

advance

Autumn 2014

Research with impact

A changing landscape

How international audiences view New Zealand films



Unitec
Institute of Technology
TE WHARE WĀNANGA O WAIKAKA

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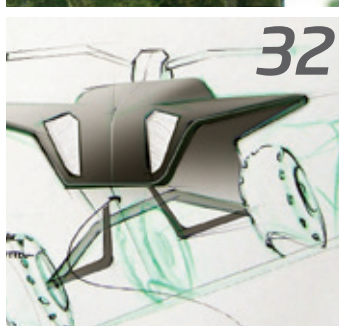
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Making it easier to engage

In past issues of Advance we've talked about Unitec's strategic goal to engage in research with impact - ensuring that our research has real-world application to local communities, industries and business. We've also highlighted the importance of collaboration in order to achieve impact; we need to work directly with external partners for our research to achieve its potential. It's the importance of collaboration that I want to expand on in this editorial.

At the end of 2013 the Unitec Research Committee allocated strategic research funding to projects within Unitec. For the first time it was a requirement to demonstrate that the research was being conducted with external partners and that the external partners were contributing in some way. These projects were true collaborations with the outcome of the research benefiting both Unitec and the external partner. Over the coming year you will see some of these projects profiled in Advance.

In most cases these collaborations were initiated by Unitec staff. The research teams saw an opportunity to include partners from industry and community and collaborations were formed. The next step is for industry and community to start discussions with their local education providers and business groups about what they need to grow, and what they need in the research and development space to ensure their business succeeds.

We can help businesses to access funding; we can provide community groups with experience in evaluating the success of their programmes; and we can design and test new technologies or processes. But, without local organisations approaching us and telling us their needs or wishes, we can't help find these solutions.



Institutes of technology can provide valuable resources to our local businesses and communities, big and small, and contribute directly to helping grow New Zealand's economy. Our staff and students are actively seeking to make their research relevant, and we would like to make it relevant to you.

**Katie Jones, Guest Editor
Research Advisor
Postgraduate Centre and Research Office**

www.unitec.ac.nz/research

New Year, New Dean

The new Dean of Research and Enterprise will be familiar to many people at Unitec – Associate Professor Marcus Williams, previously Associate Dean of Research for the Faculty of Creative Industries and Business, has taken over as head of the Research Office and Postgraduate Centre.

Williams has been at Unitec – off and on, and in different roles – for more than 20 years. “It’s changed hugely over that time,” he says. “I’ve had really great experiences in my time here, and I’ve managed to be quite entrepreneurial. An example is the Rosebank Art Walk that was featured in Advance last year, as well as setting up international guest residency programmes, international collaborations between universities, and annual noho marae field trips. Now that I’m in a leadership role I would like to make sure I provide a supportive environment for others to initiate their ideas.”

Prior to moving into teaching at Unitec, Williams was a freelance photographer. “I came into Unitec through my practice, and an interest in scholarship. Right from the outset, I was successful in the Performance Based Research Fund (PBRF) process, achieving a high ranking purely with applied practice. I think that is very significant: it makes me a useful person to have in this role now.”

The word enterprise has been added to his title, and Williams says he’s absolutely in favour of the addition. “Traditionally research is often an area of enterprise in the tertiary sector, particularly around the provision of leading-edge knowledge to industry and community, and we are in a prime position to do that. We have some tremendous expertise here at Unitec.

“Although I’m interested in knowledge and scholarship, I’m also interested in enterprise and entrepreneurship. I think it’s important that we nurture individuals who have this kind of talent, because not everyone does. I would like Unitec to be the kind of institution that provides a supportive environment for entrepreneurial talent.”

Based on the latest PBRF results, Unitec currently leads research in the Institute of Technology and Polytechnic (ITP) sector, and Williams is keen to extend this focus. “We have identified research with impact, applied research and research which informs teaching as being the primary foci of our research activity, and that is something that I am 100 per cent committed to.”

He believes that creating networked researchers is vital for the future of research. “I’m supportive of interest-led research, because it has led to some of the greatest discoveries in history, but I believe that collaborative activity around particular areas of focus is also very powerful.”

Williams says that staff across all three faculties are vital in the research culture that he wants to encourage. “At the heart of it is the need to be partnering with community and industry, and that always originates with staff. It’s staff that are bringing these opportunities to us. It’s up to us to facilitate a smooth and supportive relationship – I think that’s incredibly important. I think generally our staff have an absolute cornucopia of networks and ideas and this is the best source of stronger partnerships and relationships with industry.”





A high priority for the research office is developing external research income, says Williams. "We're looking at identifying areas of capacity and focus across the institution and then working in partnership with those staff and Heads of Department to strategically engage in seeking external research income. We're looking at a range of areas including natural sciences, biosecurity, social and sustainable housing, computing and IT, community and Pacific development, and business development. They're all potential areas where capacity exists that can be developed."

Extending connections to other tertiary institutions via collaborations like the Metro Group – which consists of ITPs based in the major urban centres in New Zealand – is another area Williams is keen to pursue. "One of the many things my predecessor was working on was building relationships within the Metro Group of ITPs, and that is something I see as very important. There are tactics that all the institutions can share in terms of greater industry partnership, and the development of knowledge transfer. The universities have dominated the applied research and knowledge transfer space for too long. We can form a formidable lobby to make the funding bodies realise that we have expertise that is just as excellent and worthy of their attention." **a**

Moving on up

Our three latest associate professors tell us what they expect from their new roles.



Nigel Adams

Department of Natural Sciences

Faculty of Social and Health Sciences

Originally from South Africa, Associate Professor Nigel Adams has a long-standing research focus, including spending time early in his career on the sub-Antarctic Prince Edward Islands researching seabirds. "The first phase of my academic career was about developing a large range of research skills in the disciplines of both animal physiology and applied ecology," says Adams. "This was acquired on research ranging from investigations of the bioenergetics and feeding ecology of sub-Antarctic seabirds; seabird-commercial fish interactions and the use of seabirds as indicators of fish populations; and water and energy flux in desert birds."

He joined Unitec in 2000, initially teaching a course in human physiology, and then in 2003 he moved into the newly established department focused on animals, now called the Department of Natural Sciences.

Since joining Unitec Adams has been closely involved in research, and was part of the team that won the 2012 Research with Impact Prize at the Unitec Research Symposium. "I presented research that reflected a collaboration between the Kea Conservation Trust, Department of Conservation and Landcare Research that focused on testing the efficacy of a combination of two bird repellents that could potentially be placed in cereal baits laced with 1080 that are used to control populations of mammalian pests over substantial areas of the conservation estate in New Zealand."

Adams has also been part of the organising team of several conferences at Unitec. "This includes a key role in developing and organising the scientific programme of two large conferences, the Ecological Society of New Zealand Conference 2008 and Australasian Ornithological Conference in 2013," he says.

Adams sees becoming an associate professor as a natural academic progression within Unitec. "Particularly for someone like myself with a strong research interest," he says. "I see it as a base on which to further develop my scholarship; to build and enhance the reputation of Unitec; help to develop the research culture; and mentor the development of researchers in the department."

He also has some very concrete goals for the future. "I would like to contribute to the development of postgraduate programmes within the department, and develop the capacity to support and deliver e-learning within my teaching speciality of vertebrate physiology. Finally I would like to further develop my research programme in a way that supports and underpins the delivery of postgraduate programmes."



Dan Blanchon

Department of Natural Sciences
Faculty of Social and Health Sciences

Associate Professor Dan Blanchon is an endangered species – he’s one of only a handful of lichenologists in New Zealand. Blanchon has been at Unitec since 1999, and is in charge of Unitec’s Herbarium, the only internationally registered facility at a tertiary institution in Auckland. He’s also just had a new species of lichen named after him, an honour that is usually reserved for much later in a scientist’s career.

He’s the chair of the Natural Sciences Research Committee and the Research Coordinator, and says that his new role as an associate professor came slightly earlier than planned. “But teaching and research are my passions, and being an associate professor is a logical progression involving those things.”

The highlights of his career are all focused on his area of expertise. “Some of the things that stand out to date include naming new species of lichens, naming new species of native irises, having a species named after me, being elected a Fellow of the Linnean Society of London, and co-authoring the first threat classification for New Zealand lichens,” he says.

Blanchon says he was very happy when he learned he’d been accepted as an associate professor, but it’s not the end of the road. “Being effective as an associate professor means being a positive catalyst for advancing research, teaching and practice. It’s important to take people with you on your journey.”

He says that his particular strengths include his applied research focus and having a good sense of humour. “But I am also collegial and connected; I like to try new things and projects, and am open minded to inter-disciplinary opportunities.”

He’s keen to take research to the next level, both in the Department of Natural Sciences, but also across the institution. “My plans involve growing research within the department and Unitec, increasing consulting work with industry and other stakeholders, using new and existing technologies in my research, and involving more students more directly with my discipline area.”



Craig Hilton

Centre for Interdisciplinary Scholarship
Faculty of Social and Health Sciences

Associate Professor Craig Hilton has also just been appointed Associate Dean of Interdisciplinary Scholarship, meaning he’s the one in charge of an innovative new centre within the Social and Health Sciences Faculty, the Centre for Interdisciplinary Scholarship. “It’s a new idea. It’s not a department; it’s a centre for innovation in teaching and learning. The initial projects include a common semester, which will give more options and more flexibility to study pathways for students, and an emphasis on postgraduate work. A very important aspect to the centre is that we are working across multiple departments and programmes, staff and students.”

The centre is piloting a new way of operating, and Hilton says it has implications across the education sector. “We’re trying to blur our boundaries with these groups, and help build capability in the centre, so that we can go out into the departments and help with blended learning delivery, and things like that. It’s about changing how things have worked in the past, across the faculty and the institute.”

Becoming an associate professor has been an interesting process, he says. “I’m glad I did it, but you have to find the time. There’s four areas: practice and contribution to industry, research, academic leadership, and teaching and learning. You have to show excellence in at least three of them.”

Hilton sees a big part of his role as providing assistance to his colleagues. “An associate professor is a mentor more than anything. If you’ve achieved in these areas, then I think your role is to help other staff members to achieve in these areas as well. You’re meant to keep on doing it, it’s not an end point, it is a challenge to do more.”

He says one of the best parts of working at Unitec is the people he works with. “There are some amazingly capable people around Unitec. For me it’s really important to have a capable team, and a team that feels supported, so that’s what I’m doing now. I’ve got a lot of really supportive colleagues, and I’ve got this amazing team of people that I’m working with in the centre. I’m blown away by how hardworking and capable they are, and what pleasant people they are to work with.”

Award-winning design

A collaboration between Unitec, Adjunct Professor Dave Strachan of Strachan Group Architects (SGA) and VisionWest – a non-profit organisation dedicated to providing healthy, affordable, and quality housing for low-income families – won two awards at the 2013 Auckland Architecture Awards in October. The judges congratulated the team for creating two prefabricated homes using low-energy passive-design principles for social housing, and awarded them in the Housing and Sustainable Architecture categories.

Sixteen Unitec students spent five months designing, documenting and building the two homes, which have large north-facing windows, floors that trap heat and innovative designs that make them easier to maintain, more durable and cheaper to heat. The collaboration was a practical way for students to gain insight and experience of the building industry in New Zealand. They also participated in practical research into social housing options in New Zealand (see the Summer 2012 Advance for more on the project).

The community housing project for VisionWest Community Trust was praised by judges for its “flexible, light, warm airy spaces, with virtually no heating required, in a design successfully driven by modular prefabricated parts”.

The innovative design included a range of materials not usually used in low-cost housing, such as the floor which contained concrete for its strength and thermal mass. The project resulted in better quality homes for the same price and provided economic sustainability for the project, as well as the people who now live in the houses. The inclusion of these materials during design and construction has led to warm, comfortable homes that don’t need much heating and cost less in terms of electricity bills. Better health outcomes for VisionWest clients is another positive result for the project, as the homes are also drier than standard low-cost housing.

Well done to the team of students involved!



Unitec Architecture students and Adjunct Professor Dave Strachan at the launch of the Vision West houses they designed.



Auckland Mayor Len Brown speaking at the opening, next to Housing Minister Nick Smith.



Inside the student designed houses.



The New Zealand Storm Petrel.

It's a bird's life

The Australasian Ornithological Conference was held in New Zealand for the first time in 10 years in December last year. Hosted by Unitec's Department of Natural Sciences, the conference comprised around 180 experts and enthusiasts from Birdlife Australia and the Ornithology Society of New Zealand (OSNZ). "It was a superb conference, and there were a good number of people," says Senior Lecturer and organiser Mel Galbraith. "It's only been held in New Zealand once before, which is why we decided to put in a bid for the conference."

Both ornithological societies have their own annual conferences, but the two-yearly joint conference is a chance for collaboration and interaction across the Tasman. The key speaker was Dr Matt Rayner from the University of Auckland, who was part of the team that rediscovered the New Zealand Storm Petrel. "It's a serendipitous story of discovery, akin to the discovery of the takahe," says Galbraith. "This bird was thought to be extinct for 100 years, and it's popped up again in the last decade. We also chose the storm petrel as part of the conference logo."

Other speakers included Hamish Spencer, Professor of Zoology at Otago University, and John Ewen, Research Fellow at the Institute of Zoology, Zoological Society of London.

Galbraith says it was a huge relief to see everything go so smoothly at the conference. "I feel very proud that we managed to pull it off. It's been two years in the planning, and includes so many things you can't plan until the last minute. People said to me that it was one of the best conferences that they'd been to, and I was pleased to hear that, it made it all worthwhile."



Mahsa Mohaghegh (left) at a Girl Geek Coffee event at Unitec.

Making her mark

Unitec Computing Lecturer Mahsa Mohaghegh was announced winner of the Emerging Leaders Category at the Women of Influence Awards event late last year. Established by Westpac New Zealand and Fairfax Media, the awards honour women who are making their mark on New Zealand and its future. The Women of Influence Awards celebrate women who are using their passion and influence to improve the world for others.

Mohaghegh is used to standing out from the crowd; she was the only female computer engineer at PhD level at Massey University, and she has excelled in the computer science field where women are scarce. However, the absence of women in technology is an issue she would like to see change in the future.

The first person to approach her after her win was Women's Affairs Minister Jo Goodhew, who invited Mohaghegh to speak at an event celebrating 100 years since suffrage. "It's definitely one of the more prestigious awards in New Zealand, but an award on its own doesn't really do anything. It's more about the connections and the people you get to know and being able to raise awareness of the issue of women being underrepresented in technology," says Mohaghegh.

This is not the first prestigious award for Mohaghegh in recent years. She was also a recipient of the Australasian Google Anita Borg Postgraduate Scholarship in 2012. In addition she has been instrumental in setting up networking groups for women in technology in the Auckland area, called Girl Geek Coffee, which she hopes to expand nationwide.

She says schools and parents are vital to increasing the acceptance of the study of computer science and technology among girls. "If you start providing them with certain toys at a young age you can start changing the way they think. I used to play with Lego all the time, which is really good."

According to Mohaghegh there are many great opportunities for girls who choose to study computer science. "All the big companies are looking for girls who've studied computer science and engineering."

She says that her efforts to encourage women into computing have been paying off. "That passion is not only my passion anymore; I have been able to share it with others. If we don't step forward, nobody else is going to help us. It needs to start with women spreading the word to other women, telling them what's happening."



photos: Jae Frew

The power of conversation

Communication Studies Senior Lecturer Sara Donaghey has used an innovative technique with her latest oral history research into the lives of lesbians in New Zealand.

What if you could talk to someone from a completely different generation about a facet of both your lives that has, in part, defined who you are? What would you expect the differences to be? What might be the same?

Those were some of the questions Communication Studies Senior Lecturer Sara Donaghey asked when she was planning her latest oral history research project. "It was about recording the intergenerational stories of lesbians through allowing them to reflect on their life stories and experiences. I paired one older woman and one younger woman up in an interview together, and they talked about their lives."

It was an intriguing proposition, and Donaghey says she wasn't sure how it would go before she started the research. "They all had very interesting lives, and that intergenerational content – at one point I had an age gap of 50 years – meant there was a strong point of difference. It turned out to be fascinating, and they were each equally fascinated in the story of the other."

But it wasn't just the ages of the participants that made her study so distinctive. Donaghey also chose to use a different interview style to any she'd used previously. "It was an idea I had when I was sitting in a conference a year or two ago. I thought, wouldn't it be fascinating if I wasn't the main person in this whole process? There's a whole area of research literature about the structure of power in an interview situation. So what would happen if we removed that dynamic, and let the conversation follow its own course? So in my study they talked to each other, rather than me being the primary interviewer. Each woman alternated in the role of interviewer and interviewee."

Donaghey says it turned out to be an exciting new interview technique. "I was there filming, but

I didn't interrupt. They had some guidance and I suggested some guiding themes beforehand, but they weren't required to use them. Sometimes they stuck to the themes, and other times they went off on complete tangents, but we all just trusted the process."

The technique became an integral part of the success of the project. Donaghey says that because she as the researcher didn't control the process, there was a greater degree of shared responsibility between the participants. "Because of that autonomy, they had greater engagement in the whole process, and I think as a result, the dialogue, and thus the information, has the potential to be a lot richer. The other aspect of it was that unlike the usual interview situation, they each felt privileged to be part of the interview process. That was partly in my mind, to allow the women to share in my research in a way that they wouldn't have done if I'd just been interviewing them."

Before the interviews, Donaghey admits she wasn't sure if it would even work. "I didn't know these women, I didn't know if they'd be good at this process, or relaxed enough, or be sufficiently self reflective, to share and talk about quite sensitive things, but they did; every single one of them was very willing to talk."

The research began in late 2012, and continued through most of last year. There were nine interviews, held in Auckland, Wellington and Dunedin, with 18 participants who were openly lesbian, and one transgender woman. "I interviewed a variety of women from different age groups, the youngest was 19 years old, and

Senior Lecturer Sara Donaghey filmed the interviews with her participants and thereby kept herself out of the interview process.

I didn't know if they'd be good at this process, or be sufficiently self reflective.

the oldest was in her mid-70s," says Donaghey. "There were different ethnicities, backgrounds and professions. I didn't want them all to be upwardly mobile, professional middle class women. I had plenty of people offering to participate, but I had to be careful about the cross-section that I chose."

None of the participants had met the other person before, and for Donaghey that was also part of the process. "For the Auckland interviews, initially I met them, and they met each other, and a week later they came back for the interview. In Wellington and Dunedin, I didn't have that luxury of time, so I allowed them some time at the beginning to get to know each other."

They all received preparatory briefing notes prior to meeting up to help them with the interview. "It was a 'Guide to Interviewing 101', including the themes and the questions they could ask. So they all came prepared to give it a go, and happily, everyone clicked. Each interview lasted between one-and-a-half to two-and-a-half hours. Each interview had its own life cycle, and you could tell when it was going to end."

At the end Donaghey also did a follow-up phone interview. "I asked them how the process had been, plus any particular learnings or 'aha' moments they'd had. I got a lot of positive feedback about how appreciative they were to be involved, and many said they'd learnt interesting aspects about themselves along the way."

The participants also mentioned the novelty of being part of the research, says Donaghey.

"Everyone remarked on the fact that they

would never have had the opportunity to have such a conversation normally. It's quite a personal topic, and something you wouldn't generally get to talk about with an older person. The idea of talking to an older person who has been through something similar to you is quite powerful. You

just need a common thread, that's the important thing that binds each person, and once you've established that you can apply it to almost anything."

According to Donaghey, that's the exciting part about this research. Having determined that the methodology can provide interesting and useful results, she says that it could work equally as well for other areas of study. "I think you can apply it to anything, it doesn't need to have a homosexual theme."

As for the actual experiences that emerged out of the interviews, it wasn't always what Donaghey had anticipated. "I must admit, although I started with a reasonably open mind, I thought there'd be marked differences in the lives and experiences of two people from different generations. One of the obvious reasons for that is the passing of the Homosexual Law Reform Act in 1986. I was interviewing people for whom being in a relationship with another woman, or being out as a lesbian, wasn't accepted by society. It wasn't illegal as it was for men, but it wasn't accepted, and it wasn't discussed. Some women even had shock therapy aversion treatment and that sort of thing to try and change them, which is incredibly sad.

"Whereas the younger generation had no experience of that, no experience of the hardships, what it really took to remain true to yourself. I expected that to come through quite sharply, the differences in terms of their lived experiences. And in fact it didn't as much as I thought it would."

For Donaghey, one of the main outcomes from the study is that the similarity between these women from different generations was greater than the differences. "Quite frequently they remarked on how similar their lives were, particularly the coming-out story. Again I thought that for the younger lesbians, it would be easier. But their coming-out stories were equally challenging; talking to their families, partners if they had them, the whole school experience. There are some really quite heart-rending stories on both sides of the age divide."

She says the coming-out stories were important to many of the women regardless of age. "It was interesting because it wasn't on the list of themes, and it was deliberately kept out, to see where and how it would come up. But inevitably people talked about it at different stages through the interview. Most of those coming-out stories were quite challenging, difficult, and in some cases traumatic, so that was quite strongly represented.

"It wasn't necessarily due to upbringing, or living in a rural versus urban environment. I had someone who grew up on a farm, and coming out was difficult for her, and then somebody from an urban middle-class professional background for whom it was equally difficult. There were only a couple of women who said it wasn't that difficult."

The differences in the stories between the age groups tended to be around how long it had taken them to decide to come out as a lesbian.

Talking to an older person who has been through something similar to you is quite powerful.



Two of Donaghey's participants, Fran Marno and Jana Allen talk in front of the camera.

"Most of the older women had come out in their 40s and by then had married and had kids, although they had always known that it wasn't what they wanted," says Donaghey. "The younger women didn't feel the need to do that, although some of them had had boyfriends."

But despite the difficulties they had experienced during their lives – or perhaps because of it – Donaghey says they all had a strong sense of pride in being a lesbian. "I guess it could be true of any minority group, but the women's sense of who they are, and their pride in who they are, was quite strongly felt. There was a question at the end, 'What other learnings would you share with other lesbian women?' and a lot of them talked about being true to who you are, and being proud of who you are."

Donaghey is already looking into other ways of analysing the huge amount of data she has gathered to add to the research. "Obviously there is the thematic analysis, but there are also different ways to analyse the dialogue, which I'm just getting to grips with. Then there is a more structured analysis, which is looking at what people said in terms of structuring the conversation, how it started, where it led;

whether people talked at length, instead of short interchanges. This would all add to the final analysis of the interviews."

Donaghey hasn't been able to find any other research that involves the intergenerational approach to interviewing, and it makes for a powerful piece of new research. "It's surprising that it works, really, it is quite unusual," she says. "But it's so endlessly fascinating, because it's people's stories, and who wouldn't be interested in learning more? There's a certain sense of achievement to have brought it all together."

Aside from the journal papers and conference presentations that she has already done on the research, Donaghey is also planning to use the footage from the interviews to create a documentary-style film. "I would like to allow everyone to learn more about our lives in a way that's not sensational. What I would ultimately like to achieve is to normalise everything so you're not immediately given a label. I'm sure Louisa Wall doesn't want to be known as the lesbian MP, and I don't want to be known as the lesbian Senior Lecturer here – why would I? The only way you can do that is with information and education, which is what I'm hoping to do." **a**



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Rising waters

Determining how rising sea levels might affect our drinking water has been the focus of on-going research by Civil Engineering Senior Lecturer Greg De Costa.

Sea level rise is increasingly an issue around the world, especially in nations like New Zealand where coastlines are so extensive. Civil Engineering Senior Lecturer Gregory De Costa has spent the last six years looking at just how much of a problem it could become. "Due to climate change we have either sea level rise or sea level drop, depending on the situation," says De Costa. "We also have changing weather patterns, and more extreme weather events. My interest is in our water, more specifically groundwater in coastal zones and how these changing weather patterns and rising sea levels affect our water resources, through both surface and groundwater."

This mix of sea level rise and extreme weather could mean the water we drink becomes contaminated with sea water because of low lying pumping stations in coastal zones, says De Costa. "In coastal zones, groundwater aquifers are connected to the oceans, and the quality of the groundwater is maintained by the pressure exerted. The groundwater flows down a hill

to the ocean, the sea water pushes up, and because of that balance the sea water can't get up higher. But because of climate change, rising sea levels are pushing the sea water up into the groundwater. We live in coastal zones, so much of the pumping of groundwater occurs by the ocean. Because we pump water that close to the ocean, increasingly the sea water is coming inside, and the quality of the aquifer is being damaged. We call it salinity intrusion, because it's essentially the sea water coming in."

De Costa's research is an international collaborative project, with funding from the Asia Pacific Network for Global Change Research (APN-GCR). "We have been working together for six to seven years, and have been funded by the same group for that time. Everyone in the group is a civil engineer, and we are all at different



institutions, including people from India, Japan, Sri Lanka, Indonesia, Australia as well as here in New Zealand. We are all climate change related researchers, but each one of us has our own expertise, so it is easier to get better results."

The original project started with salinity intrusion and the effect of pumping groundwater and how we could better manage groundwater, says De Costa. "It's gradually evolved into sea level rise and its affect, and then gradually evolved into loss of land."

Having access to the range of international expertise in the group is part of the reason it's been so successful, says De Costa. His own area of expertise is groundwater, or hydrology. "I do my part, they do their part, and then we can compare our results. For example, with sea level rise, how much is it happening around the world? I'm not the expert in that area, but our Japanese collaborator has created a model that can forecast different locations and how much it will rise, which we can feed into our research here in New Zealand."

"The extreme nature of the event is reducing our potential to maximise the benefit of the water."

De Costa's original work on sea level rise was based around Petone in Wellington, where he was living until a year ago. "In that case we had the loss of land as well," he says. "We looked at the expected sea level rise and the extreme climate events that could occur in that area. We were able to plot out the area of land that would get inundated, and how much would get inundated for particular scenarios based on different sea level rise data and extreme weather event situations."

Because Petone is on a low lying section of coastal land, De Costa says that if certain conditions were to occur in the area, Petone would be severely affected by flooding. "We were able to use the model to predict which situations might create a surge of water on particular days. If pumping volumes and capacities are known, then in inundated areas, the manner in which they would be inundated will be known. We were looking at the worst-case scenario, which was a combination of a few things, including the sea level going up a little bit, and then a storm surge that causes the waves to start coming in, and then how much water will go where. If it's only

sea level rise, it will go into certain areas. But the moment you get the storm surge, it goes higher."

Being able to predict possible flooding in areas like Petone is not the only benefit of this research. Changing weather patterns mean that our systems of collecting water may need to be updated, and De Costa says they can model areas that might be most affected. "Because of climate change, even though we may get the same amount of water over the year, this water is coming in a different type of weather. Generally it comes slowly, it seeps into the ground, it gets into the groundwater, and we have a greater benefit. But if 2000mm of water usually comes over one year, and then suddenly we're having this extreme event with 300mm falling at once, the result is that we're unable to collect all the water, and it all just flows into the sea, or causes floods. The extreme nature of the event is reducing our potential to maximise the benefit of the water. When it starts pushing to the ends, if it's in the ground for a long time, or flooding for a long time, the effects are greater."

Local and regional councils already have the information they need to determine the potential effects. "New Zealand councils all have the GIS information, they have the groundwater levels, the water table, so we are able to use that information and then forecast from there. And now new technologies are emerging through satellite imaging, so we can find out exactly where the water is."

De Costa and his international team are currently in the first year of a two-year project, with workshops held in January for those involved in the collaboration. "The funding agency requires that the findings are disseminated to the policy makers and that policy makers should be part of the project. It's a requirement that we have workshops in the different countries, so we can invite the related policy makers, to keep them informed on this type of thing, and what can be done to mitigate any consequence."

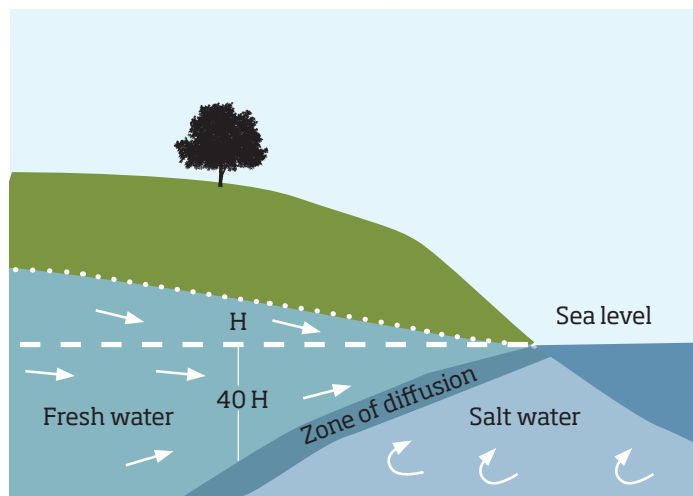
They are all keen to ensure their work is used by governments to make changes that will protect the population, says De Costa. "Once we have predicted what will happen, we can then plan for potential problems and be prepared to handle the situation. If we make changes now, we can mitigate the negative ramifications of a particular situation."

De Costa says the solution in many cases is fairly simple – at least in terms of protecting our water. "All we need to do is manage it properly. Just because we live on the coast, you can pump a little bit upstream. Pumping stations that are too low could be moved. Or there could be cut off points; if the water drops below a certain point, you stop pumping."

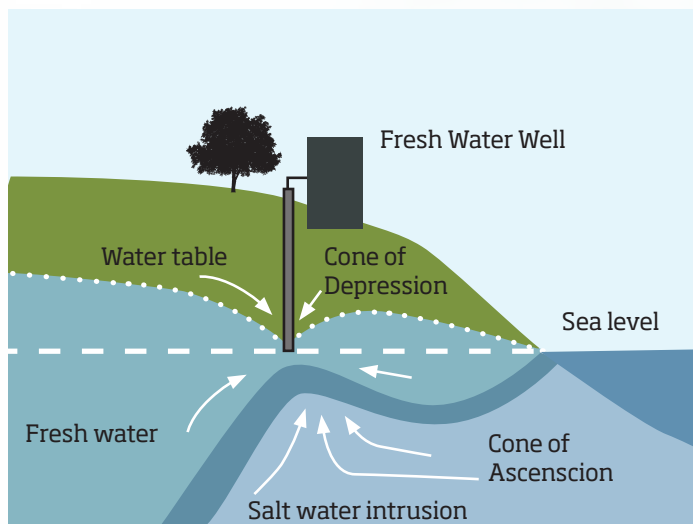
"If we make changes now, we can mitigate the negative ramifications of a particular situation."

This kind of research will impact on millions of people who live in coastal zones around the world, says De Costa. "Around the world, the majority of the population lives in coastal zones. Added to this, much of the new industry and development is taking place in the coastal zones, so they need more and more water. On the other hand, the ability to supply good quality water is reducing, because we have to use the resources we have. In addition to this we see other changes in the climate and sea level rise, which will reduce the quality of the water we have even further. When the population is increasing, we need more water, but we're also experiencing the problem of decreasing quality of water due to climate change."

He says it's a complex process, because he needs a lot of information to get results, and it's quite high-tech. "If I can simplify it, then it can be done more easily by many countries. My aim is to create something where you can get results with minimum information. It will make it into a process that helps more people in the long run, and that's what we want to do." **a**



The natural interaction between the fresh or ground water and the salt water in coastal zones.



Once a well or pump is placed in the area, or other changes like rising sea levels take place, salinity or salt water intrusion becomes a problem.

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A family affair

Associate Professor Dianne Roy has involved her students in longitudinal research with stroke survivors and their families.

It's a tough time for families when a loved one has a stroke. It's often unexpected, it can be debilitating for the stroke survivor, and it changes the lives of everyone involved, including the family members who become part of the caring solution.

Department of Nursing Associate Professor Dianne Roy has worked with families in this situation for many years, and when her clinical colleagues at Waitakere Hospital came to her with the idea for a study, she was keen to lead the research. "The Stroke Family Whanau Project is a collaboration between researchers in the Department of Nursing and our clinical colleagues at the Waitemata District Health Board," she says. "They came up with the question, 'Why is it that some families do better than others after a stroke? Why is it that in some families, the stroke survivor moves on and comes to terms with the fact they've had a stroke and the changes in their life, whatever that may mean, but the family often gets stuck?'"

The project started with Phase One in 2010, which involved a survey around the education needs of families post-stroke. "We

interviewed family members and health professionals about their experiences and their views," says Roy. "We were trying to identify the good aspects, and what was limited in terms of their education and knowledge needs."

They are now in the middle of Phase Two, a four-year phenomenological study, working with five different families with multiple members from each family. "We're just following their experiences of

becoming and being stroke families," says Roy. "We've just finished collecting data at the two-year point, having interviewed all the participants at six weeks, three months, 12 months, 18 months, and now two years."

One of the key points of difference with this research is that it's not just about the primary caregiver; they've incorporated more of the family into the study. "Most of the research that purports to look at family issues in relation to supporting people following a stroke, when you actually drill down and take a look, it actually talks about the primary caregiver," says Roy. "It's a really important role, and that person is pivotal in the post-stroke recovery rehabilitation, but we work from the premise, and we know from clinical practice, that it's not only the primary caregiver that it impacts on - there's the whole ripple effect on the family. But there is very little research that we have been able to find that looks at the experience and the needs of the family beyond the primary caregiver."

The project has six master's students working on Phase Two, and recently two third-year nursing students, Emma Dooley and Jane Barrett, were recruited onto the team. For five weeks they worked on a systematic literature review on research of families dealing with stroke.

Dooley and Barrett say they both leapt at the chance to participate in the project. Earlier in the year they'd been involved in the Health and Social Development in West Auckland Forum, presenting the results of student focus groups to health professionals at the event. "We found that a lot of the students were worried about the workforce situation, particularly for nursing and osteopathy," says Dooley. "Some of that was about changes in the health system, centralisation of healthcare, what it was going to be like working in the health system in West Auckland and what is it like for the population who are using those services. A lot of students were also aware that the health workforce in West Auckland doesn't mirror the ethnic diversity of the population they're looking after."

Roy was impressed with the presentation the students had put together. "It was very well received by the audience, who were a range of health and social practitioners across multiple sectors. They were blown away, and very

 "We're just following their experiences of becoming and being stroke families."



"There is very little research that looks at the experience and the needs of the family beyond the primary caregiver."

impressed by the presentation, which was backed up by some really good demographic data."

Having proved their capabilities through the Forum, Roy felt confident the two students could do the systematic review that was required. "We'd done a literature review before, but this was the first time we'd done a comprehensive systematic review," says Roy.

"The literature search was done based on key words, which included 'family' and 'caregiver' among many. What came through was that although the abstract might say family, it's not until we actually got into the articles that we could ascertain whether the primary caregiver was the participant, or if it went beyond the primary caregiver."

The students were supervised by Dr Victoria Andersen – a clinical research assistant for the research project who also works for the Waitemata DHB – but did the majority of the work themselves. "We had to do initial inclusion and exclusion criteria," says Dooley. "To be included in the articles that we reviewed, articles needed to speak about family beyond the primary caregiver role. In our first week we went through 1500 articles where we looked at the title and abstract and decided if they were 'yes', 'no' or 'maybe'. We had to extend that to 'yes', 'not likely', 'no', 'maybe' and 'more than maybe'. Because we're new to it, it was hard to be the one to say definitely either way."

Roy says that the other important aspect for the systematic review was the length of time that other research focused on the families. "We believe there is very little research that goes to twelve months, let alone two years and beyond," says Roy. "The work that Jane and Emma did has provided the in-depth literature review to support that, and really drill down to identify what is and isn't known from a research perspective about the issues for the wider family. Their systematic review confirmed that there is only limited research

What is a stroke?

"A stroke is a cerebral vascular injury or accident," says nursing student Emma Dooley. "It's a very global term than incorporates a myriad of different types, and it leads to a focal brain injury. It usually results from either a bleed in the brain or a clot and it affects certain parts of motor or sensory function. Where in the brain the bleed is, dictates how that person is affected. It can range in severity from death to mild after-effects." Dianne Roy adds: "There is also a huge variation in age. Although most strokes occur in people who are older than 65, there is a trend in some groups for strokes to occur at younger ages. Within New Zealand there is increased incidence of strokes in younger people in Pacific and Māori populations."



Associate Professor
Dianne Roy with Dr Victoria
Andersen.

that explores the experience of family members beyond the spouse or primary carer."

The next part of the project, Phase Three, is starting in 2014, with help from funding by the Faculty of Social and Health Sciences Research Fund. It's an intervention study running over an 18-month period, and will involve Waitakere and North Shore Hospitals. "It builds on our findings from Phases One and Two," says Roy. "We're looking at developing, implementing and evaluating a Stroke Navigator role. The first part of Phase Three would be a series of focus groups with various stakeholders, clinicians, and some of the family members from Phase Two, to discuss what the Stroke Navigator might do."

Once it is clearly defined, they plan to pilot the role with a small group of families. "Our plan is for the Stroke Navigator to work with the families for the first 12 months - from when the family member is first admitted to hospital, through the hospital rehabilitation phases, and out into the community, working on individual family needs within that framework."

Meanwhile, the first articles from the longitudinal study - Phase Two - have been submitted for publication. "The sort of things that come from a phenomenological study like this aren't earth-shaking results, they're more about increasing understanding of what it means for these families, and how nurses and other health professionals might work better in supporting families," says Roy. "For example, all the health professionals involved saying the same thing. The families talk about mixed messages - one person tells them one thing, and then another person tells them something else. It might not seem entirely contradictory to us, but because a family isn't used to dealing with the health system, they sound very different."

Roy says that her ultimate goal is to ensure that families receive the kind of care that means they can more easily care for and support the stroke survivor and each other as they adjust to life after a stroke. "In terms of the quality of care that is provided to stroke families, it's those small but significant things that have the potential to make a big change in the lives of the families of stroke survivors. It's about individual practitioners thinking differently, and working together to do things differently within their existing parameters. It's about changing that mindset." 



Nursing students Jane Barrett and Emma Dooley.



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Stroke in New Zealand



- ✚ Each year, approximately 9,000 New Zealanders experience a stroke; one third are fatal.
- ✚ It's estimated there are 60,000 stroke survivors in New Zealand, many of whom live with impairment and need significant daily support.
- ✚ Stroke can have negative consequences on the health, wellbeing and quality of life of both the stroke survivor and their extended family.
- ✚ The care and support required are variable, can be complex and are dependent on the severity, origin and location of the cerebral trauma, the time-period following the stroke, as well as socioeconomic variables and ethnicity.
- ✚ Fragmentation of services and unfamiliarity with the health system can be barriers to access of services for many families, confounded by financial, communication and emotional barriers of fear and distrust, particularly in low income families.
- ✚ The effects of the stroke can result in the carer becoming the 'voice' of the stroke survivor and the inevitable transformation into someone who has to co-ordinate management and support.



To have a family living in the finished home will give us a different kind of data.

Warmer, drier homes

A new research house is being built at Unitec's Northern campus, with the intention of taking the on-going whole-of-house research project to the next level.

For the last few years, the whole-of-house research project has been using a control and a test house on the Mt Albert campus to test various building products for their effectiveness in an innovative research environment.

Last year they tested an internal wrap product from building solutions company ProClima, which has led to this year's extension of the project. The current house has been built using several ProClima products – an external wrap and roof underlay as well as the previously studied internal wrap product – and will be sold and then monitored with a family living inside. "It works for us on multiple levels," says Building Technology Lecturer Robert Tait.

"Our students are building the house, so they get exposure to the latest products. Then we get to test the products themselves to see if they really do create a higher level of airtightness and insulation in the house, and if the final product meets standards for a Passive House, which is an ultra-low energy house that requires very little energy for heating or cooling."

ProClima is a German company that opened its doors in New Zealand in 2008, with the aim of improving New Zealand's housing stock. Tait says last year's project showed positive results for ProClima's products and they had been keen to extend the research. "It didn't add any extra

time into the build, which we tested as part of the process. We found that the wrap product positively affected the warmth and dryness of the house. Those are big issues with our housing stock in New Zealand, so we were pleased with the results."

According to Thomas van Raamsdonk, General Manager of ProClima New Zealand, it's not just about building warmer houses – we also have ongoing health issues that could be easily fixed. "For example, we believe that the high levels of asthma in New Zealand can be linked back to the buildings in which mould, damp and air penetrate the building envelope," he says. "We can build homes that have a high level of airtightness and insulation, and will therefore remain warm and dry no matter the temperature or weather outside."

Tait has been working on the whole-of-house project for the last few years, and is pleased they will now be getting some research data on a house with occupants. "It's been fantastic having two houses on the Mt Albert campus to test these products and ideas, and they have given us a huge amount of valuable information. But to have a family living in the finished home will give us a different kind of data on how these products function."

The research will continue throughout 2014, once the house is finished and sold.

Landscape in New Zealand film

A trip to the US on a Fulbright Scholarship has allowed Performing and Screen Arts Senior Lecturer Scott Wilson to see New Zealand film from another perspective. He tells us about his new book and the premise behind it.

How do international film audiences really see and understand New Zealand? That's the question Performing and Screen Arts Senior Lecturer Scott Wilson is planning to explore in his latest book for New York publisher Bloomsbury. "I planned to go to the US on my Fulbright Scholarship last year and spend time researching and exploring the international reception of New Zealand cinema in a general sense," he says. "But while I was working in the Library of Congress and teaching my course at Georgetown University, what emerged was that international audiences invariably come to their experiences of New Zealand cinema through its representations of landscape.

"So the project became an exploration into the reasons why New Zealand cinema and art represents the landscape as it does. I was in the States, looking back at New Zealand and asking, 'How do international audiences understand New Zealand?' and 'How does New Zealand come to understand itself?' and the idea for the book is that it's actually the same kind of process."

From there he began looking at New Zealand films to see how landscape was represented, and why. "*The Piano* is a great example, or *In my Father's Den*, and even *The Hobbit* and *The Lord of the Rings*, although they aren't



photo: *In My Father's Den* - image courtesy of The New Zealand Film Commission.

exactly New Zealand films. They find a way of representing the country in a particular way, and that representation of landscape becomes the way people understand New Zealand through New Zealand cinema."

Wilson believes this view of New Zealand stems from our settler origins. As he searched New Zealand's history he discovered that when the British colonial empire was spreading around the globe, a particular method for viewing nature and art was prominent. "In 16th and 17th Century England, in landscape architecture and then into painting, the notion of the picturesque started emerging. The picturesque was a way of understanding nature – it means to literally confront nature as if it was a picture."

The picturesque emerged out of the concept of the sublime, says Wilson. "On the one hand there is the sublime, which is where nature is so overwhelming you simply can't respond, it's too much. Which is great, but when you're designing a garden, you don't want your guests to be rendered speechless. So the notion of the pictureque emerged."

This was integral to New Zealand's view of landscape. "The picturesque was a way of considering the relationship of the people to the landscape," says Wilson. "Importantly for settlement, one of the ways in which they represented the land was by not having any people in it. You could have a ploughed field for example, but you couldn't show the people ploughing

because they ruined the composition of the picture. One of the things my book is looking at is the movement of the picturesque from the Northern to the Southern Hemisphere."

When people in England saw paintings of New Zealand, they would see empty lands,

International audiences invariably come to their experiences of New Zealand cinema through its representations of landscape.

uncluttered by people, says Wilson. "The people back home thought there was no one here, and they were encouraged to make the journey. But when they arrived, they discovered there were actually quite a few people here who had their own way of relating to the land."

Settlers arrived in New Zealand primed to have a certain kind of experience, and then discovered it wasn't going to be that easy. "The settlers to Wellington were promised this wonderful land, and they washed up in Petone, which at the time was a flood plain," says Wilson. "They had to carve Wellington out of the side of a mountain, so they had a very different experience."

At the same time as the settler movement to the South Pacific, landscape architecture and land surveying were becoming more important, and new technology was being developed to look at the land. "One piece of technology that came out with the surveyors was the theodolite, a predecessor to the modern device on the tripod that's used at the side of the road to measure distance," says Wilson.

He says this small piece of technology affected the way people viewed the land when they arrived in New Zealand. "It's a lens that you look down, and through it you have a particular view of the landscape. It's a technology that produces an image, and it's an image that's linked to a way of understanding the land. So you've got a technology, a view and a way of interpreting that view. The theodolite breaks the landscape into chunks so that those chunks can be consumed. And the eye of the cinematographer is breaking the landscape into chunks so that those chunks can be consumed."

This idea has become one of the themes of his book, he says. "On the one hand the surveyor is breaking the land up so it can be settled, or farmed or planted or cleared, on the other hand the cinematographer is breaking up the land so it can become the frame in which the action occurs, but the end result is still consumption. That's the link. It's a way of looking that becomes the dominant way of understanding the landscape."

This settler view also led to the idea that the landscape needed to be broken or tamed to make it in New Zealand. Much of our early literature included this idea – think *Man Alone* – and many of our early films involved a battle against the landscape, which was personified as an ominous physical force. "You look at the New Zealand films of the 70s and 80s, it's about men having problems with what it means to be a man in this country where the landscape doesn't want them. They're pathologising the landscape. Films like *Sleeping Dogs*, *Goodbye Pork Pie*, *Bad Blood*, even up into *The Piano*. Out of the rhetoric of 'It's us versus the wilderness', you can see there is a certain validity to that experience."



photo: In My Father's Den - image courtesy of The New Zealand Film Commission.

Wilson says in some ways it's hardly surprising this settler viewpoint has been an ongoing theme in our literature, film and art. "The settler experience was based on disappointment and ambivalence. Settlement occurs armed with a whole variety of ways of understanding the land based on hundreds of years of experience, and they come to a country that is already settled quite successfully, and that doesn't immediately work the way the ideas of settlement led them to believe it would."

More recent New Zealand films are no longer a male-focused battle against the landscape, but they continue to represent the landscape in a certain way, says Wilson. "If you look at *Lord of the Rings*, those guys walked for what seemed like months through a landscape where there is nobody. That landscape has been settled, it's been broken, it's been cleared, but there is no one there. It's a return to the picturesque view."

There is a parallel between the experience of the early settlers to New Zealand, and the international viewers of New Zealand films today. "There is a relationship between the kinds of encounter one is set up to experience through cinema, and the kind of encounter one has. You just have to look at the development of the spectacular eye in Peter Jackson's work. In *Heavenly Creatures* you get the beautiful Christchurch landscape, and there are a couple of digital landscapes imposed as well. Then in *The Lord*

of the Rings and *The Hobbit* you get increasingly artificial landscapes. The spectacular landscape isn't spectacular enough for the spectacular cinema."

Technology does more than just represent, it's not innocent in its representation of the land.

This ability to upgrade the landscape for cinema is because of advances in technology, says Wilson. "Technology does more than just represent, it's not innocent in its representation of the land. One of the things it does is that it constructs, in advance, the terms by which we will understand our encounter. By that I mean there are a huge number of tourists who have arrived in New Zealand expecting to find 'Lord of the Rings Land', and have been sorely disappointed, because it's not like that."

The way New Zealanders view themselves is an important part of the research, and it affects any possible definition of a national cinema, says Wilson. "I'm coming very close to saying that we don't have a national cinema, that we have a settler cinema instead. And if we have a settler cinema – which means that we are still looking at the landscape with the gaze that came out with the European settlers – what does that mean for the other populations who are trying to be represented inside that?"

If he's right, this concept of a settler cinema has repercussions on the way filmmakers represent New Zealand, both to other New Zealanders, and to the rest of the world. "We continue to represent ourselves to ourselves as though we were still outsiders to ourselves. The idea is that the settler eye comes from somewhere else, it's not from here, it's not an indigenous eye, it's a settler eye. But if we continue to use it to represent ourselves, then we're looking at ourselves as though we were foreign to this place."

But it's not a conscious decision says Wilson. "It's not a view that we choose, it's one that becomes a default. In cinema it's one that we're moving away from somewhat, but you look at the Mainland Cheese ads, you look at the New Zealand Rail ads; there are rolling landscapes, there's nobody there, it's full of this gorgeous landscape, the mist is settling in. It's the same thing."

Part of the problem with this representation of New Zealand through its landscape is that it's how international audiences have come to understand our films, says Wilson. "Is it a necessity in New Zealand, when a small filmmaker in New Zealand wants to make a film that will be understood by international audiences? Yes. Of course. And again, I'm sure that this doesn't happen at the level of conscious discourse. At least not all the time; I'm sure there are moments when people say, 'How are we going to make it look?', and they say 'Let's make it look like something the American audience will like, or the American distributor will understand'."

Wilson says the international audience, particularly the American audience, view films in a certain way, so it's also important for filmmakers to fall in line with that if they want international sales. "The American audience has been trained to understand landscape in a particular way, in terms of how it frames character and action, or narrative function. In *Thelma and Louise* for example, when they drive through Monument Valley, they do that specifically to poke their tongues out at the American Western, where previously it was white guys on horses, now it's two chicks in a car. The other way of viewing it is when a shot of the White House means you're in DC, and a shot of the Chrysler Building means you're in New York. It's shorthand for place. It has a big impact on how we view landscape, so being known for our landscape is quite significant."

The focus for his book is to develop a knowledge base around national cinemas, particularly in countries like New Zealand that have a settler history. "If you live in a country whose dominant discourse has emerged out of a cross-cultural mix or conflict, then this provides you with a way of thinking more critically about what is going on, what is being represented by the people who are doing the representing and what they stand to gain from it. We are starting to get a lot of books internationally about landscape and film, like the American West and the Western, for example, and a lot of books about settlement and cinema, but nothing that puts those two together – settlement and the representation of land – in the development of a national identity, which is where I'm heading. It's very exciting." **a**

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Caring for under-twos

Early Childhood Education Senior Lecturer Sophie Alcock has been researching a centre where staff have found other creative ways to fulfil children's needs for strong attachment figures.

According to Senior Lecturer Sophie Alcock, many childcare centres are increasingly being encouraged to appoint one main caregiver to each baby or young child. "It's related to ideas around attachment theory. Very young children need to feel that there's a secure base, usually the mother, but other people too, where they feel very safe, and they can develop a sense of belonging. Especially for children under two, this is very important."

So when an early childhood centre decides to move away from primary caregiving methods for under twos, there is a lot of pressure for that centre to fall back into line. "The head teacher of this centre had talked about the pressure she was feeling around primary caregiving," says Alcock. "I knew this was a very good centre, so I went along and talked to them. They wanted to participate in some research, and I decided to do it with them."

The centre has a structure based around environmental sustainability. "They're doing it from a bigger perspective. They want to develop an ethos of care that is more collective than just individual adult-child one-on-one. It's quite interesting to see how they've carried over their philosophies of caring for the environment to caring for people," she says. "The environment doesn't individualise, so they try to extend this philosophy to their relationships with people. They want the children to develop relationships with each other and a variety of staff members. A greater range of secure attachments makes for a more sustainable and therefore secure environment for children."

Alcock had previously researched play in children aged six months to five years old. "I did ethnographic research in three different childcare centres. I was looking at playful communication between children. How children feel confident enough to go out in the world to explore and play. A distressed child won't do that, a distressed child will hold onto themselves and stay inwardly focused. Children need the security that comes with attachment to be able to explore, play and relax."

Because of this earlier research, Alcock was aware of how important secure attachments are for this age group. "I didn't know what I would find, but I knew that it was incredibly important for babies to feel secure. So I was looking at how security manifests itself for these children, or doesn't, in an environment where there wasn't one primary adult caregiver."

The research was based in the under-twos section of the centre, and mainly focused on five of the children. Alcock spent many hours at the centre watching how the children reacted to different situations. "I was trying to see from the perspective of the child what was going on. I was looking at how happy and content they seemed to feel in the centre, how they related

to each other and to things," she says. "It was an ethnographic study, I was a participant observer. If the children approached me, I had to respond to them. But I didn't initiate interactions."

Alcock found there were several factors that influenced the success of the centre. Firstly, the quality of the staff, how well they interacted, and the length of time they had been at the centre were all important. "They've had the same three teachers for the last 12 years. This has resulted in a remarkably cohesive and secure environment. There was a lot of consistency for the children. The teachers also seemed to be very good at picking up on the children's cycles. Who needed to eat more, or who needed calmer environments or needed to sleep earlier."

Children need the security that comes with attachment to be able to explore.

The way the teachers interacted with the children was significant. "These teachers were originally Montessori, but they don't implement a rigid Montessori approach. However they have a respect for finishing things, and caring for stuff in the centre. For example, when the finger painting moved to the window, the teacher just moved the carpet back and let them go with it. I was thinking, 'oh no', but it was very calm, it wasn't chaotic."

There was also the way they promoted relationships within the centre. "One of the things they're concentrating on is encouraging the child-to-child relationships in this centre," says Alcock. "They deliberately cultivate that, and it's working for them. Children are often drawn to other children more than adults and they often like children who are a little bit younger. The children in this centre have strong relationships to each other."

And it's not just the children. "They encourage parental involvement too. There was a heck of a lot of communication with the families, more than I expected. They also don't buy new toys, they get the parents to bring old ones from home, they recycle them, rather than buying new things. There's a bit of pressure to buy new things for childcare centres, but this one has a recycling process going on."

There is also a focus on the local community. "The other strong theme at the centre is community; the family community and the local community. For example they go on outings a lot. They always take one or two of the under-two children when they go

out with the over-two children. They go to Oakley creek, or the local shops or whatever, and it helps the children get a sense of their place in the local area."

But according to Alcock, the main reason the children are happy and settled in their environment, despite the lack of a primary caregiver, was the strong philosophy the centre was founded on. "Before I went into the centre, I didn't realise that environmental sustainability was such a big thing for them. It's working because of the philosophy, that's what I've learned. The owner, who is the head teacher and manager, drives it and she's very committed. It's important in holding everything together so these children do feel they are cared for and loved," she says.

The conclusions that Alcock made based on the care at the centre are very different to the theories of care that are common in the early childhood education sector. "The wider ramifications are in two areas. One is the way attachment theory is incorporated into centres, not just with primary caregiving, and the other is environmental sustainability, which was not intended to be the main focus of this research," she says. "It shows a real logic for not following a one-on-one model, which perpetuates a really individualistic view of how we are in the world. We can't afford to be like that in this world, we have to be more community minded, and more connected to other people and to the environment."

And while the centre used the central theme of environmental sustainability to pull everything together, Alcock says another central philosophy could be used in the same way to encourage relationship-building among children and the teachers in an early childhood centre. "This model enables children to represent ideas and feelings in ways other than words. It's about a philosophy,

Children are often drawn to other children more than adults.

about having something that creates that sense of community. I think the same result could be achieved with a centre based around art or music. It creates a community feeling, it's emotional, and it's about a thinking and feeling process."

But that doesn't mean we can throw out the books on attachment theory, adds Alcock. "Attachment theory is still important, but at this centre, they're providing that attachment in a different way. It doesn't just have to be one person; it's more community based, and that community is the other children in the centre and their parents, as well as the teachers."

It will also take further research to convince people in the industry that this is a good alternative model. "This is not very popular; if I say to early childhood education under-twos people, 'You don't need to have primary caregiving', their reaction is, 'What?!' The centre was feeling the pressure to conform for a while - although not so much now, because they know they're a good centre."

What this all means is that done the right way, with the right central theme and the right teachers, this kind of model can work for the children. "But I wouldn't go out to all centres and say you don't need primary caregiving. I'd say look at the ways you provide consistent, warm, care environments for all young children. It's the way you do it; I think you can do it in different ways." **a**



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Protecting our wilderness

Senior Lecturer Mel Galbraith was a founding member of the conservation group Supporters of Tiritiri Matangi. This year they celebrate 25 years.

For the last twenty five years, supporters of the Tiritiri Matangi Island wildlife sanctuary, located 30km north east of Auckland off the Whangaparaoa Peninsula, have been working to make the conservation project a success. Natural Sciences Senior Lecturer Mel Galbraith has been a part of the group since the beginning. "In 1983 I became involved in the restoration of the island. The community group, the Supporters of Tiritiri Matangi, officially began in 1988, and I was the foundation secretary. It's not so unusual now, but when it started the idea that the public was going to restore this island was very controversial," he says.

The 220-hectare island had been used for farming for more than 120 years and was stripped of most of its native bush. Between 1984 and 1994 volunteers planted 300,000 trees on the island and it is now 60 per cent forested. Mammalian pests were eradicated, and the island was populated with rare and endangered species of birds and lizards. "It was a restoration of what perhaps Auckland might have been like," says Galbraith. "It's an open sanctuary that offers an unsurpassed opportunity for conservation advocacy and education."

The island is managed by the Department of Conservation (DOC) in conjunction with the Supporters of Tiritiri Matangi.

"The supporters group was set up by enthusiasts, because as an incorporated society you have access to funding that government organisations like DOC don't have. All the funding has to be spent on the island, so we started with buying spades and a quad bike, and it's just become stronger and stronger."

Research on the island has been plentiful, including a recent special issue of the New Zealand Journal of Ecology, which was sponsored by the Supporters of Tiritiri Matangi. "I was guest editor for this issue," says Galbraith. "It's actually a significant research piece. The papers in this issue represent an overview of the last 30 years of research on the island, and will inform the next umpteen years of research as well."

The research includes species identification, counts of introduced species, plus work on vegetation and change. "The research is also about monitoring what happens after species are introduced to the island," says Galbraith. "In one of the first papers in the journal, it talks about how restoration projects have a duality. You've got this restoration of the environment, but parallel to it you have these incredible research opportunities, because they really are experiments. You might have expected outcomes, but there is no guaranteed end point. It makes for amazing research possibilities."

Bridging the gap

In just over four years, Professor Hossein Sarrafzadeh has turned computing at Unitec into a world-class department. But he's not finished yet.

When he moved to Unitec to lead the Computing Department in 2009, Professor Hossein Sarrafzadeh saw many opportunities. "It was a place where applied research was the focus, and it was a place where you could stay relevant to the industry. I've always had a close relationship with industry, and my research has always been applied; and Unitec had everything I was looking for. The department was fairly large, and it was a perfect place for me to apply my leadership experience."

Since then he's had many successes in his department, including the opening of New Zealand's first Cyber Security Research Centre in association with the National Institute of Information and Communications Technology (NICT), Japan's main research organisation. The department is also involved with the Delivery Centre in association with IBM and Concentrix, which was established on campus last year. "What attracts people here is the capability we have built over the last few years. We have created areas such as cyber security where there is no other option than Unitec. The best place for you to study cyber security in New Zealand is at Unitec. And the next focus will be to make Unitec a hub for business intelligence and data engineering, as it is for cyber security."

Unitec's relationship with IBM, and the new Delivery Centre on campus has had a big impact on the department, says Sarrafzadeh. "It's made us very attractive to industry for collaboration. I think IBM is a very appealing example and we get a lot of requests from partners wanting to do a similar thing. Of course, IBM is a priority for us, but it doesn't mean other people can't get involved."

Sarrafzadeh says the IBM relationship is an innovative example of how academia and industry can work well together with benefits to both sides. And the benefit to Unitec isn't just about the experience that students gain with an international organisation, or the range of scholarships now available. "Next semester we're going to have a course on software architecture, which will be taught by seven IBM architects. That will be a brilliant experience for our students that no other students in the world will have."

Tertiary institutions around New Zealand are attempting to address the well-documented gap between the skills students graduate with, and the skills that industry requires. "That gap has now been closed because of IBM, that's why our students are far more employable today than they were before IBM came on campus," says Sarrafzadeh.



photos: Simon Riera

"I think the new way of thinking at Unitec, where we don't want to sit still, we want to be moving forward fast, is refreshing."

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These are examples of the big wins for Sarrafzadeh's department, but there are other more intrinsic changes he has made to improve their performance. "I have focused on areas of computing that are of immediate and future need to the industry. I identified jobs for which we could prepare our students and in which we had the capability. Then I worked backwards from the jobs, to the skills needed, to the courses that we'd require for the students to achieve those skills to get those jobs."

It might sound simple, but it has taken the department four years to get to the level they are at now. "It wasn't easy, because to teach those skills you have to have people with skills in those areas. As we have grown in number and financial performance – our student numbers have gone from around 470 to close to 700 now – we have had the opportunity to hire new staff, and we have targeted staff with teaching skills in areas of need."

For Sarrafzadeh, an important part of their success has been his focus on research collaboration with industry partners like NICT and the National Institute of Water and Atmospheric Research (NIWA), meaning their research involves real-life data, and solves real problems. "With NIWA, we contacted them with a master's student, defined a project and two supervisors, and produced some results for them. They liked it, and they said we should do something else together. That has led to larger, more on-going research projects."

It's a vital part of the on-going expansion of the department and they've seen several external relationships develop into strong long-term ties. "Relationships develop very slowly at first, but once they reach a stage where both sides are happy that we can work well together and achieve results, then it moves fast. You always have to go through that initial proving stage. That is the moment we are waiting for; when they see that we really can help them solve their problems. Then it just snowballs."

This level of relationship-building with industry and other institutions is a path that is increasingly expected, he says. "I think the new way of thinking at Unitec, where we don't want to sit still, we want to be moving forward fast, is refreshing. It's what the demands of the digital era combined with the needs of the New Zealand knowledge economy require us to do, and the more we do, the more encouraged we are. All my staff are engaged, which is what you really need in a high-functioning team."

Sarrafzadeh's own research has been in the field of intelligent systems and he says one of

his strengths lies in his ability to understand intuitively the next research step for the future. "For example, I was doing work in computer vision, and also in machine translation. Teaching led to me developing intelligent tutoring systems for teaching students, but I always compared that to the way I was teaching, and I found that I was doing something different. The intelligent systems were missing emotions; the way we express emotions, and the way we read the emotion of others. That helped me move into the new area of emotion detection, or facial expression recognition and gesture recognition, as the difference was obvious when I looked at how I taught, and how the machines taught."

His ability to read the future direction in research is a skill he has also used for his department at Unitec. "I believe I understand the world of computing very well internationally, and to stay ahead I have to try to see three to four years ahead of time. To achieve this I do a lot of thinking and I communicate with industry, and with people I know, not just in New Zealand but in other countries," he says. "I go to conferences, but also I have extensive networks in industry, government and academia. For example with cyber security, I don't think there is a company in New Zealand in that area that the department doesn't have a link with or hasn't communicated with."

It doesn't stop there. "We work with people in Australia, people in Japan and in Canada. In fact I have a Dean of IT and Director of the Cyber Security Centre at the University of New Brunswick in Canada coming here for three months in December this year. He wants to spend time in the Cyber Security Research Centre here. There is also a professor from the University of Oklahoma coming to spend three months here later in the year to work on computational intelligence and data mining with my team."

Hossein says his plans for the Unitec Computing Department are still in progress. "I want to develop our international reputation to bring funding in and to become the best applied computing department in the country."

"To become the best, I believe you are only as good as your staff. I have many stars in the department, and we've achieved quite a bit, but we still have a long way to go. I have to make sure there are opportunities here that allow staff and students reach their highest potential. The department is a very vibrant environment; it's at the cutting edge of technology in specific areas. Our goals are clear. We know what we want, and we know where we want to be and we are steadily moving towards those goals." **a**



From top left: Sarrafzadeh talks at the opening of the Cyber Security Centre. Watching on as Unitec CE Rick Ede signs the agreement with NICT. Sarrafzadeh with the team from Unitec and NICT. In front of the Computing Department building. Talking with Unitec CE Rick Ede at a presentation.

Innovative quad bike

A new collaboration between Unitec and industry plans to design a quad bike that will be safer, more energy efficient and use a much cleaner fuel source.

Opposite page: Early designs from the UniQuad team show some of the challenges and innovation involved in the project.

Every year, 850 people are injured and five people die in quad bike accidents in New Zealand. It's a huge issue for the farming community, and one that is regularly debated in the media.

But a new research project led by Civil Engineering Associate Professor Jonathan Leaver aims to address these concerns, by not only creating a safer quad bike, but one that will boost New Zealand's energy self-sufficiency by using a much cleaner fuel source. "The best part of this research is that the UniQuad electric quad bike has the potential to save lives," says Leaver. "We expect the UniQuad to revolutionise user safety. Essentially we're taking the quad bike from the stone age to the space age."

The new quad bike will include a dynamic self-levelling suspension, independent hub drive electric motors, and be powered by a hydrogen fuel cell. "The bike is one element in a larger vision of energy independent farming," says Leaver. "As hydrogen fuel can be generated from onsite renewables the carbon footprint for fuel could be eliminated. Initially the cutting-edge componentry such as the hydrogen tank and fuel cell will be expensive. However costs are coming down rapidly."

As well as industry partners such as Hydrogen New Zealand, Callaghan Innovation, Landcorp and Astara, the project team includes students and staff at Unitec. Final year automotive engineering student Simon Hartley has been on the team since November 2013 and says it's a challenging and exciting project. "I've been in the automotive industry for 20 years, but this is the first time I've been able to do something like this. We're designing a prototype from the ground up, which is usually a 10-year task with 30 or more engineers, and we intend to have it finished within a year. It's monumental."

The team has started from scratch with the design, and intend to change the way people view the farm-based vehicles. "No one is really leading the innovation or reform of quad bike safety on farms," says Hartley. "There is an agreement that the current vehicles are dangerous, but the solutions that have been pushed forward, such as retrofitable rollover protection, are more of a Band-Aid."

Every year, 850 people are injured and five people die in quad bike accidents in New Zealand.

Part of the new design is a self-levelling suspension, which means the driver will be level, while the wheels adjust to the slope. The concept is based on the award-winning Tahr Quad design created by bike designer Nick Marks, who is also part of the design team. The self-levelling suspension will have applications across the entire quad bike fleet in New Zealand. "By making the vehicle level, we are changing the vehicle's centre of gravity, and making it more stable on the slope," says Hartley.

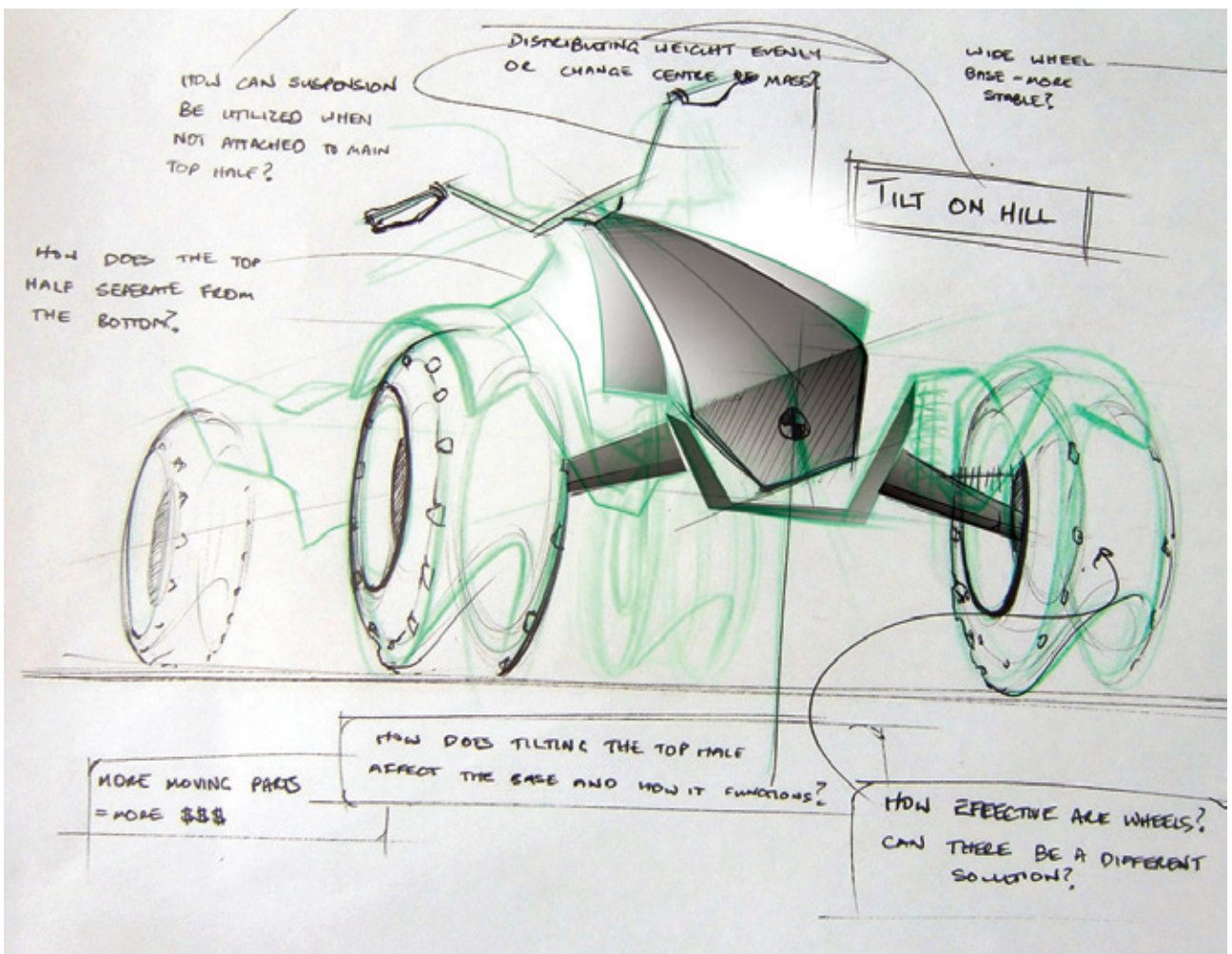
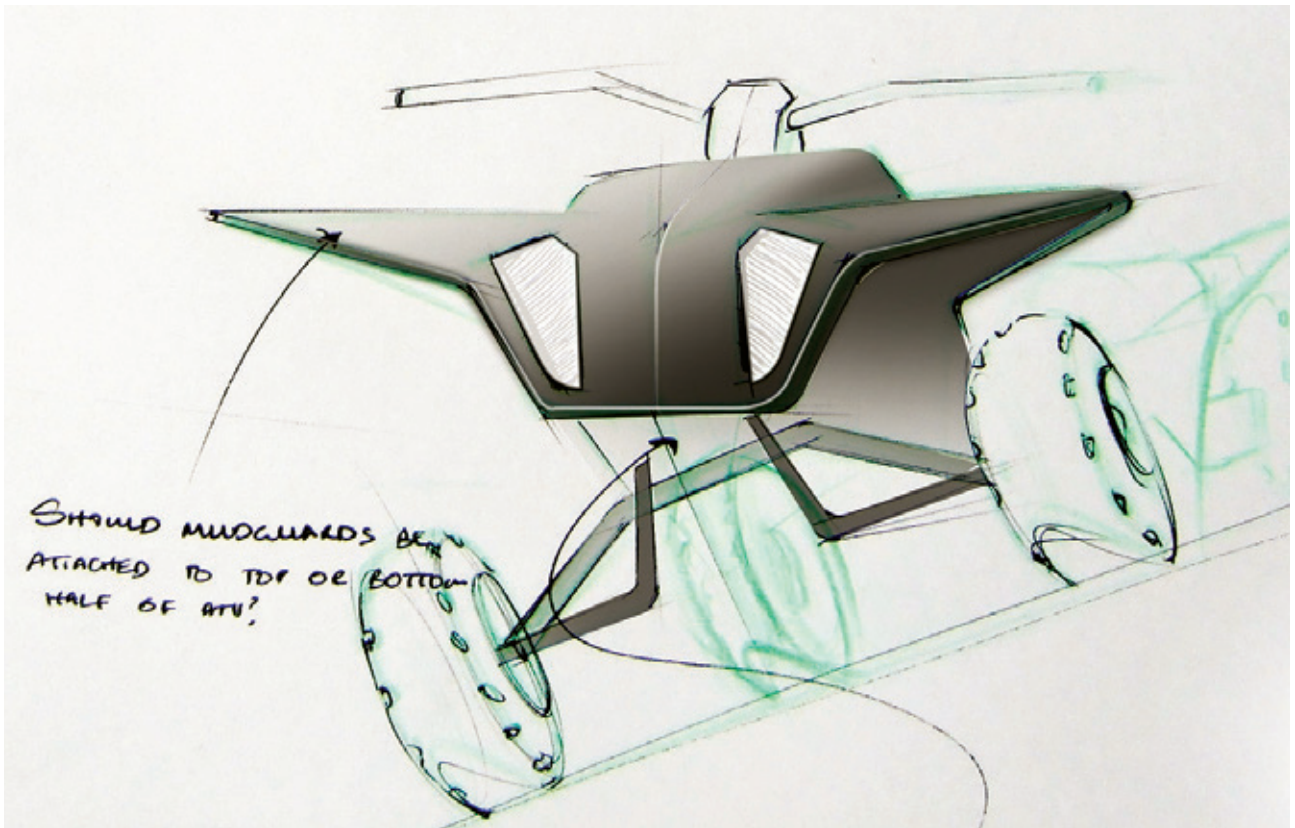
They're aiming to have a big impact, right down to the way that people think about quad bikes, says Hartley. "We've tried to address the kind of mindset you'd have while operating the vehicle in our design. We want to make a real difference to the farming community, and the quad bike industry."

For more on the quad bike project visit
www.unitec.ac.nz/uniquad



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Student Research

Unitec congratulates the students who have recently completed significant postgraduate research in their chosen fields. The wide variety of topics reflects Unitec's focus on high quality applied research.

Master of Architecture (Professional)

Name: Alexandra Rean
Research: Pins and needles

Name: Ambrosia Crum
Research: Ngahere atawhai

Name: Anita Thomas
Research: Healing environments: design of a rehabilitation facility

Name: Ashneil Kumar
Research: Gateway: passenger experience and the airport terminal

Name: Averil Moore
Research: Join the dots: architecture of movement and connections

Name: Benjamin John Connor
Research: Critical regionalism: oenology in otago

Name: Byron Peard
Research: Per aspera ad astra (through hardship to the stars): Investigation of functional and aesthetic characteristics of a lunar architecture

Name: Daniel Smith
Research: Humanitarian architecture, people, place and power

Name: David Cook
Research: Rebuilding Christchurch: rebuilding history

Name: Dmitry Rozov
Research: Carlile House: Finding ways to preserve run-down heritage buildings through their adaptive reuse

Name: Fan Yang
Research: Culture and travel centre - cultural and functional diversity

Name: Hui Li
Research: Investigate design methods for the Chinese academic library in the future

Name: James Sievers
Research: Environ-mental design

Name: Jordan Pearce
Research: Adaption, accretion and architecture. A proposal for the island of Funafuti

Name: Kate Morland
Research: Critical preservation

Name: Marcus Everard
Research: IntenCity through urban opportunities

Name: Michael Cyra
Research: Ludotopia

Name: Pardeep Singh
Research: Aotearoa Sikh architecture

Name: Shaneil Narsey
Research: Expressive space: engaging the architectural experience between the tectonic and stereotomic

Name: Sunny Lo
Research: The pocket village: it takes a whole village to raise a child

Name: Tessa Crosby
Research: Social sutures: the architectural integration of the medical facility back into the urban tissue

Name: Yao Qin
Research: How can existing six-storey apartment buildings from circa 1980-1990 be redeveloped as a new mixed-use residential model in China

Name: Yuan Shi
Research: Architecture as nature

Master of Business

Name: Amish Kumar Patel
Research: Why do consumers support the underdog team in sports entertainment? Replication and extension study of motivational bases for consumer affection for underdog

Name: Daniel Hunt
Research: Exploring and modelling adolescent entrepreneurial learning behaviours through antecedents and consequences

Name: Phonephet Manichith
Research: How can commercial banks in Laos promote and sustain competitive advantage through practicing strategic leadership?

Name: Thi Thu Thao Tran
Research: Identifying the existence of the glass ceiling and examining the impact on the participation of female executives in the Vietnamese banking sector

Master of Computing

Name: Anupama Chitti
Research: Requirements engineering process improvement in health it projects

Name: Rashikala Weerawarna
Research: TCP/UDP network performance evaluation of various ipsec algorithms

Name: Sreenivas Tirumala
Research: A quantum inspired competitive coevolution evolutionary algorithm

Master of Design

Name: Oliver Kraft
Research: Taonga - not dead fish

Master of Education

Name: Courtney Yukich
Research: Teaching and learning challenges facing primary school teachers of students from non-English speaking backgrounds

Master of Educational Leadership & Management

Name: Adele Anderson
Research: Relationship strategies that support the achievement of school-wide goals - case studies of two secondary schools

Name: Manjula Handjani
Research: Managing diversity to achieve ethnic inclusion in multi-ethnic secondary schools

Name: Mark Whitford
Research: Performance appraisal in primary schools: Managing the integration of accountability and development

Name: Monette Atkinson
Research: Leaders' perceptions of the practices and the challenges that influence Pasifika achievement in New Zealand secondary schools

Name: Shanley Joyce
Research: Everything to everybody: the profile and challenges of pastoral care middle leadership in New Zealand secondary schools

Name: Stephanie Harford

Research: Stepping-stones and glass ceilings: the motivations and challenges of aspirant leaders

Name: Tony Coughlan

Research: Service academies and student transitions: an exploratory study

Master of International Communication

Name: Indra Dhanaraj

Research: Lecturers' perceptions of intercultural communicative competence and its impact on teaching performance: a case study in a New Zealand higher education institution

Master of Landscape Architecture

Name: Jennifer Parlane

Research: Pretty /gritty: an investigation into revealing the enjoyment of industrial landscapes around Mangere inlet

Master of Osteopathy

Name: Tony Howat

Research: A Single Systems Research Design to examine the effectiveness of osteopathic treatment for people with osteoarthritis of the hip

Master of Social Practice

Name: Hiromi Kominami

Research: Moving toward diverse cultural communities: lost in transition – when the Sakura cherry blossom meets the Pohutukawa – what are the opportunities and challenges facing Japanese migrants in Aotearoa/New Zealand?

Name: Laura Ashton

Research: Dis/identifications and dis/articulations: young women and feminism in Aotearoa/New Zealand

Name: Maile Feletoa Finau Uluave

Research: Toulanganga: a Tongan model for community engagement and social enterprise



Copies of these studies can be found in the Unitec library or through the Unitec Research Bank, unitec.researchbank.ac.nz



Breaking down the barriers

Master of Architecture graduate Joseph Chalmers now has double the degree he intended when he started at Unitec. He was only the third Unitec student to participate in an exchange programme with Wismar University in Germany, in which students earn two degrees. "I have a Master of Arts from Wismar, which means I can register in Germany as a German architect, and then I have my Master of Architecture through Unitec."

His final project was influenced by his time in Germany. "It focused on the idea of boundaries. I was fascinated by the Berlin Wall – it meant life or death to many people. From an architectural perspective there is a vertical element that says don't cross me, and it does that in the strongest way, so that it attracts people to cross it. There was a lot of other stuff happening around that, but the Berlin Wall was the central point for that energy."

Added to this was the idea of memorials. "When you walk around Berlin, there are memorials about the Second World War on every second corner. As a result your interest in the memorials reduces, and so does the importance of the people being remembered. So I tried to make a piece of architecture that was about remembering that past."

The result was a memorial for modern audiences. "I looked at the Berlin Wall from an East German person's perspective, and I flipped the vertical and made it a horizontal. Then I lifted it off the ground, and hoped that the people on the ground would find the unknown on the top more interesting than the known below. We have these ideas that the grass is greener on the other side, so straight away when you look at it, it becomes more meaningful."

The memorial is 150 metres by 70 metres, and would tower around 70 metres up over the Checkpoint Charlie area of the Berlin Wall. It includes a 100 metre swimming pool and beach, as well as a museum, exhibition space and children's area. "I went with the approach that you just go and have a good time, and memory can be provoked through the discussion of the venue. Why is it like that, why is there a beach in the sky? It was connected to the experience, but detached in a sense."

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