat alongside Nina Huang, who last year won a $50,000 Prime Minister's Future Scientist Prize.

In her congratulatory remarks McRae took the chance to quote a figure from her favoured field – Albert Einstein: "The important thing is not to stop questioning… never lose a holy curiosity".

She is clearly inspired by the success that her ex-students are enjoying as well as their all-roundedness. In a school that produces plenty of academic high achievers, it's easy to imagine some might be sucked on to career treadmills of long hours, but McRae believes today's students are well equipped to maintain their work-life balance. "I think our new generation of kids coming through has got it sussed," she says. And professions themselves have shifted away from a survival-of-the-fittest mentality: "Different ways of working are being explored now by a lot of different businesses. I think our kids in some ways have a lot more flexibility, and think about the world in a different way." ■

Teaching the teachers

Massey's approach to teacher qualification is about to change, writes **Professor James Chapman**.

When the nod came from Government last May that a postgraduate qualification would be the minimum for new teachers from 2015, Massey was poised to act.

We had already elected to become the first local university to focus on graduate rather than undergraduate teaching qualifications.

We were also ready to create an Institute of Education where this could become a reality. Here, we could prioritise educational learning focused on postgraduate education and research equal to any equivalent institution in the world.

The decision was not easy for those of us who had come up through the teaching training colleges that shaped the identity of our colleges of education.

But for those committed to ensuring that Massey truly lives up to its aim of becoming this country's defining university, it felt like crunch time. Our future lies in innovative teaching and research programmes that can drive improved cultural, economic and social outcomes. The College of Education simply could not continue with business as usual.

So after consultation with our staff and the wider educational community, we have decided to focus all initial teacher education programmes at the graduate/postgraduate level by teaching beginning teachers through the graduate diploma pathway and to phase out of teaching on Massey's undergraduate initial teacher education programmes from 2013. At the same time, an Institute of Education will be established within the College of Humanities and Social Sciences.

Our task is clear. We need to advance our knowledge and research to fully understand factors like the influence and impacts of emerging technology in – and on – education and learning.

We need to understand more about how we can deliver better education for an increasingly diverse base of students with different backgrounds and ethnicities. Massey education academics need to undertake more of the relevant research that will equip teachers with the knowledge and skills to meet these challenges head on.

The changes we are making at Massey will start to address these issues by taking teachers to the next level of professionalisation. As graduates and postgraduates, our students will be able to progress to Master's and doctoral degrees and they will be well positioned to both move up the career ladder and assist those entering the profession.

The advantage of graduate and postgraduate teacher education is that the students have already qualified in a wide variety of degrees – sociology, psychology, maths, science, technology, the arts, Māori studies etc – and they bring those specialist skills and the ability to apply them.

Two undergraduate pathways will remain. The first is the Bachelor of Arts education major, which allows for specialist study alongside relevant education papers. The second is the general Bachelor of Education degree available to teachers who are upgrading diploma qualifications.

One of the arguments repeatedly put forward against this move is that it is not possible to prepare a teacher in one year. This is a misrepresentation of what we are doing. The students completing the graduate diploma path will have studied for a minimum of four years – and they will undertake the required two years of professional practice before being fully registered.

Around half of all graduates entering primary teaching come through the graduate diploma route; that increases to over 80 percent for the secondary sector.

At Massey we talk about the role that we, as an academic institution, can play in making what we call the new New Zealand a reality. The answer is a fresh approach to education in general, and in particular, the way we teach education and professional development.

The Government has signalled its clear intention to improve the quality of initial teacher education, improve the quality of teaching, and raise the achievement rates in our schools. In embracing the direction I have outlined here, so have we. ■

Professor James Chapman is the Pro Vice-Chancellor of Massey's College of Education.

Chemistry honours student David Nixon uses the 400-MHz Bruker NMR spectrometer to check his reaction product.

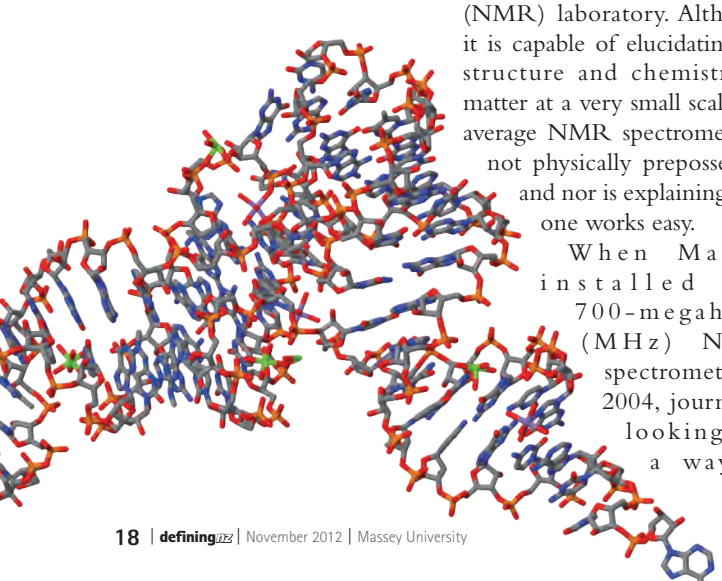
The console housing the hardware for transmitting and receiving radiofrequency signals.

PhD student Chris Lepper is working on how RNA behaves under conditions of high temperature and pressure. Behind him is the 500-Mhz spectrometer he is using.

Compound interests

Malcolm Wood writes.

Enquiries about making use of the Massey NMR laboratory are welcomed.
Contact: Pat Edwards
p.j.edwards@massey.ac.nz



Sometimes the most extraordinary technology doesn't look nearly as sophisticated and powerful as it really should. This is the case with Massey's nuclear magnetic resonance (NMR) laboratory. Although it is capable of elucidating the structure and chemistry of matter at a very small scale, the average NMR spectrometer is not physically prepossessing and nor is explaining how one works easy.

When Massey installed its 700-megahertz (MHz) NMR spectrometer in 2004, journalists looking for a way to explain the significance of the $3 million purchase decided to liken it to a "microscope", one with a magnifying power equivalent to a telescope that could be used in Palmerston North to view an insect fluttering its antennae on top of the Sky Tower in Auckland.

In fact, other than being able to glean information about the very small, the spectrometer is not much like a microscope, or a telescope for that matter.

In appearance the 700-MHz spectrometer, just like the others surrounding it, is a white bulbous-topped vat, close to three metres tall, which perches on three stubby legs.

Nor do the results from an NMR spectrometer resemble anything like the results of an optical or electron microscope. The product of a sample subjected to NMR is a graph showing a series of sharp and broad peaks rising above a flat line. Deeply meaningful peaks for those who know how to interpret them, but nothing like a faithful visual rendering of a hugely magnified molecule – although eventually, after much detective work, this may be the result.

What can the NMR laboratory be used for? Almost anything that involves the analysis of matter, from testing for the use of drugs in sport, to understanding the chemistry and physics of food, to investigating the origins of life itself.

From left: Professor Geoff Jameson, Senior Research Officer Pat Edwards and Dr Jason Hindmarsh.

The results of a Fourier transform. This is the information from which the physical and chemical properties of the sample will be derived.

The largest and most powerful of the NMR spectrometers, a 700-MHz Bruker, has a room to itself.

Dangerous attraction

Operating an NMR spectrometer has its hazards. Each of the smaller NMR machines sits at the centre of a carpeted circle, an exclusion zone that is observed at all times. The circle marks the realm where the spillover of the powerful magnetic field generated by the helium-cooled superconducting magnet is at its greatest.

In itself, the magnetic field does not pose any known biological dangers, but any ferromagnetic material within the radius of the circle will be powerfully affected. If not well secured, gas canisters can be transformed into missiles, colliding with people and equipment; credit cards can be wiped; and electronics, such as cellphones or – more seriously – pacemakers, be damaged or destroyed.

In days gone by, Senior Research Officer Pat Edwards would demonstrate the strength of the field to visiting school groups by floating a tethered pair of scissors between himself and one of the NMR machines. Edwards recalls a colleague who ruined a treasured multi-thousand-dollar designer watch by forgetfully wandering into the forbidden circle.

A second set of hazards has to do with the liquefied gases that maintain the superconducting magnets at their operating temperature of close to absolute zero (4.2 Kelvin or -268.9 degrees Celsius). Once a week the NMR machines are topped up with nitrogen that is used for the outer jacket of the magnets and once every few months with helium, which is used for the inner. "We go through hundreds of litres of helium every year," says Edwards.

Here the risk is that containment of the gases is somehow breached, leading to the NMR 'quenching' and releasing volumes of gases, which though inert could still lead to asphyxiation.


face shield
must be worn
High pressure Pump
schematic
Open
Close

Life under pressure

Malcolm Wood writes.

It is heady territory for a postgraduate student: making sense of the origins of life itself. And the key to it all, explains Chris Lepper, holding it up for inspection, is this beige-coloured ceramic tube. Theoretically, inside its three-millimetre bore, the NMR specimen tube can contain 250 times atmospheric pressure, the equivalent of burying the tube's contents deep within Earth's mantle, which is more than enough for what Lepper wants to do.

His interest, and that of his PhD supervisors, Professor Geoff Jameson, Associate Professor Bill Williams and Dr Pat Edwards, is in how the molecules crucial to life's origins behave at the lesser pressures found in the ocean deeps.

What do we know about how life began? Earth itself is known to be about 4.5 billion years old, and the earliest evidence of life comes in the form of fossilised mats of cyanobacteria called stromatolites in Australia that are about 3.4 billion years old. But these cyanobacteria are biologically complex; the consensus is that life began much earlier, perhaps around 3.8 billion years ago, and that the crucial molecule in the construction kit – the one Professor Jameson terms the 'cantilever' – was DNA's near relative RNA.

As for where life began, one of the best candidates is in the deep sea around the hot, mineral-rich waters spewing from hydrothermal vents. Here can be found the sort of primordial stew of sulphur, carbon dioxide, hydrogen and trace metals in which simple organic molecules could form. But that notion is not without its difficulties, says Edwards.

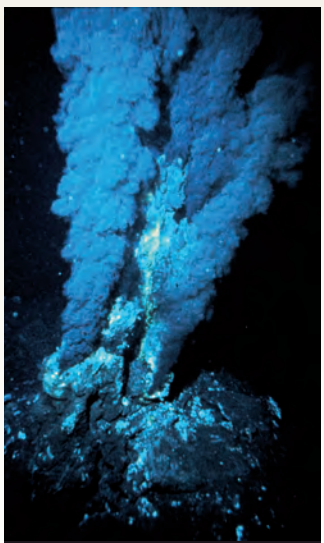
"A lot of people liked the idea that the origin of life was at the bottom of the sea by these black smokers, but then people said, 'Well it's too hot down there, things will tend to fall apart'. But we haven't looked at whether pressure might compensate by conferring some stability."

This, then, is the basis of Lepper's project: first to look at how the individual bases that make up RNA and DNA behave under conditions of extreme pressure and temperature; then to do the same thing with short sequences of bases; and finally to test RNA itself. Whatever the outcome, the result will be scientifically significant, but Edwards is in no doubt about the one that would create the most excitement.

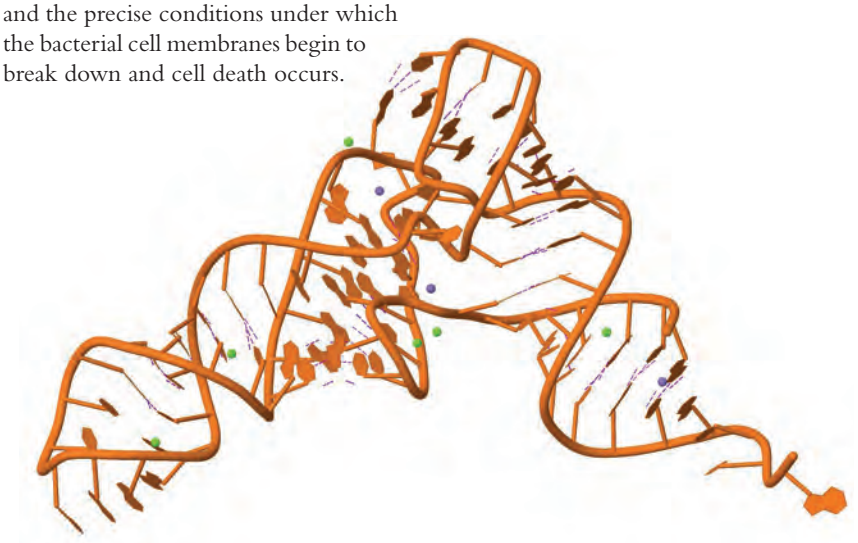
"The great thing would be if we found that the pressure conferred greater stability, in which case it would lend credence to the idea that the origin of life was indeed at the bottom of the ocean near these black smokers."

The next in line after Lepper for the use of the high-pressure NMR apparatus is Dr Jason Hindmarsh, who plans to investigate the use of pressure in food sterilisation. To date, most of the work that has been done on the effectiveness of pressure sterilisation has been relatively crude: subject samples of bacteria to varying conditions of pressure and temperature and only afterwards determine whether or not they have died. Using the high-pressure NMR, Hindmarsh believes he can short-cut this, identifying the exact moment and the precise conditions under which the bacterial cell membranes begin to break down and cell death occurs.

The ceramic tube used to hold highly pressurised NMR samples.



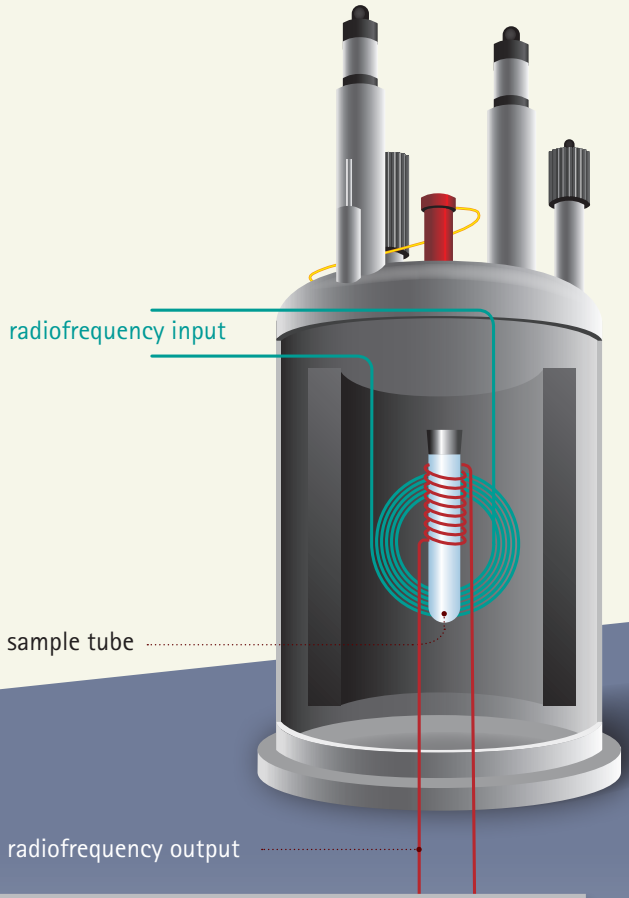
A black smoker at a mid-ocean ridge hydrothermal vent.

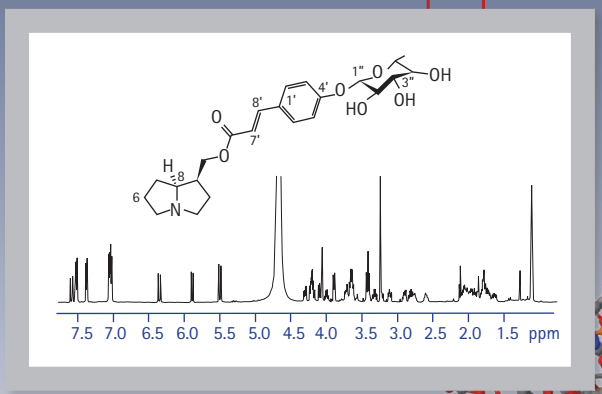


At left: PhD student Chris Lepper standing alongside the set-up for pressurising NMR samples that he helped to design and build. At right: A cloverleaf RNA motif.

NMR at work

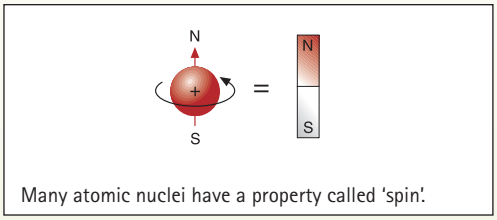
Inside the NMR spectrometer the sample is positioned in a magnetic field and excited by pulses of radiofrequency radiation at a frequency matched to the characteristics of the sample. The pulses cause the sample to resonate; the nuclei emit tiny radio signals that create a corresponding voltage in the surrounding tuned coil of wire. The signals are recorded, fed through an equation called a Fourier transform, and graphed – and this constitutes the basic results of an NMR analysis. The greater the power of the spectrometer's magnet, the greater the strength and frequency of the signals and hence of the spectrometer's sensitivity and resolving power.



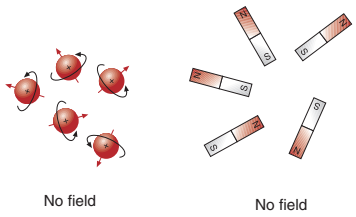


Above: The one-dimensional NMR spectrum from a rye grass alkaloid.

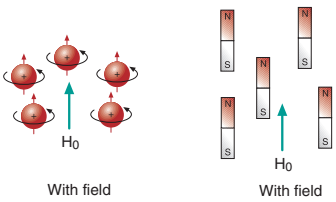
At right: A rendering of a cloverleaf RNA motif derived using an NMR spectrometer.



Many atomic nuclei have a property called 'spin'.

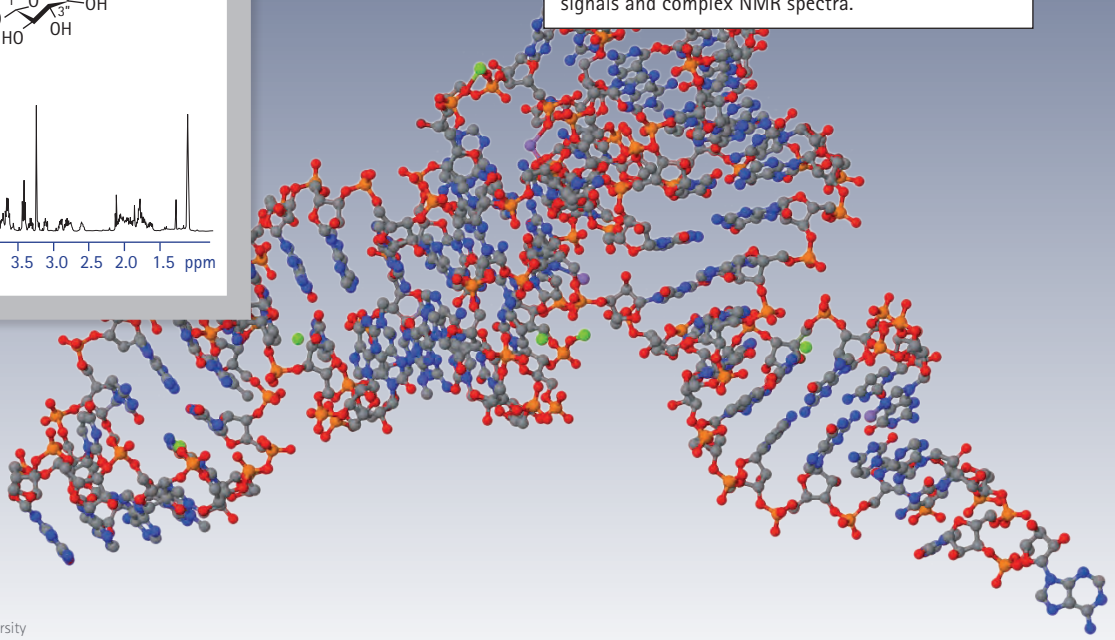


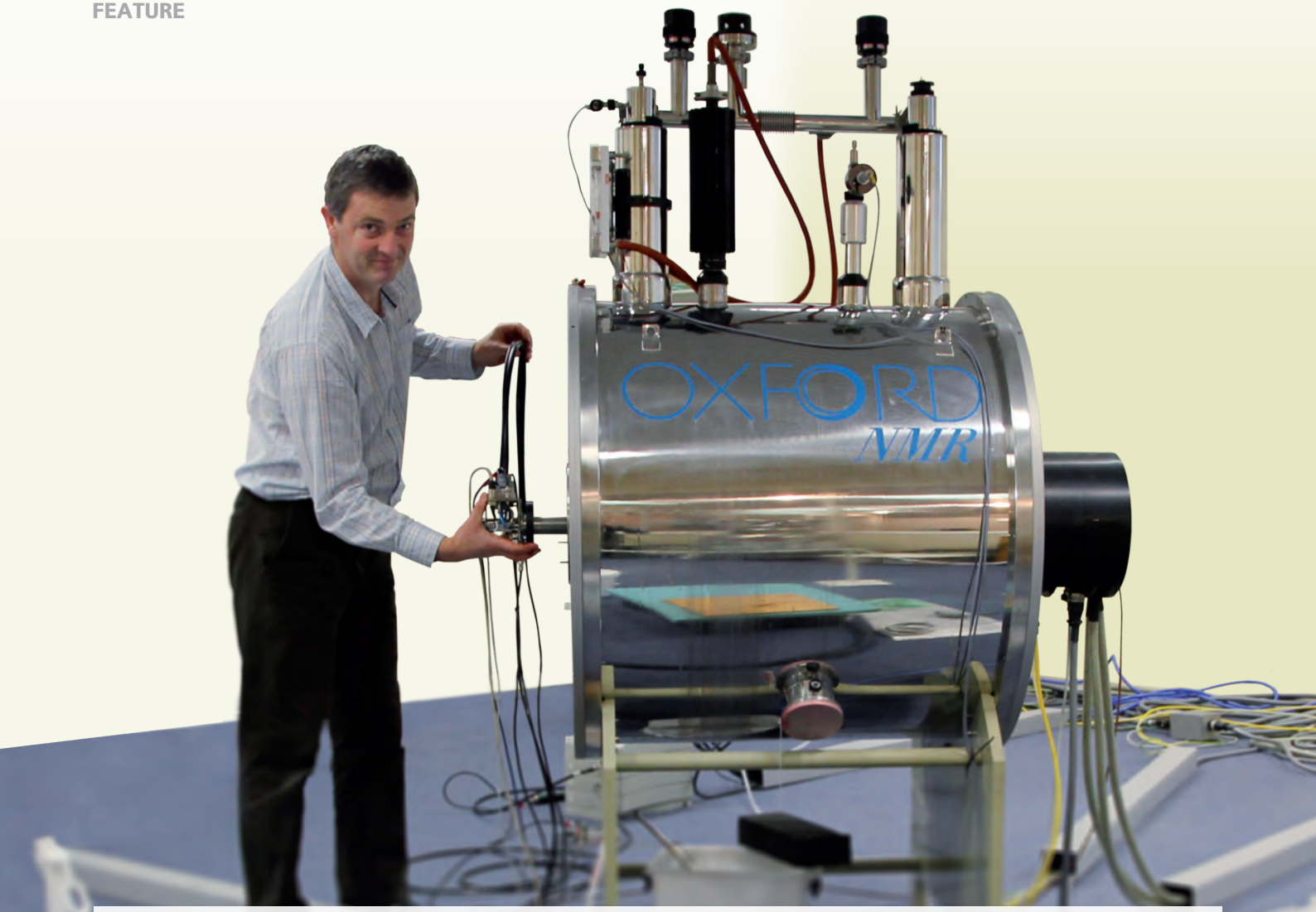
The combination of spin with the charge of the nucleus causes it to behave like a tiny bar magnet.



Immersing these nuclear magnets in the strong magnetic field generated by the superconducting magnet in the NMR spectrometer causes them to align with a net magnetisation parallel to this field.

A pulse of radiofrequency radiation can tip this magnetisation away from this equilibrium alignment, whereupon it will switch orientations at a frequency dependent on its chemical environment. This gyrating magnetisation produces a tiny oscillating voltage in the receiver coil wrapped around the sample tube. Complex molecules such as proteins have magnetic nuclei in many different chemical environments, yielding many different signals and complex NMR spectra.





Sir Ernest Rutherford, the New Zealander who split the atom, was famously frugal. Legend has it that a student in his laboratory who asked for a piece of metal piping was given a hacksaw and told to find a bicycle. Jason Hindmarsh, who has created a remarkable piece of research equipment out of recycled machinery, would be a man after Rutherford's heart.

Hindmarsh is a food engineer who "fell into NMR" during postdoctoral work at Cambridge University. But he hankered to return home, and when Sir Paul Callaghan, then a Massey professor, visited his research group Hindmarsh enquired about work. Callaghan, although keener on physicists than food scientists, said that Hindmarsh would be welcome and that a mothballed NMR machine used during the 1990s by Callaghan and HortResearch to look at ripening disorders in kiwifruit, would be available to him if he could raise the money to put it back into action. Soon afterwards, Hindmarsh found himself a Foundation for Research, Science and Technology fellowship and set about doing just that, and the recommissioned NMR machine is now the centrepiece of a sophisticated set-up that is almost entirely made up of equipment that has already led a rich and full life with earlier owners.

Hindmarsh's speciality is solid state NMR, a category of NMR with its own set of complexities. In solids, atoms that are close to one another or are chemically bonded can interact in ways that are orientation dependent. Solid state NMR lends itself to many kinds of work. Hindmarsh's machine has been used to analyse a whale's eyeball, kiwifruit vines and, recently, the curing of sheep skins and the ripening of cheese.

"In the case of the sheep skin, we were looking at how it responded to different treatments. With the cheese we are looking at what happens to the distribution of minerals like calcium and sodium as the cheese matures."

Dr Hindmarsh's work has been made possible by the generous assistance of Scion Research; the MacDiarmid Institute; Industrial Research Limited; the Institute of Fundamental Sciences, Massey University; Fonterra; and the Riddet Institute.

In the beginning

Aurélio Guterres is one of a number of prominent Massey-educated graduates helping to create the new nation of Timor-Leste. Kelly Burns writes.

Additional reporting by Malcolm Wood.

There must be many a morning when Aurélio Guterres, the Rector of the Universidade Nacional de Timor-Leste (UNTL), wakes up and wonders at the Herculean scale of the work ahead of him.

He has been in the job for a little over a year, and there are so many things to be done, so many needing his urgent and immediate attention.

Timor-Leste, now entering the first year of its second decade of independence, faces immense challenges. This is a country where the average gross national income is just NZ$2700 per annum; where many of the population suffer from chronic disease and malnutrition; and where around one in every two people is illiterate.

It is a country of around one million inhabitants, of whom fewer than 10,000 are tertiary educated.

Guterres is one of them. In two stints at Massey he has gained Master's and doctoral degrees, becoming the third staff member of UNTL to hold a doctorate. In comparison with most Timorese, his life has been extraordinarily blessed. Now the time has come for him to pay it forward.

Postgraduate fine arts student Ryan McCauley visited Guterres in September 2012 during the course of a masterate project (see page 28). Gutteres' office, he says, is pleasant but unremarkable, a book-lined space on the second storey of what was

once a technical high school. But outside the office UNTL is a place of spartan classrooms crowded with wooden desks, yet empty of the sorts of thing that crowd most universities: computers, books, photocopiers. Even so, given the circumstances, for Timor-Leste to have a working university is remarkable.

Timor-Leste has had an unfortunate history. In 1975, the year Guterres turned 12, it was decolonised by the Portuguese only to be annexed by the Indonesians nine days afterwards. It was the beginning of a notably brutal occupation during which Timor-Leste was kept deliberately isolated. "We didn't have any contact with the outside world," says Guterres.

The answer for many Timorese, like Guterres, was to look elsewhere for their education – to the main islands of Indonesia (Guterres gained his undergraduate degree from a university in Java) and further afield to places like New Zealand. "New Zealand was one of the few Western countries to give scholarships to Timorese under the Indonesian occupation," Guterres told McCauley.

Guterres arrived in Palmerston North in 1994 on a Ministry of Foreign Affairs and Trade scholarship to begin a masterate, discovering a place, unlike his homeland, where "everything was free, you could express your ideas, your views".

Regina Scheyvens, then a fellow student, now a Professor of Development Studies, describes Guterres and his fellow Timorese students – some studying development studies, others agriculture and rural development – as "lovely people. They were extremely conscious of how lucky they were to be able to study abroad, and both humble and temperate".

All of them were determined to return to Timor-Leste and to make a difference.

Scheyvens remembers Guterres boogying down on the dance floor of Palmerston North's 'Cossie' club at a farewell function, shortly before his return to his still-occupied homeland, where he took up the position of International Director of Planning, Cooperation and International Relations at UNTL.

But things were about to change. In 1998 Indonesia's President Suharto died and the way opened for a United Nations-sponsored referendum in which the Timorese voted for independence by a massive majority.

It was not an amicable parting. Pro-Indonesian militia went on a rampage, destroying homes and infrastructure and killing opponents. The university was largely destroyed and the Guterres' family home was among the many that were razed.

These were times of such ubiquitous and painful personal tragedy that Guterres and others like him seldom touch on them.

Unable to do much directly, Guterres concentrated on his studies. "My hope was to come back and build my country," he says.

But some other good things were happening. He was now married to Humbelina, also from Timor-Leste (who was studying towards a postgraduate diploma in business and now runs her own business consultancy), and during their time at Massey the couple had two boys, one of whom they named Zelandini.

And when he and his family returned to their homeland of Timor-Leste it was, at last, free.

How do you build a nation from scratch? Guterres, whose qualifications are in development studies, divides the challenges into three interdependent realms: the economy, health care and education.

In many ways, Timor-Leste has already made great strides. Take UNTL. In the year 2000 there was nothing – no phone network, no IT systems, no audio-visual equipment, no accessible library.

Today, Guterres' campus has wireless internet – a very recent arrival – and plans are well advanced to build a campus outside Dili in the village of Hera, where it is quieter and less crowded.

Timor-Leste has a significant advantage over most third world countries: it has money to spend. The Timor Sea holds major gas and oil reserves; and tankers are a common sight off the coast.

The revenue will go to fund roads, bridges, airports, port facilities, schools, health clinics and hospitals. But in tandem, the university will need to provide the country with the human capital it so desperately needs: people like doctors, engineers and teachers.

The Kiwi connection

Since the early 1990s more than 100 New Zealand scholarships have been awarded to Timorese students according to New Zealand Aid's Mike Burrell. Many have chosen to study at Massey – leading to joking references to a Massey mafia. Among Massey's other distinguished alumni are Timor-Leste's Minister of Justice Deonisio Babo Soares; the Minister of State Administration, Jorge Teme; and the Secretary of State for Art and Culture, Isabel Ximenes.

It also needs to help guide how development takes place. Most of Timor-Leste survives on subsistence agriculture, and the new influx of money could, if not carefully managed, be socially destructive, crowding the towns and cities with young unemployed people in search of opportunity and creating social, political and environmental problems. Under the Indonesians, the movement of the population was both coerced, by resettlement, and restricted, by requirements for household registration and travel documentation. Rural-to-urban migration patterns were a particular focus of Guterres' PhD thesis.

"You need to have access to medical facilities and schools at the village level, so the population doesn't have to come to town. Then you can start to use public education to address pressing issues like disease and malnutrition. But you also need to raise people's incomes, and many of our people have no experience of a market economy."

Timor-Leste does not lack aid and development advisors or advice. The challenge is for the country to determine its own way.

Guterres also talks of other risks. Oil revenues can be as much of a curse as a blessing, creating socially divisive disparities in wealth. "Timor doesn't have rich people. The president and the prime minister are not rich. If we can stay this way, we can minimise social jealousy."

As for UNTL, many universities are keen to help. Guterres has visited a number, enjoying near celebrity status. In the US, during a visit to Stanford University, he secured an introduction to Mark Zuckerberg, founder of Facebook.

In New Zealand, Waikato and Massey universities have strong relationships with UNTL through their development studies programmes.

Guterres has been known to speak of working towards the 'Massey model', and his former classmate Professor Scheyvens is actively fostering collaboration between the two universities and had championed a memorandum of understanding. Massey, has sent lecturers and university administrators to UNTL to assist the university in developing its teaching and research culture, and a deputation of six UNTL representatives visited Massey in August 2012.

Under, Guterres' leadership, Scheyvens thinks UNTL will prosper. He has passion, energy, vision and something else. "His heart is in right place." ■

Changing the world

From her office on the Manawatū campus, Professor Regina Scheyvens works with a United Nations of student bodies. On the roll are Kiwis, Zimbabweans, Burmese, Lao, Solomon Islanders, Timorese, Brazilians, Pakistanis, Chinese and Papua New Guineans. Just as varied are their professional specialisations. There are aid workers, architects, accountants, missionaries, lawyers, midwives and diplomats, all of them united by their desire to improve their skills and understanding and make the world a better place.

Scheyvens herself has been interested since childhood in other cultures and in alleviating poverty and inequality, and after an honours degree in geography and anthropology followed by a year's travel in Asia, she enrolled in a PhD in development studies at Massey.

"I did my fieldwork on the empowerment of women in the Solomons. I was really impressed by the way they used their resources. Even during the political crisis in the late 1990s, their agricultural and fishing traditions meant they could still feed themselves. They had a different sort of poverty to struggle with, a poverty of opportunity. They lacked educational and health resources."

In recent times Scheyvens has focused on the Pacific and the economic sector that has grown most strongly in the past 20 years, tourism. "Making sure that Pacific peoples and governments can capture the benefits."

A number of Massey's development studies students and graduates are working in nations that are rebuilding themselves after conflict: Timor-Leste, the Solomons and Papua New Guinea.

"It is very satisfying for us to see."

Countries where Massey has development studies students studying extramurally.

Photograph of Ryan McCauley by Lillian Baker

Bricks and mortar

Master's student **Ryan McCauley** visited Timor-Leste 10 years on from independence. **Kelly Burns** writes.

Timor-Leste is not yet on the backpacker circuit. Few international flights touch down there, and travel advisories speak warningly of civil unrest and the risk of disease. The foreigners who do visit are likely to be part of the aid and development community. So when 22-year-old fine arts student Ryan McCauley arrived in Dili in May 2012, he was an anomaly.

McCauley says he was drawn to Timor-Leste by its location within the Asia – Pacific region and its connection to New Zealand. He wanted to see how the country of just over one million people had physically developed 10 years on from independence, and to make what he saw the subject of his Master's project.

"Very little visual research has been done in Timor-Leste," he explains.

For someone who had never travelled outside Australasia, landing in Dili was a wake-up. "I just thought, 'wow, what have I got myself into?' I tried to think about what I thought it would be like, but I don't think I expected the poverty.

"Until you do something like that, I think there is a sense of naivety. It was my first intrepid journey."

McCauley describes his photography-based project, *Neo Colonialism and the Built Environment in Post-Conflict Timor-Leste*, as an investigation into the nature

of post-conflict architecture: what it looks like, who is involved in its creation, how it is being built and used. More broadly, McCauley is interested in the way that Timor-Leste's architecture expresses the country's social, cultural and political history.

McCauley has now been to Timor-Leste twice on missions to photograph the Portuguese, Indonesian, Chinese and Western influences on the 'built environment'.

In Dili, Portuguese colonial buildings in whites and pastels sit side by side with traditional Timorese homes. Sometimes there are revealing crossovers. "You'll see ramshackle homes painted in beautiful Portuguese pastels – local people aspiring to have the wealth and power associated with the coloniser's colours," McCauley explains.

Then there is the imprint of China, one of the first countries to establish diplomatic ties with Timor-Leste, which has sunk its aid money into such highly visible infrastructure projects as the Ministry of Defence headquarters, the foreign affairs office, the presidential palace and the Chinese embassy.

"These structures are the physical and visual outcomes of economic and political negotiations and constructions – they are politics played out through the built environment," he says.

He believes that one inadvertent effect is a complication and disruption of national identity – an identity that is already complicated enough.

Then there is the imprint of China, one of the first countries to establish diplomatic ties with Timor-Leste...

"... you'd see ramshackle homes painted in beautiful Portuguese pastels – local people aspiring to have the wealth and power associated with the coloniser's colours."

McCauley, a monolingual English speaker, speaks wonderingly of the difficulties of dealing with three languages: Tetum and Portuguese, which are the official languages, and Indonesian, which is widely spoken among younger Timorese.

Meanwhile, out in rural areas, where 70 percent of Timorese live, life goes on. Here the overriding concerns are grinding poverty, malnutrition, disease and lack of access to education.

But as the nation increasingly reaps the revenues from offshore oil and natural gas reserves, a brighter future beckons.

"I think there is a strong sense of hope," McCauley says.

World Bank research has shown that it typically takes 15 to 30 years for countries to rebuild after conflict, and by this yardstick Timor-Leste is doing okay: hospitals and schools are being built, the university plans to double its student numbers, and its people are gradually becoming accustomed to peace and stability.

"For the entire population, war and occupation are all they've ever known, it's not just a switch that can so easily be switched on and off - but as the country moves forward, so too does their way of thinking."

He remembers Dili on 20 May, the country's 10th anniversary of independence, when its new, peacefully elected leader, Tau Matan Ruak, a former guerrilla commander and independence hero, was sworn in as President. It was a day of flag-waving school children lining the streets from the airport to the city centre; of welcoming dignitaries lined up outside the presidential palace; and of crowds celebrating along the waterfront.

McCauley's project is due to be completed in February. But that is unlikely to be the end of the relationship with Timor-Leste. It is a place where he feels at home; one to which he is determined to return.

"There seems to be a sense of community. One of the best things was walking down the street in the morning and saying hello to everyone as you went by. The people are wonderful, really friendly and very proud." ■

finding the right words

Sonia Yoshioka Braid explores an outreach programme for aphasia sufferers

Left to right: Patrick Gaiter (third-year student), Patty Govender, Sharat Rao, Miriam Rao, Stella Karaman (fourth-year student).

Nine years ago, a stroke silenced Auckland broadcaster Peter Kingston, leaving him dead for four minutes. When Kingston awoke, he was unable to speak. Two months passed before he could say "yes" or "no". His career as a broadcaster was over. He'd become – in his words – an "Aphasian".

Kingston is one of an estimated 16,000 New Zealanders who live with aphasia, an impairment mostly caused by stroke, occasionally by head injury. It leaves sufferers unable to express or understand written or spoken language. Six of us develop it every day. There is no age barrier and no cure, and aphasia touches not only the individual, but their family, friends and community.

But thanks to an intensive collaboration between Massey speech and language therapy students on the Albany campus and a local community-based support group, people like Kingston are being actively helped to reclaim their lost communication skills.

The programme is the brainchild of speech and language therapy clinical educator Patty Govender. She had long wondered whether bringing together a group of people with aphasia for an intensive therapy programme could help them to improve their communication skills. Fortunately she was in just the right place to implement this intensive-style therapy.

Associate Professor Helen Southwood, head of the School of Education in Albany, was open to the idea of incorporating intensive group therapy for aphasia into the academic programme. "Speech and language therapy deals with any communication problems across the life-span," she says.

The programme started in 2011, with clients referred by the Rodney Aphasia Group (RAG), a community-based support group established in 2006 and chaired by Kingston. RAG secretary and pioneering speech and language therapist Elle Glazer was instrumental in bringing the two groups together.

To run the programme, final-year students gave up their semester break to provide one-on-one therapy and group sessions with clients, under the guidance and supervision of Govender and third-year students.

"Students gain a real-life experience of working with adults with communication disorders. For some students this is their first experience working with clients with strokes and aphasia. They describe this as a great learning opportunity," she says.

The programme provides 24 hours of intensive therapy in a two-week period, and caregivers or family members are also welcome to attend. Clients attend one-on-one sessions with their designated student therapists to work on language areas with which they have identified they want help.

They then come together as a group to practise the strategies learned in their sessions, and share their experiences. It is a safe, supportive environment where encouragement matches the laughter shared around the table, and charades feature as an icebreaker.

Along the way, students learn a new set of skills, including slowing down their own speech and allowing other people time to speak. They learn to prompt with questions. "Is that what you meant?" gives the client the option to self-correct. Asking for a description, a drawing or a gesture can also help if the word is momentarily lost.

Scripts can also be written out, making it easier for the client to say what they mean, or the student supplies the first letter of a word or the first word of a sentence, with the client finishing it off. Repetition of the right sentence can also help.

"It's important to try not to speak for them, and that's something that the students and the clients' families also need to adapt to," Govender says. "For these clients, this current state is 'normal' for now, but things can improve if they keep practising. Working on different strategies can help build confidence, which is incredibly important. For us, it is extremely rewarding to work with our clients and to see their progress during and after the programme."

A month after the completion of the

intensive group therapy phase, there is a final group catch-up session. Here everybody prepares for the next challenge – presenting a speech at RAG's monthly meeting in Silverdale.

Kingston is one of four graduates in the most recent programme, each of whom came along with different stories. One was still coming to terms with having had a stroke and didn't want to be identified. Another wanted to be able to go back to church and hold a conversation with members of the congregation.

The youngest member of the group is Sharat Rao. His aphasia was the result of a head injury he received in a motorcycle accident in India 14 years ago, on his last day of university.

He went from being an active, cricket-playing, fun-loving mathematics whizz to spending six months in a coma. Convinced that he was going to die, the hospital sent him home – but not before someone had tried turning off his life support and attempted to swipe a kidney.

Fortunately for Rao, his family intervened just in time and brought him home, where his bed was placed in the living room. He spent two years in a catatonic state – 'locked in' – where he could understand what was going on around him, but couldn't convey that understanding. After five years he could say "yes" and "no" but he still struggles to make himself understood, especially when he is tired.

"Sharat wanted to learn how to communicate with his family and friends overseas using a computer," Govender says. "His speech has improved but he still struggles. Stella, his speech therapy student, helped him to use a computer to send emails and to use Facebook to communicate with family and friends. He also has a smartphone that he uses to take photographs that he can share online – all of which match the goals he set at the beginning."

With his family's dedicated support, Rao has learned to walk and talk again, and he is learning to play the piano. Daily walks and physical therapy are also helping with his ongoing recovery, and his enthusiasm for life is infectious. He happily shows off pictures of the famous people he has met, including cricketer Rahul Dravid, a beautiful former Miss India and broadcaster Paul Holmes.

"When people come to us, they can still be grieving for what they've lost. We focus on client-driven goals – what they want to work on – and then we come up with strategies together," says Govender.

"For some, it could be drawing a picture to get their point across. For others, sounding out the first letter of a word or describing the colour or shape of an item works. Gestures and scripts can also be helpful.

"Aphasia is there for life – there is no cure," Govender says.

"What this group therapy programme gives the clients is support and acceptance. They can go at their own pace, learn to tell jokes again and have conversations. Nobody hurries them. The psychological wellbeing of clients is a key component in this programme, and it's worked very well for us."

The programme has now attracted the attention of Henrietta, the Duchess of Bedford, and Chair of the UK-based Tavistock Trust for Aphasia. Established in 1992, the trust provides grants for research and programmes on aphasia all over the world. Geraldine Everett, who worked on one of the earlier programmes, was a 2012 recipient of a Tavistock Trust New Zealand University prize.

Plans are already in place for the next programme in February 2013, and the speech and language therapy team is also planning new projects including a paediatric feeding programme.

"Aphasia can't be cured, but people with aphasia – and the people with whom they interact – can learn strategies to communicate better. With this programme, people discover they are not alone and things can improve," Govender says. "It's not just about words – communication is who we are. Communication is life."

Peter Kingston is happy to tell people he has aphasia and readily uses the strategies he learned in the group therapy programme, including asking people to slow down while they are speaking. He continues to raise awareness of the impairment, using his broadcasting contacts to tell his story on television and in the local media.

"Being aphasic is not necessarily bad, but it can be hard work. You've lost some of the speech but the communication isn't gone. You can use an eyebrow, a wink, or find a strategy that works to convey your message," he says. "You just want to be normal." ■

Speech language therapy

The speech and language therapy degree is a four-year qualification combining academic course work with supervised clinical experience in speech and language therapy. Students work alongside practising speech language therapists to gain a minimum of 300 clinical hours in a wide range of settings, including pre-schools, schools, rehabilitation centres, child development settings and community settings.

Disorders studied include language disorders, phonological and articulation disorders, fluency, voice, motor speech, aphasia and swallowing (dysphagia) disorders.

Places in the speech and language therapy course are limited and admittance is by selected entry.

In 2013, the speech and language therapy programme will celebrate its 10-year anniversary at the Albany campus.

If you have trouble with words:

- Relax and slow down so others can hear you
- Go at your own speed
- Give the other person time to speak
- Use new strategies – draw a picture or a letter
- Spell the word or sound it out
- Describe the thing you are after. What colour, size or shape is it?
- Use a gesture to describe the word you want to say
- Plan your message in advance
- Use a script that you can follow
- Be patient

Miriam and Sharat Rao at the Speech and Language Therapy Clinic.

Incredibly Hot Sex goes to Frankfurt

Bryce Galloway explains zines to Michele Hollis.

"I grew up in Hamilton, which is the butt of national jokes. There was one cool café and I was on my way there, and there was a little circle of people guffawing. They had a copy of this fanzine called *Truck Guy*, by a guy called Glen Frenzy – that's his punk name."

> **Fanzine** (noun): a magazine, usually produced by amateurs, for fans of a particular performer, group, or form of entertainment. [*Oxford English Dictionary*]

"It was photos of truck guys; the archetypal big Mac truck, budgie smuggler Stubbies, muscle shirt, baseball cap guys standing outside their cabs. So it was a rather ironic homage to the macho truck guy. I don't think there was any text at all; just these images."

Bryce Galloway had known about the fanzine phenomenon before his first 'real life' encounter in 1980s' heartland New Zealand. He'd read about them in the UK music magazine *NME*, when punk rock was new and dangerous. Zines like the London-based *Sniffin' Glue* were a strident alternative to mainstream commercial music media, sloughing off advertising and editorial pressures, writing idiosyncratic articles, using the cheap production methods of the time (photocopy and Letraset), which created a rough-and-ready look: "Vivid marker titles, typewriter texts, really rudimentary reviews - even though the final circulation was quite extensive, it never really got much flasher than that in terms of aesthetic."

Twenty years on, Galloway is a lecturer in fine arts and one of New Zealand's best-known zine artists. His quarterly zine, *Incredibly Hot Sex with Hideous People*, is up to 46 issues. It "plumbs the embarrassing", diarising in words and sketches the minutiae of life as a middle-aged man with a mortgage and two kids. (His wife has right of veto – rarely exercised.)

As a genre, zines are loose and unpredictable. Some are one-offs, others are regular series. They may be a self-indulgent vehicle for someone's lousy poetry

Excerpted from *Incredibly Hot Sex with Hideous People* #46, Frankfurt 2012.

"No. I'll catch the next flight." So now, with a yawning 6 hours before my flight, I'm ever so casually checking my bags in and getting ready to make a tour of the terminal. "Don't head through the gates until a half hour before your flight sir, there's just one overpriced café through there." Before sending my exotic looking luggage on its way, I fossick around for a clean T-shirt and socks. I do not want to subject my very close economy flight neighbours to my rising stink.

Flashback: 1993 and I am on a long haul flight from London to New Mexico. My shoestring budget insists I take a flight that includes a night in Charles De Gaulle Airport, slumped in a plastic chair. I have a bandaged broken ankle, and a pair of crutches from the National Health Service in Scotland (too much alcohol and weirdness on summer solstice). The labour of heaving around on crutches is working up more of a sweat than usual. I know this, but the reality of its perfume is masked by the fact that my intolerance to dairy means I always have a blocked nose. On the flight from Paris to the US, I hobble off to the bathroom and with considerable dexterity, I soap my sweaty feet in the hand-basin. Now I can relax without shoes. How considerate I am.

Once we touch down in New Mexico and the safety belt light blinks off, the woman two seats to my right leans over and glares at me. "Your feet stink!" she scolds. "It's bad enough for me, but for the last 11 hours, this poor woman right next to you has had to endure even more. Shame on you." I pout, and with a hopeless expression, I make a show of collecting my crutches. Perhaps she will forgive an invalid. She shows no sign of it.

That horrible woman could have told me earlier in the flight. I would have put my shoes back on. No, not so brave. She'd rather chew me out once she could safely run away. Of course I'm quite mortified by the memory of this and now intensely sensitive to the idea that I should make any noses suffer.

So now I'm killing time: buying a copy of the trashiest US souvenir I can find (*The National Enquirer* on Randy Travis's drinking binge, and the existence of angels), checking Facebook on the free Internet service, searching the - also overpriced - franchise eateries for something... anything... gluten free, and finally, indulging in a sponge bath in the terminal toilets, with a fresh T-shirt and socks at hand.

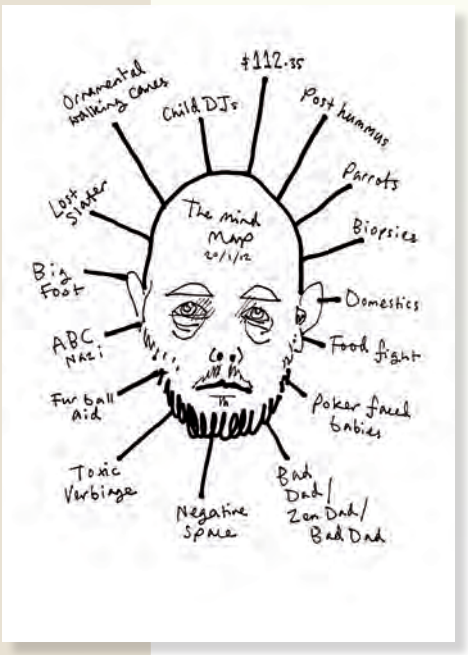
or a delightful piece of comic whimsy. Formats and production values vary wildly. Since they derive from an anti-capitalist, anti-authoritarian counter-culture, most cost little or nothing, and few carry advertising. In theory, they answer to no-one, although over time, well established zines may evolve a clear voice, consistent aesthetic and strong audience expectations. What unites them, perhaps, is their diversity; their content is more varied and their personality less massaged than in the press.

By Galloway's guesstimate, there are currently about 200 titles across the country. Most of the larger centres have thriving zine-scenes, except Hamilton where there has not been an institution, group or person mentoring new zinesters. "The current crop of Auckland zines emerged from a craft house, so tend to reflect more attention to making (hand-stitched binding, different paper stocks on each page, tooled vinyl on cover…). Wellington's scene was stimulated by the public library's decision to start archiving ephemeral publications, so there's no common

stylistic or thematic concern. Dunedin came from a couple of indie rockers running the local gig guide."

At 46, Galloway admits he is probably one of the oldest zine-makers in New Zealand, although there's growing interest from people born before 1990. "It is one of the reasons I do the autobiographical narrative. If you're concerned about your skinny jeans and the fact that someone stole your iPhone, what's it gonna be like to read about domestic fatigue of the father and some kind of ailment that's to do with getting older? The mortality and complications of age that play out in my narratives might be a challenge to the forms of self-obsession that are part of being young."

The cover of issue 44 is a self-portrait of Galloway's shirtless torso with underpants on his head. That image graced posters advertising the recent *Zines aus Neuseeland* show at the Weltkulturen Museum, an ethnographic museum in Frankfurt. The exhibition, coinciding with the book fair, was curated by Galloway and Associate Professor Heather Galbraith, head of Massey's School of Fine Arts, and featured about 110 titles by 36 New Zealand zine-makers.



There were few glass display cases. To apply that treatment to fanzines would be "quite precious", argued Galloway. Instead, they provided a photocopier and long-armed stapler and encouraged visitors to make their own irreverent mix of articles and drawings from the zines on display. Even zines with national or international distribution, such as *White Fungus*, agreed to waive copyright. "They believe that the mainstream channels for publication in New Zealand do not allow for very varied content. So I think they're happy to allow me to celebrate what fanzines are."

The very notion of curating a zine show, however, is anathema to some in the zine-scene, since it suggests hierarchy and elevates the curator's taste. But despite his love of the medium, Galloway knows there would be plenty of dross between gems in any random selection. "Whilst it's an all-comers medium, I do like that the Wellington zinefest has a Best of the Fest award, because it does say 'let's not make it a total love-in, let's look at what's good writing, good drawing, what's well made, what's intriguing, what's not'."■

Ducklings

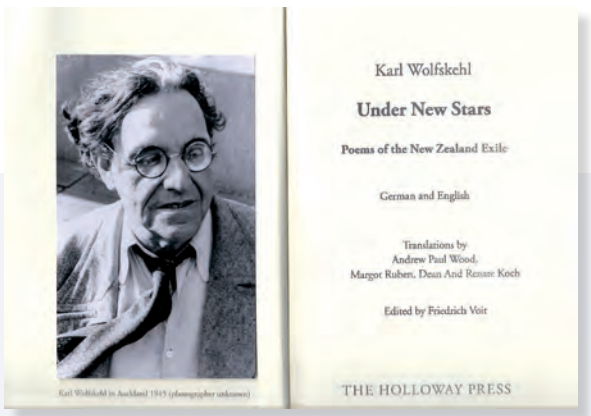
There are ducklings
around the place this morning—
ducklings that cats dare not disturb
because their lines
are so unnervingly straight,
their mother's quacks
too loquacious
and their fuzzy down
too bee-coloured
to engage with.

Even if one were to straggle,
to drop off the end
like a misplaced preposition,
lost for a moment in the long grass,
no cat would mess with it
because today belongs
to the ducklings
and all the other
spring things
that on some mornings
and some afternoons
are just plain off-limits.

Johanna Emeney is in the second year of a creative writing PhD at Massey Albany. Her first collection, *Apple & Tree*, was published in 2011 by Cape Catley.

AUF ERDBALLS letztem Inselriff
Begreif ich was ich nie begriff.
Ich sehe und ich überseh
Des Lebens wechselvolle See.
Ob mich auch Frohsinn lange mied,
Einschläft das Weh, das Leid wird Lied.
Bin ich noch ich? Ich traue kaum
Dem Spiegel, alles wird mir Traum.
Traumlächeln lindert meinen Gram,
Traumträne von der Wimper kam,
Traumspeise wird mir aufgetischt,
Traumwandernden Traum-Grün erfrischt,
Hab auf Traumhellen einzig Acht.
So ward der Tag ganz Traumesnacht,
Und wer mir Liebeszeichen gibt
Der fühle sich, wisse sich traumgeliebt!

ON THE GLOBE'S last island reef
I understand what was once beyond belief.
I observe and oversee
Life's ever mutable sea.
Though happiness has long avoided me,
The pain falls asleep, suffering becomes song.
Am I still me? I hardly trust the mirror,
Everything turns into a dream;
A dream smile soothes my grief,
A dream tear from my eyelash drops,
A dream dish is served up to me,
The dream wanderer refreshes dream-green,
I take care only for the one dream-light.
Thus turned the day into a dream-night,
And who gives me signs of love,
Should feel and know he is loved in a dream!



Karl Wolfskehl, UNDER NEW STARS: Poems of the New Zealand Exile
German and English.
Translations by Andrew Paul Wood, Margot Ruben, Dean and Renate Koch, edited by Friedrich Voit, The Holloway Press, $290

Karl Wolfskehl (1869-1948) was probably the most prominent literary figure among the refugees from Nazi Germany who came to New Zealand in the 1930s. Aged 69 when he arrived in this country, Wolfskehl wrote his finest poetry here in the last decade of his life. Until now little of his work has been available in English translation. Now Massey alumnus Andrew Paul Wood has added many new translations to existing versions by Margot Ruben and Dean and Renate Koch to provide a substantial bilingual selection of the work of Wolfskehl's New Zealand exile.

Wood, who has a Postgraduate Diploma in Museum Studies, writes:

> The preservation of heritage is not just restricted to tangible objects in museums – and in its way this book is a museum of a time, a place, an individual and very much in keeping with the same preservationist philosophy. It is as much curated as it is translated.

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