

defining *nz*

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SEPTEMBER 2009

Creating leaders

Educating executives to
take on the world

Designer inspires young entrepreneurs
Engineering innovation at Albany





Steve Maharey

The entrepreneurial university

“It is vital to maintain and grow the level of public investment available to universities. But, over time, we will generate new sources of income so that we are less reliant on public funding while lifting the quality of what we offer.”

There is a lot of talk about higher levels of funding for universities these days. This is because the world of universities has been changing for sometime. The sources of this change are many, but there is one in particular that helps us understand what is happening. Over recent decades university education has internationalised: once national systems are being drawn into an internationally competitive network.

This is why universities talk about the need to make international comparisons. Like telecommunications companies, we work in international markets. Our salaries have to be internationally competitive, our science internationally ranked, our facilities of world standard and our academic programme of exceptional quality.

Governments know they must invest more, but struggle to keep up with the costs now associated with maintaining world standard universities and this causes problems for institutions that are largely publicly funded.

Massey has been working hard to respond positively to the challenges inherent in this new environment. Essentially, we are moving towards being an “entrepreneurial university”. In practice this means we are defining clearly what it is that makes Massey unique and we are seeking to stand on our own two feet by diversifying our revenue base.

This does not mean we do not want or need public funding. Like all universities, we need more public funding going forward and this is why we share the concerns expressed across the sector when confronted by reductions in funding.

Given that universities find it very difficult to rapidly change what they do because they are engaged in long term teaching and research programmes, abrupt changes to funding lead to genuine difficulties.

It is vital to maintain and grow the level of public investment available to universities. But, over time, we will generate new sources of income so that we are less reliant on public funding while lifting the quality of what we offer.

Crucial to making this transition is a change in the way the University sees itself. An entrepreneurial university needs to show itself to be distinct and able to offer something a range of stakeholders and partners want. This is often referred to as creating public value. Massey is carving out a distinct role for itself in the areas of creativity, agri-food and innovation. We are and will be a comprehensive university. But we are seeking to mark out clearly what we have to offer our regions, New Zealand and the global community.

This strategy is already getting a positive response with many people, both nationally and internationally, contacting the University to talk about interesting new possibilities. After reading this edition of *DefiningNZ* you may want to contact us too. In this issue you can read about the plans we have for our fast-growing Albany campus, the way our MBA programme is meeting the challenges of a changing business world, and how we took our food technology course to Singapore to meet student demand. ❖

A handwritten signature in black ink, reading 'Steve Maharey'. The signature is fluid and cursive, with a long horizontal line extending from the end.

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Helping create leaders and transform business is the reason Dr Jonathan Matheny gets out of bed every morning.

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COVER: Dr Jonathan Matheny Photograph: Paul Jones

Engineering innovation at Albany

How did an entrepreneurial engineer with a penchant for car crash analysis find himself leading the expansion of Massey's Albany campus? Sonia Yoshioka-Braid went in search of what makes Professor John Raine tick.

As Regional chief executive of the Albany campus, Professor John Raine is a rare breed – a manager with both academic and entrepreneurial experience.

Originally from Wellington, Raine graduated from the University of Canterbury with a Bachelor of Engineering (1st Class Hons) in Mechanical Engineering. Five years later, he was awarded a PhD in Mechanical Engineering with a thesis on wind tunnel studies of wind shelter fence performance. He left all that behind to return to his first love of engines and vehicles, moving to England to work in product development and technical management at a British engine and vehicle test equipment company.

Raine returned to New Zealand in the mid-1980s, teaching mechanical engineering at Canterbury University. He also flexed his entrepreneurial muscles, co-founding technology start-up WhisperTech; founding the commercialisation company Canterprise in 1999; co-founding the Canterbury Innovation Incubator in 2001; and HitLab NZ with the Canterbury Development Corporation and the University of Washington, Seattle, in 2002. When he left Canterbury, he had been the Pro Vice-Chancellor (Enterprise and International) for five years.

Moving to Albany five-and-a-half years ago was a real eye-opener. “It’s been fun – I love it,” he says. “I live on the Shore. I reckon that the energy here is palpably different from Wellington and Christchurch.” Raine became involved with Connect New Zealand, and is on the Board of the Committee for Auckland, a think tank fostering projects supporting the economic and social development of the Auckland region.

“The idea of taking this campus forward to where it was larger and more comprehensive; where we had more buildings and services – that, to me, was an exciting thing to be involved with. That’s what attracted me here,” he says. The Albany campus has representation from all five academic colleges and is focused on innovation.

Since his arrival, Raine has been kept busy on campus, with the opening of the recreation centre in 2004, construction of new interim Sciences facilities on Oteha Rohe in 2005, the fit-out and opening of new premises for the School of Design and the School of Psychology in the Albany village, the construction of the Sir Neil Waters lecture theatres in 2006, and the next stage of the Library and Information Services Centre, which will formally open early next year.

He is passionate about seeing the campus excel in teaching and research, deliver first-class student services, and create a vibrant,

happy academic community with strong external community engagement. The recent construction degree offering was the result of talking to key people in the industry, and responding with a programme designed to meet the needs of the Auckland region. Its initial intake of students doubled in the second year.

Having the business incubator e-Centre on campus also helps keep business connections flowing. “We’ve got to be strong in connecting with our communities of interest, whether it’s through research contracts, consulting or commercialisation of intellectual property, so that we are an engine for economic development as well,” he said.

The College of humanities and Social Sciences has been a long-established presence on campus, offering social work, psychology, a broad range of humanities subjects and post-graduate nursing courses as well as joining forces with the College of Business to offer the Bachelor of Communications degree. The College of

Business hosts the country’s top Finance programme. The College of Creative Arts will offer a new major in integrated design, and is the only College in New Zealand to offer programmes in transport design, while the College of Education’s speech language therapy course is the only undergraduate course of its kind offered in the North Island.

A diverse and stable international student population is also prominent on Raine’s radar. “We want to foster an environment where New Zealand and international students form lasting friendships, which will be of benefit in international relations and trade in the future,” he said.

Raine can see the expansion of the Albany region being

reflected in the increased programmes on offer at the campus. “Over the next 10 – 20 years, we will broaden our academic programme offerings across our colleges, and we have plans in the pipeline for a student centre and accommodation village on the East Precinct, a major sciences and engineering complex, and marae, on the West Precinct,” he said.

So how do car crashes fit into the picture? It turns out that Raine is one of New Zealand’s most experienced practitioners in vehicle crash analysis, being called in, on occasion, to offer expert testimony in court. “There aren’t a lot of us around, and I get called in for some of the difficult ones,” he said, “but it’s more of a hobby. I have a full time job.” Raine has his engineer’s eye focused on the road ahead for the Albany campus, and he’s excited by what it promises to deliver. ❖



Creating leaders, transforming business

MBA programme leader and acting director Dr Jonathan Matheny talks to Melanie McKay about his greatest job satisfaction – watching his students grow, graduate and take on the business world.

Photographs: Paul Jones



For Dr Jonathan Matheny, helping create leaders and transform business is the reason he gets out of bed every morning. The Master of Business Administration (MBA) programme leader and acting director finds it immensely satisfying to watch the progress of the students who do the tough degree, and see them go back to the business world to take on leadership roles with the additional skills and confidence to implement what they have learned.

“It’s the best work that you can do,” says the native Texan, “Working with MBA students provides me with the most exciting teaching and learning experience. These people are achievers, they’re smart, accomplished and ambitious.”

That also means it is a challenge for Matheny and other staff to ensure the internationally-recognised programme is completely relevant in the changing world by encouraging innovation in the curriculum design, course assessment and delivery. The key, he says, is the University’s close connection with the industry, moving towards the regional delivery of elective papers, and the addition of a community service element to the programme. “We’ve taken exceptional measures to get in touch with industry leaders, alumni and students to ensure we’re providing the learning experience they want and need.”

An example of this is asking students in its latest recruiting round if they would like to see a community service element to the course. The answer was a resounding yes and as part of their strategic management module, students are helping non-profit violence prevention in homes organisation Shine. Study teams have conducted strategic audits of the organisation and will report their findings to Shine’s leadership team. Because Shine’s staff are so busy co-ordinating and providing services, the students can make a real contribution to the organisation. “Students are getting credit for and being evaluated on their work, and they are also all really enthusiastic about helping out. The work is real and they are helping others so they are really enthusiastic,” says Matheny.

While it is one of the most relevant and up-to-date MBAs, the College of Business is also proud that it is one of the longest continuously-running programmes. MBA was launched in 1972, making it one of the pioneers of New Zealand’s executive education in business.

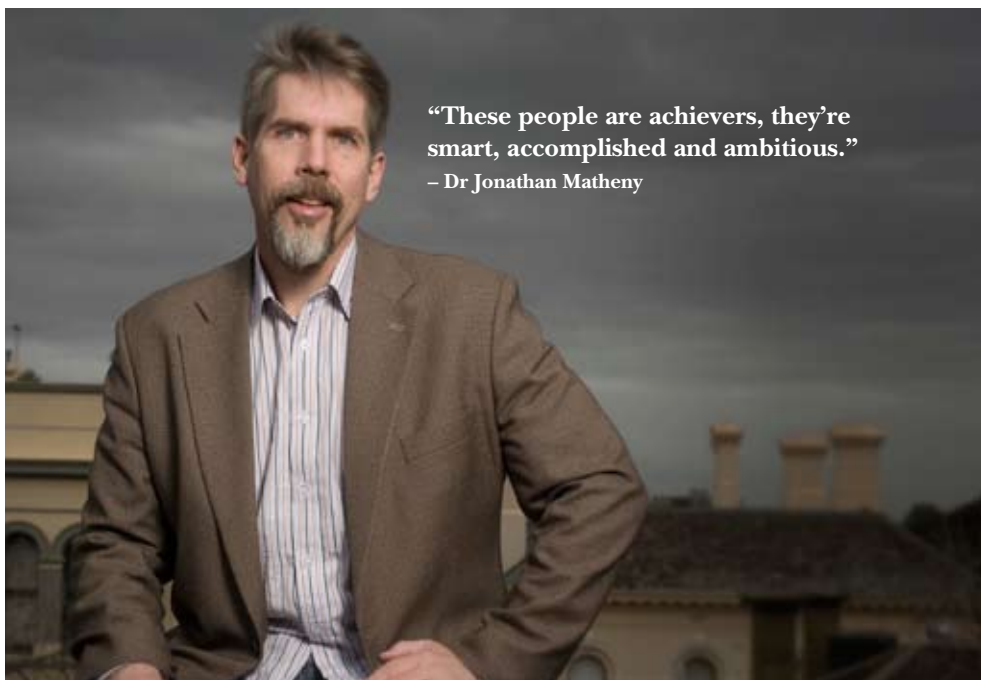
To date there are more than 2000 Massey MBA alumni active in business through-out the country and the world. It is a programme that is increasing in popularity, with almost 20 per cent more enrolments this year than last. Next year the roll is expected to grow from 65 to 120.

This, Matheny says, is because of the structure of Massey’s MBA. “They want to do it because it is a practical course delivered by internationally experienced academics using research-led teaching techniques.

“An added bonus is that it is offered in executive mode, which is part time and over weekends, so it fits in with their work. Massey is also the only provider in New Zealand with national reach –

it doesn’t matter where you are in the country, you can do our MBA.”

“Rather than just sitting in lectures and absorbing information, we provide so many opportunities for people network and to learn from each other. Our faculty are there to share their expertise and facilitate dialogue and engagement between students so that their own experience adds to everyone else’s learning. We select our students in part on what they can contribute. This year the average age of our MBA students is 37-years-old, with 17 years business experience and eight years managerial experience. It’s a tough course to get into and we look for people with the right attitude, aptitude and demonstrated leadership potential,” says Matheny.



“These people are achievers, they’re smart, accomplished and ambitious.”
– Dr Jonathan Matheny

That was not the case when he did his own MBA at the University of Connecticut, and from his experience of working on 10 different MBA programmes around the world from France to China, Massey’s is a much more inclusive model. “They’re not necessarily environments where you learn from the great minds around you, it’s more of a walk in and talk situation. I think what we’re doing here is tonnes better,” he says.

It was while working in France as a lecturer in international management at the Groupe ESC Reene and for the UK’s Open University that Matheny first entertained coming to New Zealand with his wife. Some of the best students he had were on an exchange from New Zealand, and they made such an impression on him that he moved here in 1999. From 2005 he has been at the Albany campus as a senior lecturer in management and international business, and last year also became the MBA programme leader.

Matheny says that if it is one thing that has remained the same over time with the MBA, it is its objective - to develop people who can transform business, think and act strategically, are knowledgeable and effective in international environments, and innovative and entrepreneurial. “I think that with the way Massey has continued to develop it’s programme, it is now the country’s defining MBA.” ❖

MBA helps managing director

For Victoria Rees-Webbe the most important thing about her MBA was gaining practical skills that she could go to work and implement the very next day. Her MBA also reinforced that the approach she and her husband had taken with their specialist construction business was the right one. As a direct result of her MBA, Rees-Webbe has increased the company's already strong emphasis on health and safety and staff, and is now running a literacy and numeracy programme for its 50-odd employees and contractors.

"We had been running our business for nearly twenty years, but I wanted to find out about different ways to do things, whether what I was doing was right, or if there was a better way. It gives you a benchmark and makes sure you're up to date, and was a hugely practical degree that I could apply as I went," she says.

With a business to run and three children, the youngest of whom was just 10, Rees-Webbe is not sure how she managed the two-year part-time course that she completed in July. When she wasn't attending classes or study group every third weekend, she was studying hard at home.

"There were a few dark patches where I wondered what I was doing, and there were a few family holidays I didn't have because I stayed home to study. I think it would have been easier for me to do the Coast to Coast or run a marathon, and I just hope I haven't put the kids off going to University themselves!" she laughs.

For Rees-Webbe the sacrifices were well worth it and she thoroughly enjoyed the learning process of Massey's MBA. "I



Troake managing director Victoria Rees-Webbe

just knew it was the right thing for me because it's changed the way I approach things. I learnt a lot that could be applied to my company, and a lot about myself," she says.

Rees-Webbe was recently appointed to the board of the Building Research Advisory Council to BRANZ, and put forward to chair the New Zealand Subcontractor's Federation. "I'm usually the only woman at those meetings but I don't really notice it to be honest. You have to work hard at everything you do in life - whether you're a woman or a man." ♦

Success stories in the making



Steve Corbett, e-centre chief executive

The e-centre is playing its role in helping develop and grow export-focused innovative technology businesses at its Albany campus base.

The business incubator was established to nurture and grow entrepreneurial technology companies. Some of the e-centre's success stories include online budgeting service Who Stole My Money, whose founder Grace Xue was last year's TUANZ Entrepreneur of the Year, health company Precept Health, web design company zeald.com, research company Perceptive, and software company CleanFlow.

Centre chief executive Steve Corbett says the team provides guidance and support for budding businesses during the early stage growth phase, with companies graduating into the business community. "We provide the environment for them to grow. If they've got an innovative idea, this environment allows them to come in and test it."

The e-centre, which has been assisting start up businesses for eight years, is currently home to 16 companies as well as a number of virtual (offsite) companies. Corbett says that where possible the e-centre entrepreneurs are introduced to experts in the same field at the University. "We're in a key position where we can really leverage the resources and technology that Massey has available to help these companies develop into global markets."

Applicants, who can come from within the University or from outside companies, go through a filtering system where it is established whether they have the necessary attributes and business ideas. "It's great to have a mixture of the young ones who have the energy, and the more experienced ones who are more street-wise," says Corbett.

He says the e-centre focus for the next couple of years is working with the College of Business to identify ways of bringing in more ideas with commercial potential, and where possible link them with technology and expertise at the University. If the companies can utilise these skills, it is a win for the University, and good for New Zealand, Corbett says. ♦



Careers under construction

Quantity surveying trainee at Albany campus' new library and Bachelor of Construction student Charlene Colas enjoys the 'hands-on' aspect of the job, including climbing scaffolding to talk to subcontractors.

Charlene Colas has been watching her “baby” grow from conception to a giant edifice in recent months.

That’s how the second-year full-time Bachelor of Construction student describes the Albany campus’ new library extension as it has risen up from the bare earth next to the existing library where the foundations were laid a year ago to shadow all other buildings on the East Precinct.

She has been able to keep a close eye on progress through her work experience placement as a two-day-a-week quantity surveyor trainee for Mainzeal Property and Construction Ltd, which is building the \$20 million six-floor library complex due to be completed by the end of March next year, with the first stage opening this November.

It is a perfect arrangement for the South African-born student who enrolled last year to do the degree in the School of Engineering and Advanced Technology.

Her worksite office overlooks the existing and emerging libraries, which will be linked internally when the project is completed. On the days when she is not in the office or donning a hard hat to go on site to check plans with subcontractors regarding materials, costings and schedules, she will be in a lecture in the Atrium building.

Colas arrived in New Zealand two years ago looking for a new career combining an interest in design, architecture, finance, and with the opportunity to work in a team-setting.

“I’d worked for 15 years in the hospitality industry – I was ready for a change. I did some research and quantity surveying offered me the best options in these areas. The world-wide shortage of quantity surveyors contributes to the global demand for the career with exciting job prospects,” she says.

She enjoys the varied “hands-on” nature of the work, the variety of people she deals with on such a major project and the tangible satisfaction of seeing a project take shape.

Colas is one of a growing number of women in the Bachelor of Construction programme, which encompasses career pathways in quantity surveying, construction management, facilities management, and as from 2010, architectural technology and building surveying.

“With the blurring of professional boundaries in the construction industry, the programme offers a wide range of technical, managerial and generic skills that equip the graduate for the workplace of tomorrow,” says Dr Jasper Mbachu, senior lecturer and coordinator of the undergraduate and postgraduate construction programmes in the School of Engineering and Advanced Technology at the Albany campus.

Job opportunities for Bachelor of Construction graduates are extensive, he adds. “There are opportunities in all sectors of the built environment involving construction, property development, building maintenance, building restoration and insurance valuation,” Mbachu says.

“Strong emphasis on hands-on construction experience coupled with a broad range of value added skills are the underpinnings of the Bachelor of Construction curriculum to ensure that before graduation, students are already gainfully employed with a least one year solid work experience working as trainees in the industry. This helps to produce graduates that are in touch with the needs of employers in the workplace.”

Having had a taste of the construction industry over the past year, Colas admits it is dynamic and exciting. The ultimate satisfaction will be seeing the final completion of the new library – which was nothing more than a drawing on paper when she started the job a year ago – and to be using it next year. “Others might admire the artwork and décor, but I’ll know exactly what’s behind the walls, and what everything is made of!” ❖

– Jennifer Little

When Andrew Jackson (left) and Andrew Waite (right) started their Bachelor of Business degrees at the University's Albany campus, neither of them really imagined that a plan they hatched there would come to fruition more than 10 years later.

But the pair have made their vision into a reality, turning an old car park into a campus bar where students, staff and visitors meet and mingle, play pool, listen to a jukebox, and dance to DJ sounds by night.

The entrepreneurial pair are joint owners of The Ferguson Bar, which with the support of the University opened on campus in February, as well as The Saint and restaurant Flax in nearby Browns Bay. Waite, who manages The Ferguson Bar, describes himself as the more practical partner, and Jackson as the strategist. While studying tourism and marketing at Albany, Waite was student union executive member and also managed the then campus bar, Scholars.

"It's that experience that has shaped me - I got a lot out of University by putting a lot into things as well as study. I love hospitality and now we get to provide a really good student service. The students are a great group of people - they're a fantastic bunch, intelligent, energetic, enthusiastic and passionate. They're also likely to be the future leaders of New Zealand," he says.

Prior to going into partnership with Jackson, Waite - now 34 - had been with DB Breweries for six years, starting in their call centre and working his way up the ranks to key account and sales management roles. As for Jackson, he had several small businesses going even when he was still a student, and quickly discovered after graduating that working for other people was not his thing. His first job was sales representative for Neat Feet, but by 24 he had bought the company out with a two others who worked there. They built the business up and took it global before Jackson sold out about four years ago.

"I guess if you don't like being told what to do or working 9am to 5pm, this is what you do instead. I think you've just got to be driven and have a healthy ambition to do your own thing. Once you're comfortable with the risks, you get some great returns," says Jackson.

While developing Neat Feet the now 30-year-old also set up a product broking business to supermarkets, which he still has, largely supplying pharmaceuticals. Jackson also has a mid-market merger and acquisition business called CDI Global with two partners in Australia. He admits though that it has not all been plain sailing with his enterprises. Import and currency trading businesses have gone belly up along the way, but that is something Jackson is philosophical about: "You either don't take the risk at all or quit, or you use your skills make it work," he says. ❖





Photograph: Doug Cole



Lost for words

A stroke left Margaret Jones unable to do many of the things she used to love, and she has been re-learning how to read. Jennifer Little finds out how speech language therapy helps stroke and brain injured patients.

Auckland resident Margaret Jones, 79, a voracious reader, preferred sitting down to soak up a chapter or two of a novel in the morning instead of doing housework. Four years ago she suffered a stroke. When she regained consciousness, she was shocked to find she could not read the hospital menu.

By the time she'd recovered enough to go home, Jones found she could not remember how to cook – she simply had no idea what ingredients went together or how to prepare even a simple dish. And being unable to read meant she couldn't just follow a recipe.

"I had some really weird meals for quite a while," she laughs.

For the last two of the four years that have elapsed since then she has steadily been re-learning how to read, as well as how to remember names of people and words familiar to her with the help of speech language students from Massey's Speech Language Therapy Programme at the School of Education at Albany.

People like Jones with aphasia, or language impairment caused by a stroke or traumatic brain injury, need long-term therapy to "rewire the brain", says Speech Language Therapy Programme Director Associate Professor Helen Southwood from the College of Education. "The language is not lost, people just have more difficulty accessing it."

Jones, also a keen gardener who can not recall the names of flowers and plants she still grows, has shown great determination in the face of this invisible, frustrating disorder which often renders her lost for a word mid-sentence. "It's really quite embarrassing – I'll be talking and I just forget a word."

Her fortnightly, hour-long reading and comprehension therapy session with Year 2 and Year 4 students Bridget Oliver and Vanessa Jones is hard work and requires a high level of concentration but Jones is motivated, the students say.

"Just being able to sit down and read a book again really appeals

to me. I'm tired of people saying 'you're so lucky Margaret' [not to be physically disabled]. I'll hit the next person who says that! Having a stroke has a huge effect on your life."

Like many who acquire language disorders from strokes and brain injury, she received some treatment through the Auckland District Health Board after she was discharged. However, Southwood says long-term, intensive therapy is needed for full recovery of language and communication skills, and the situation is further exacerbated by the shortage of speech language therapists in New Zealand, says Southwood.

She says people are often surprised by the range of disabilities and conditions requiring speech language therapy. "The common perception is that speech and language therapists just treat children who cannot produce their sounds correctly."

People with a wide spectrum of communication disorders following a stroke or brain injury or because of other neurological problems like Parkinsons' disease are among their clientele. They also assess and treat individuals with swallowing and feeding difficulties, people with voice disorders and children with problems including autism, delayed development, and cleft palate.

Speech and Language therapy students study anatomy and physiology of speech and hearing, psychology, phonetics, linguistics and the neuroscience of memory and brain function.

They are also clock up 300 clinical hours throughout their four-year course, gaining experience at the Speech and Language Therapy Clinic on campus and in hospitals (acute and community services), through Ministry of Education Special Education, special schools and private agencies throughout New Zealand, and even in Australia and the Britain. With a Bachelor of Speech Language Therapy graduates can work in hospitals, rehabilitation centres, Ministry of Education Special Education, child development services, geriatric facilities and private practice. ❖



Singapore campus doubles

After finding out New Zealand was a bit too quiet for Singaporean food technology students, Professor Richard Archer devised a simple solution – take the course to them.

The result is Massey's campus at the Singapore Polytechnic, which is just ending its first year with 33 students looking to graduate next year with a Massey University Food Technology degree.

Head of the Institute of Food, Nutrition and Human Health, Archer says the campus offers a qualification the polytechnic there cannot.

"We knew there was a good diploma course there," he says. "They were graduating 70 a year, I went there to find out why they weren't coming here and basically found out that to a Singaporean student New Zealand was perceived as a little unsophisticated."

But the course Massey had to offer was anything but, and it was chosen by Singapore's Ministry of Education as an ideal contender for the Polytechnic Foreign Specialised Institution, scheme.

"Under that scheme the Singaporean Government would effectively fund a foreign university that was chosen to be good enough to come and put on their degree for Singaporean students in Singapore.

"The advantages for Singapore are that they don't have their students going offshore and taking their Singapore dollars with them. They don't go offshore and stay offshore and they can direct the labour force through the scheme."

But there are also major benefits for Massey, with the number of food technology graduates set to double.

"In February we will invite the top half of the senior cohort here

to Manwatu to finish their degree," Archer says. "They'll spend the 12 active research weeks of the 15-week semester here, and of course we hope that some of them will choose to go on to postgraduate study – and they're certainly good enough."

Massey staff travel to Singapore to teach for up to three weeks at a time, staying in an apartment on campus. Staff have made 16 trips in total this year but in future years those visits will decrease with staff at the Singapore Polytechnic increasingly involved, Archer says.

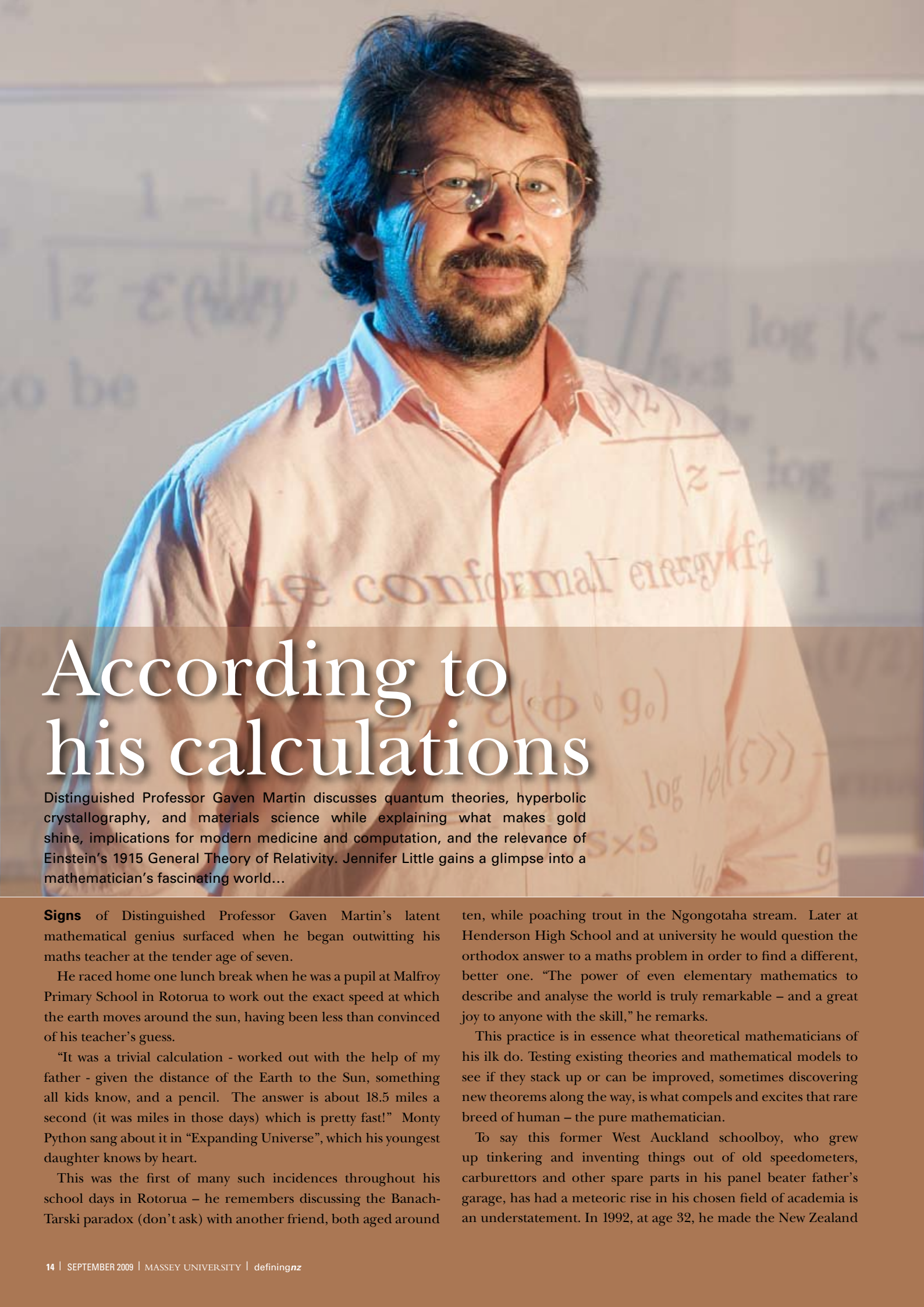
"We'll still control it academically, it will be our course with our course material, and we'll set and mark the exams and assignments. We also have very good video conferencing facilities that can be used as well."

The opportunity is also there for Massey's researchers to network with the Singaporean food industry, which is very different to New Zealand's.

"Ours is primary products driven: we grow the stuff on farms here, we process it and we export it. The Singaporean industry is twofold: there is a high-tech ingredients industry with the multinational ingredient companies and flavour houses all present doing manufacturing and technical development supporting the whole of South East Asia.

"On top of that there is a close to market finished foods industry supporting all of the restaurant industry. But they lack completely the area we have, we're completely complimentary and I want my staff mixing with those aspects of the food industry there." ♦

– Bryan Gibson



According to his calculations

Distinguished Professor Gaven Martin discusses quantum theories, hyperbolic crystallography, and materials science while explaining what makes gold shine, implications for modern medicine and computation, and the relevance of Einstein's 1915 General Theory of Relativity. Jennifer Little gains a glimpse into a mathematician's fascinating world...

Signs of Distinguished Professor Gaven Martin's latent mathematical genius surfaced when he began outwitting his maths teacher at the tender age of seven.

He raced home one lunch break when he was a pupil at Malfroy Primary School in Rotorua to work out the exact speed at which the earth moves around the sun, having been less than convinced of his teacher's guess.

"It was a trivial calculation - worked out with the help of my father - given the distance of the Earth to the Sun, something all kids know, and a pencil. The answer is about 18.5 miles a second (it was miles in those days) which is pretty fast!" Monty Python sang about it in "Expanding Universe", which his youngest daughter knows by heart.

This was the first of many such incidences throughout his school days in Rotorua - he remembers discussing the Banach-Tarski paradox (don't ask) with another friend, both aged around

ten, while poaching trout in the Ngongotaha stream. Later at Henderson High School and at university he would question the orthodox answer to a maths problem in order to find a different, better one. "The power of even elementary mathematics to describe and analyse the world is truly remarkable - and a great joy to anyone with the skill," he remarks.

This practice is in essence what theoretical mathematicians of his ilk do. Testing existing theories and mathematical models to see if they stack up or can be improved, sometimes discovering new theorems along the way, is what compels and excites that rare breed of human - the pure mathematician.

To say this former West Auckland schoolboy, who grew up tinkering and inventing things out of old speedometers, carburettors and other spare parts in his panel beater father's garage, has had a meteoric rise in his chosen field of academia is an understatement. In 1992, at age 32, he made the New Zealand

Herald front page for being the youngest professor in the recent history of the New Zealand university system.

At the time he had just declined a chair at University of Sydney and was considering chairs at the Australian National University and the University of Auckland. He completed his PhD at the University of Michigan in 1985, and since has been awarded numerous fellowships, research grants and visiting positions at Universities around the world in Europe, the United States, Australia, Israel and including MSRI at Berkeley, Yale, Princeton, the Swedish, Finnish and French Academies. In another rare accolade he was elected a fellow of the Royal Society of New Zealand before he was 40. Most recently he was a James Cook fellow and Miller Fellow (University of California at Berkeley's distinguished visitor programme).

It didn't all come so easily though. A C-average in his first year at the University of Auckland quickly became a straight A+ record. "I learnt how to do exams, I don't think I got smarter!"

Martin became Distinguished Professor when he moved to Massey's Albany campus five years ago. He is founding director of the University's New Zealand Institute for Advanced Study, launched in 2007, and is dedicated to fulfilling its aspiration to be a world-class centre for theoretical research and intellectual inquiry in the sciences through his numerous collaborative research projects with mathematicians around the world.

Along with Professors Paul Rainey (evolutionary genetics) and Peter Schwerdtfeger (theoretical chemistry), Martin is one of its three full-time professoriate members (there are two fractional and four associate members), along with a dozen PhD and a dozen post-doctoral students. Institute staff currently hold six Marsden grants among them.

"These guys are among the very best in the world at what they do and it's a pleasure to be associated with them. We need more of this in New Zealand," he says.

Martin is also the recipient of the Royal Society of New Zealand's 2008 Hector Medal "for deep and wide-ranging contributions to the theory of Kleinian groups, geometric function theory and other fundamental parts of modern mathematics, including the solution of a number of difficult and long-standing problems."

His main research interests include non-linear analysis and materials science (basically studying the differential equations that describe how materials are deformed when stressed), and hyperbolic and arithmetic geometry (a topic he last year gave a public lecture on to explain how "hyperbolic geometry is weird and interesting and offers greater possibilities to explain many features of our universe").

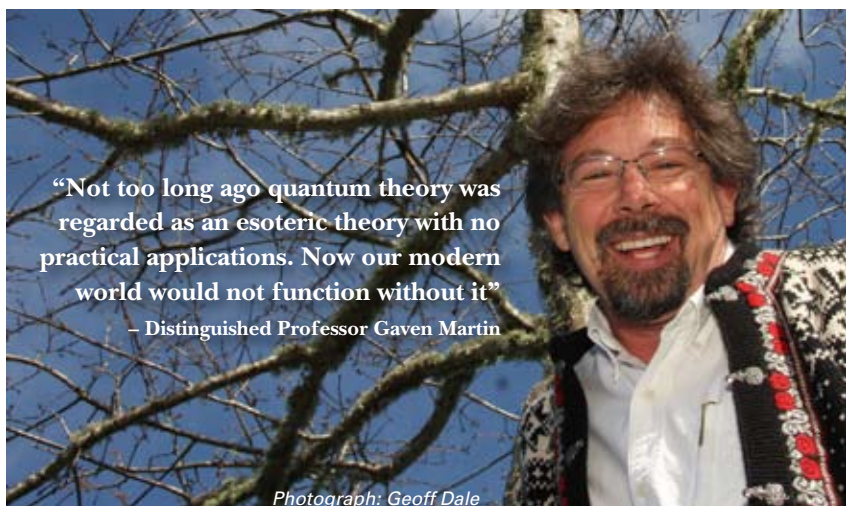
His breakthrough discoveries several years ago regarding the fundamental structure of hyperbolic (curved) space were published as over two hundred journal pages in the world's top mathematics journals and led to further surprising revelations on the connections symmetry, geometry and number theory. "I worked on that problem pretty much nonstop for 15 years."

In geometric analysis, he is studying classes of equations used to model materials in science. One of the seminal achievements of his career has been the development with his long time Polish collaborator Tadeusz Iwaniec of a technique called non-linear

Hodge theory.

This has provided solutions to mathematical problems dating back to French mathematician Joseph Liouville in 1850 in understanding the symmetries of physical theories (conformal transformations) such as occur in relativity developed some 60 years later. A case of "mathematicians ahead of the game again," he says. "Indeed, so strong is physicists' belief in conformal symmetry, that they are prepared to concede the number of dimensions we live in, hence the nine or ten dimensions of string theory."

Mathematicians are effectively developing tools to find answers to puzzling questions that underpin our understanding of how the physical world works, says Martin.



Take gold. "Scientists could not explain its particular brilliance in terms of classical physics and chemistry. As my good friend Schwerdtfeger will tell you, the colour of gold is not a typical phenomena, like the colour of the sky, paint or hair and explained by classical theories of photons and electronic orbitals," says Martin. "The particular shine, along with other properties, is due to relativistic effects on orbiting electrons due to the heavy nucleus. We realise now that quantum effects are particularly important in the physics and chemistry of many everyday objects – such as lasers – and are going to be even more so in the future (computing and medicine are two obvious examples)."

"Not too long ago quantum theory was regarded as an esoteric theory with no practical applications. Now our modern world would not function without it. This is partly why mathematicians follow their noses to develop seeming abstract theories – some day these ideas might underpin much modern technology. Our record is pretty good so far," he says, quoting German mathematician and scientist Carl Gauss – "theory attracts practise like a magnet attracts iron."

In this realm he also has research projects applying quantum theory and the mathematical theory of scattering to develop novel materials and electronic devices with Boris Pavlov – a mathematical physicist in the Institute.

He says that contrary to what many think, mathematicians are highly sought after across a range of careers and disciplines – medicine, technology, business, finance and elsewhere – because of their exceptional problem-solving ability. "The best people in virtually any discipline will have strong mathematical and analytical skills". ❖



Business group gives students head start

Photograph: Doug Cole

Business Student Group chairman Jesse Thomas was inspired by meeting clothing designer and magazine publisher Annah Stretton and learns that if you want something enough, you will make sure you get it.

When Jesse Thomas was nine, he started writing ideas for inventions down in a little blue book. Although he has moved on from some of the early entries, such as rocket-propelled shoes, he still has the book, the ideas are still flowing, and he feels he is on his way to making some of them a reality. As a home-schooled student the now 18-year-old always found science stimulating, but realised he would also need to gain business skills at university to realise his entrepreneurial ambition of having his own research and development company one day.

He was not content to dedicate himself just to his business and science studies and, as soon as he arrived at the Albany campus, now a second year student, started looking for ways to get involved in student life. "I wanted to make the most of my time at university in every way so I started by looking through all the clubs here," he says. "In my first semester I was involved in founding a Toastmasters Club and through that I met the chairperson of the Business Student Group, which exposed me to the Student Development Society national business case competition, and the founding of the Massey League."

The Business Student Group, which Thomas now chairs, includes students not only from the College of Business, but from across the Albany campus. It aims to provide an environment that enables students to develop skills that will give them an edge in their careers. The group is also the parent group of the internal Massey League, which sees teams of students use their wits and a range of business skills to come up with a solution to a problematic business case within a very tight timeframe.

League sessions involve presenting solutions to a case assigned a week earlier to an external judge, followed by a peer review of the presentations and a discussion on challenges within that sector. This leads to selection for the nationwide business case competition, which follows the same format with a 12-page case study, five hours to come up with a solution, and 20 minutes to present it to a panel of judges.

Thomas recently met clothing designer and magazine publisher Annah Stretton, who is also a member of the College of Business advisory board. "One thing that came through quite strongly was her immense self discipline and drive," he says. "When I asked if running a business conflicted with being a mother she was quite frank and told me that she gets up at 4.30am and has the majority of her day ticked off before her children even wake up. She basically told me that if you want something enough you will make sure you get it."

His drive and enthusiasm means he does not think twice about the time commitment required for the league, but it is considerable, says Business Case League coach and University Communication lecturer Dr Andrew Chrystall. "You've got to admire them all because they're essentially doing the equivalent of another really tough paper, and they organise the league and they drive it themselves. They realise it's the place where they get to put their studies into practice, and where it all comes together." ♦

– Melanie McKay

Celebrating the crazy ones

There is nothing better than thinking up a new idea, stretching it, turning it upside down and pushing inside out. While admittedly after doing this most of my ideas look rather worse for wear, I firmly believe that ideas change the world. As Apple's famous 'Think Different' television advertisement claimed using the iconic imagines of Einstein, Gandhi, and Martin Luther:

"The people who are crazy enough to think they can change the world are the ones who do".

Attempts to reshape the future are alive and well at Massey University. It's a great place for generating ideas. The freedom to think differently coupled with the tradition of Massey's 'can do attitude' is the perfect recipe to foster entrepreneurialism. Importantly, the essence of entrepreneurialism is not about generating money, but making Aotearoa/New Zealand and the world a better place—for everyone.

Education is at the root of transformation. Accordingly, we need teachers with the flair, imagination and out-of-box thinking that is a hallmark of entrepreneurs. Put bluntly, you can't standardize creativity! We can hardly expect to produce the next generation of entrepreneurs by pumping students through low quality education factories. Massey wants to be New Zealand's defining university by feeding the minds of tomorrow's entrepreneurs, as the deep-seated problems we face require new and creative solutions.

Flexible learning is one such solution. Increasingly people require access to education anywhere, anytime. Learning does not stop after graduation. It's a life-long and life-wide process. This is why online learning has quickly become a common feature of both the boardroom and the building site. It provides access to just in time, just enough and just for me learning for people from all walks of life. Indeed, the new spaces of learning are a potential solution to millions of people who have no access to education in the developing world.

Massey has a growing reputation on the world stage as a leader in the new ways of online learning. Our lead role in developing the Mahara eportfolio system [<http://mahara.org/>] is evidence of Massey's willingness to take on the world. Last year Mahara—Māori for think or thought—won both a national and international award and is being used to support life-long learning throughout the US, UK and Europe. Mahara's success demonstrates the global opportunities available to New Zealand entrepreneurs and the value of local industry-university partnerships. Richard Wyles, Director of Flexible Learning Network, now leading the Mahara Project continues to work closely with Massey University.

Richard's groundbreaking work in open source software development epitomises how entrepreneurialism is a mindset of defining new boundaries.

Although unashamedly idealistic, more than ever, in troubled times universities have a crucial role in nurturing the critical thinkers and entrepreneurial future makers who may one day save the planet. ❖

Mark Brown is a trained primary school teacher. He has a particular interest in the use of new educational technologies, was New Zealand's first Apple Distinguished Educator and has received several awards including the Darrylin O'Dea Award for Electronic Learning and a National Tertiary Teaching Excellence Award for Sustained Excellence.



"The people who are crazy enough to think they can change the world are the ones who do."

– Associate Professor Mark Brown

World sheep research centre option explored

Massey scientists are considering taking New Zealand a step further in its status as world leader in sheep production by establishing an international sheep research centre.

The team aims to find ways to make farming, processing and trading more profitable and at the same time continue to lead international best practice in animal welfare and environmental wellbeing.

Agri-food strategy manager Mark Jeffries says Massey has commenced discussions with key New Zealand meat industry players to gauge their level of support for the proposal and seek their input to develop the best possible model for the centre.

“We believe there are benefits both for the industry and for individual farmers,” Jeffries says. “To improve on-farm profitability, Massey will promote optimisation of farm systems – the integration and impact of a number of management decisions. Other partners in the sheepmeat supply chain will benefit from improved linkages back to optimised on-farm performance.

“For Massey and its research partners, there’s a third driver of rationalising effort, promoting consolidation and succession-planning to ensure New Zealand continues to lead world sheep research. Massey scientists have an opportunity to develop and implement a focused and effective research strategy for the global sheep industry which will leverage resources and ideas from across all sheepmeat producing countries.

Academic staff including Professors Steve Morris, Peter Kemp, Kevin Stafford Dave West and Hugh Blair, and Associate Professor Paul Kenyon already enjoy international reputations in the sheep industry and participate in networks around the world. The research centre proposal sees this leadership taken to the next level however – formal establishment at the Manawatu campus.

Morris says the centre could use novel approaches to drive a suggested target of 500kg lamb weaned per ewe lifetime.

“We’re also looking at making research more available both in New Zealand and internationally. A key thrust of the sheep centre will be to routinely translate scientific papers to easy-to-understand instruction guides for farmers.”



Professor of Animal Science Steve Morris is among the key academics leading the charge to develop a world sheep research centre in New Zealand.

Morris has worked in sheep and beef research for more than 20 years on projects including year round lambing systems, hogget management to maximise reproductive performance, management of twin and triplet-bearing ewes and mid-pregnancy shearing of ewes, beef production from Jersey cross Friesian steers, effects of early pregnancy nutrition on calf birth weight and calving difficulty in heifers and once-bred heifer beef production systems. Last year’s recipient of the Sir Arthur Ward award for application of research to animal production, Morris is acknowledged for his industry relevance and hands-on approach. ❖

– Lindsey Birnie

Three brothers will boost lambing output

Enabling New Zealand farmers to produce lamb year-round is the backbone of a tripartite agreement between Massey University and two Chinese institutions, but the benefits will be much greater, Professor Hugh Blair says.

The partnership is between Massey, Peking University and Xingjian’s Shihezi University, with the Chinese-Government funded project enabling collaboration to identify gene markers that enable non-seasonal lambing in selected breeds of Chinese sheep.

Blair says that if New Zealand sheep were able to breed year-round in some areas, it would be a further tool for the industry.

“It’s not about changing the industry,” he says, “and many farmers wouldn’t dream of lambing out of season. But probably about a fifth of New Zealand sheep farmers do have a suitable climate and with appropriate premium payments, providing lambs out of season may be a viable proposition.”

The partnership is working with the International Sheep



Professors Alex Chu, Hugh Blair and Steve Morris on-farm in China.

Genomics Consortium to gain access to their data, and Blair has been made an honorary principal of the Chinese Academy of Science to enable him to represent the Chinese partners. ❖

EVENTS

SEP

SEPTEMBER 12

Open Day – Albany Campus

Open Day provides an opportunity for prospective students and their families to visit each campus, meet Massey staff and see first-hand what study at Massey is all about.

A wide and diverse range of courses are profiled along with student services and the vibrant student life. Prospective students of any age are welcome.

The day will include:

- Campus tours
- Course information
- Presentations and seminars
- Careers advice
- Robotics demonstrations
- Haiku competition
- 'Report on Open Day' competition
- Entertainment, giveaways and prizes

Albany Campus – Gate 1 Albany Expressway (SH17), North Shore

SEPTEMBER 29, Noon–2.30pm

Richard Stallman, the founder of the Free Software Foundation:
“Copyright vs Community in the Age of Computer Networks”

“Copyright was designed to fit with the system of centralized copying imposed by the printing press. The global corporations that profit from copyright are lobbying for draconian punishments, and to increase their copyright powers, while suppressing public access to technology. If we seriously hope to serve the only legitimate purpose of copyright—to promote progress, for the benefit of the public—then we must make changes in the opposite direction.”

Public presentation followed by discussion

Albany Campus – QB5, Gate 1 Albany Expressway (SH17), North Shore

OCTOBER 6, 6.00-10.00pm

2009 Manawatu Blues Sports Awards Dinner

The Annual Blues Sports Awards dinner is held each year to celebrate the achievements of Massey athletes as they achieve great things in the national and international sports arena, while successfully completing their studies. The Dinner is a celebration for Massey staff and local community leaders, alongside coaches, parents and families of athletes. More than 30 awards are usually presented, along with the Palmerston North Sportsman and Sportswoman of the Year.

Palmerston North Convention Centre



definingnz

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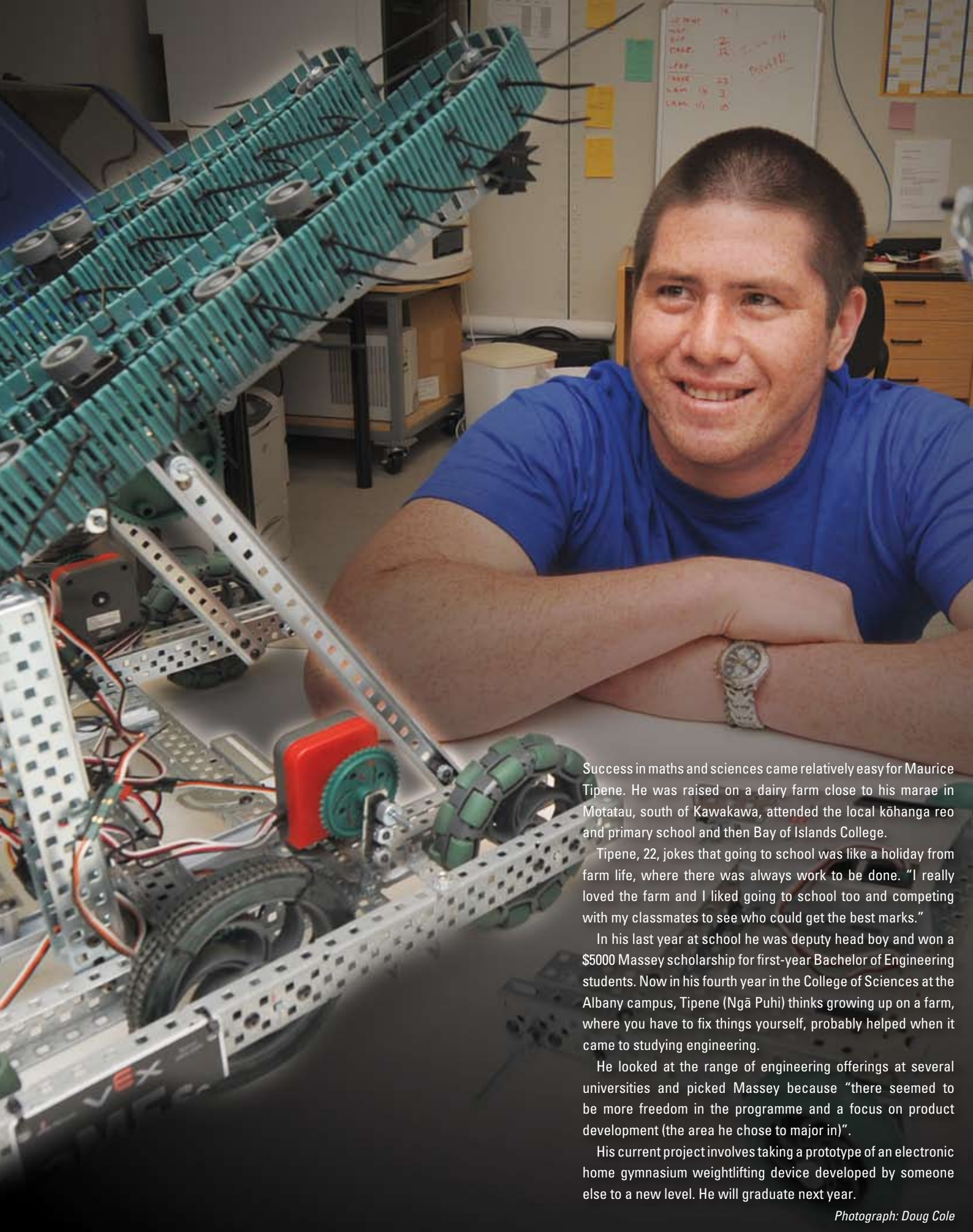
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Success in maths and sciences came relatively easy for Maurice Tipene. He was raised on a dairy farm close to his marae in Motatau, south of Kawakawa, attended the local kōhanga reo and primary school and then Bay of Islands College.

Tipene, 22, jokes that going to school was like a holiday from farm life, where there was always work to be done. "I really loved the farm and I liked going to school too and competing with my classmates to see who could get the best marks."

In his last year at school he was deputy head boy and won a \$5000 Massey scholarship for first-year Bachelor of Engineering students. Now in his fourth year in the College of Sciences at the Albany campus, Tipene (Ngā Puhi) thinks growing up on a farm, where you have to fix things yourself, probably helped when it came to studying engineering.

He looked at the range of engineering offerings at several universities and picked Massey because "there seemed to be more freedom in the programme and a focus on product development (the area he chose to major in)".

His current project involves taking a prototype of an electronic home gymnasium weightlifting device developed by someone else to a new level. He will graduate next year.

Photograph: Doug Cole