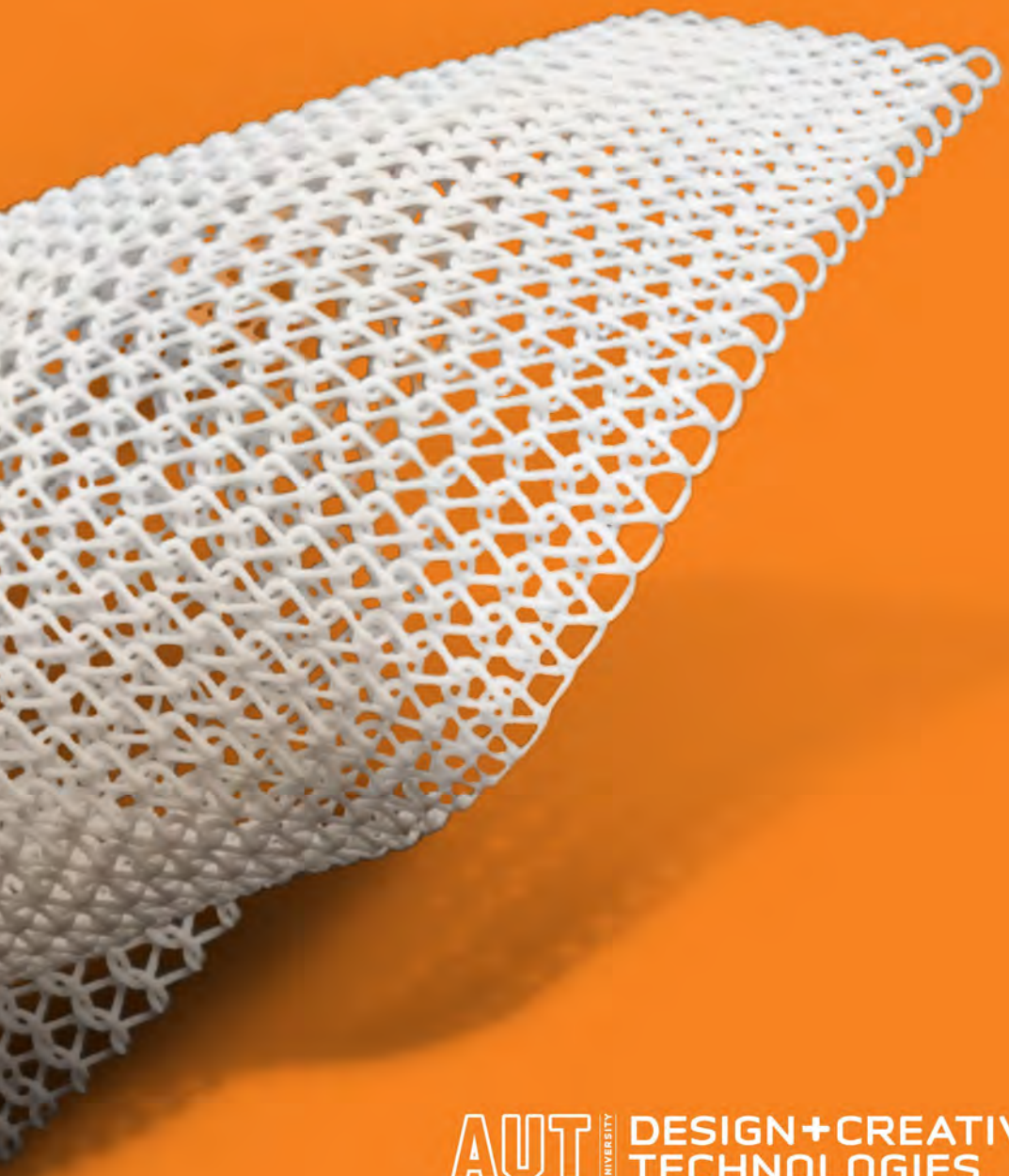
ART & REASON

RESEARCH REVIEW 2011/12



AUT UNIVERSITY DESIGN+CREATIVE TECHNOLOGIES

PUBLISHED 2013

From the Dean

It is my pleasure to bring you this inaugural edition of the magazine τεχνη & λογόσ profiling the research of the Faculty of Design and Creative Technologies over the period from 2011 to 2012. The name of the magazine draws upon the underlying Greek roots of the word technology (art & reason) and reflects the diverse and evolving nature of the Faculty which houses disciplines associated with art and design, praxis and the professions, in combination with more traditional academic disciplines of the mind, and the inter and trans-disciplinary thematic linkages which contribute to Creative Technologies. From the table of contents you can see the breadth of discipline areas covered and the Research Institutes associated with the Faculty. We hope the selection of research projects and profiles of researchers presented here will illustrate the exciting and novel forms of research being conducted within the Faculty. Design and Creative Technologies is itself a relatively new organisational unit within New Zealand's newest University, Auckland University of Technology. While formally established as a University for the millennium in 2000, the institution has a history as an educational institution which stretches back more than 100 years. In its prior incarnations as a teaching institution initially preparing students for careers in the trades, and latterly for increasingly technical and professional roles, we have always had a strong focus on activity and production with the hands and the mind in combination.

It is this combination that we try to infuse into our research projects in the quest for research that is engaged, impactful and relevant to a complex world which demands research that can transcend narrow academic discipline boundaries. But at the same time, we do not seek to shy away from the rigorous development and application of theory to underpin research of lasting consequence.

I hope you enjoy reading the magazine, and come to appreciate the burgeoning strength and diversity of the work of our researchers.

Desna Jury

Dean, Faculty of Design and Creative Technologies, AUT University

Acknowledgements and Contact Details

All researchers who provided copy and images	
Adam Winship	Research Development Manager adam.winship@aut.ac.nz +64 9 921 9999 ext. 8005
Diana Kassabova	
Emma Kelly	
Eva Ihaia	Research Support Analyst eva.ihaia@aut.ac.nz +64 9 921 9999 ext. 6832
Melanie Curry-Irons	
Printsprint	
Ryan Butler	
Tetiana Kirii	
Tony Clear	Associate Professor, Associate Dean Research tony.clear@aut.ac.nz +64 9 921 9999 ext. 5329

Contents

▸ Aukje Thomassen (1975-2013)

Tribute for Aukje Thomassen

Early this year AUT lost a young researcher of considerable merit. The Faculty of Design and Creative Technologies lost a rare individual able to cross its peculiar disciplinary thresholds. The School of Art and Design has lost a brilliant research leader. And I have lost a close colleague and dear friend. Aukje Thomassen passed away on the twenty-first of February.

Aukje was appointed as School Head of Research for the School of Art and Design a little over two years ago and from the beginning showed us all what it meant to be an expert researcher, an enthusiastic educator, a compassionate listener, and a boundlessly playful intelligence. She would talk about her research focus, or one of her many research engagements, as serious gaming. There was always something wry in the way those two words would be conjoined. Everything was serious for Aukje, everything was important and worthy of consideration. No thing and no one could or would be overlooked. And everything was playful, to be approached with a creative and joyful spirit, to be uplifted, rarified and held in its singularity.

During her brief time with us in the School and Faculty, Aukje renovated and invigorated our research thinking, how we strategise, what we hold to be important, how we see our futures differently, how we can discover working together differently or, indeed, working together for the first time, how we can better enjoy living as academics. If we can speak of legacies and remembrance, it is surely the case that Aukje's research accomplishments, even for one so young, are worthy legacies. Though for me it is how I think and do things otherwise, how I recognize possibilities that are wryly serious and joyously playful, how I live my research differently, that is a lasting legacy. Though Aukje has touched our past, she especially invigorates our future.

Tribute from:
Mark Jackson, School of Art and Design

Introduction

There were significant developments in research for the School of Art and Design during 2011 and 2012, under the leadership of a newly appointed School Head of Research, Dr Aukje Thomassen. Aukje significantly galvanized the research culture and infrastructural possibilities, with particular emphasis on developing research synergies.

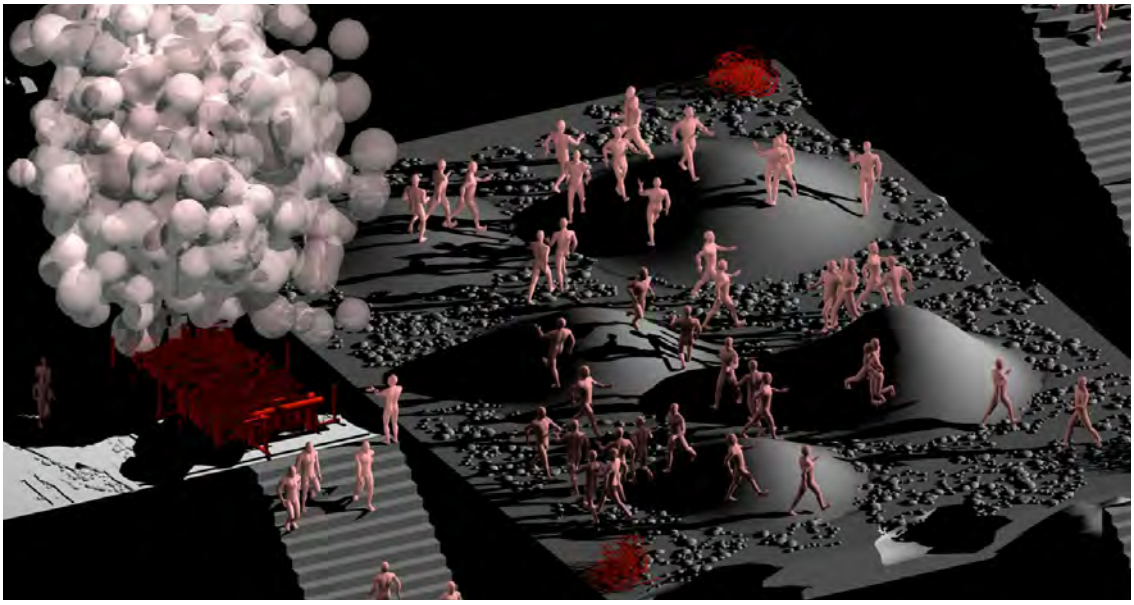
The School's research culture developed into a series of strong groupings that included *Between Art & Architecture, the Moving Image Group*, the *Art & Ecology Group, the Design & Innovation for Sustainability Cluster*, the *Motion Capture Research Group, the Art & Performance Group, Nga Wai Indigenous Art Research Group, Unified Field Theory (UFT) and the Design Histories Cluster*. In this report highlighting aspects of the School's research activities, we will focus on academic staff working in three of these research groupings, firstly the Moving Image Group, secondly, the *Sustainability and Design Group*, and thirdly the *Art & Performance Group*.

Moving image group

The *Moving Image Group* fosters research, practice and collaboration in emerging moving-image technologies and contemporary cinema.

The intersection of cinema and screen scholarship with new digital technologies, including digital animation, interactive cinema, and global networking installation and trans-media, constitutes a vital growing arena for historical, theoretical, creative and technology research, meshing experimental practices and techniques with projects linked to industry. School researchers involved in moving image include Greg Bennett, Andrew Denton, Welby Ings, Mark Jackson, Maria O'Connor and Nova Paul.

We focus in the stories below on the narrative cinema of Welby Ings, the experimental formalist cinema of Nova Paul and the motion capture digital animation of Greg Bennett.



- Gregory Bennett (Utopia iii)

- Welby Ings' *Munted*, 2011. Text by Emma Kelly, AUT, PhD candidate. First published as an article in The New Zealand Listener Vol.237, January 19-25 2013

Bringing stills to life - from still to moving pictures

Professor Welby Ings has had a remarkable career to date and a fascinating last few years in the School of Art and Design. He is Professor of Design, is a British Royal Society of Arts Fellow and is a multi-award winning designer, playwright and filmmaker.

His most recent film, Munted, premiered at the 2011 Montreal World Film Festival, was selected for festivals in Berlin, Bilbao and Brussels, among others, and was named Best Short Film at the 2011 Lucerne International Film Festival.

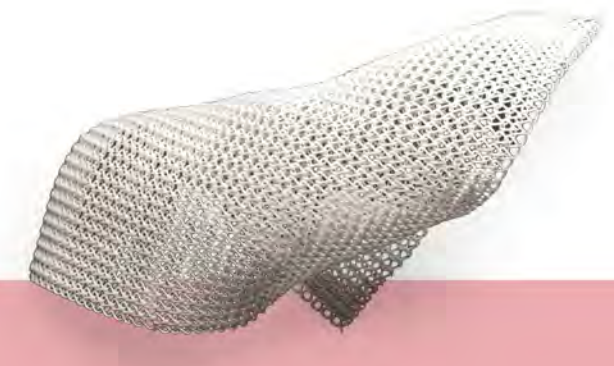
Welby grew up in Pukeatua, between Putaruru and Te Awamutu, and trained as a graphic designer. He makes films by a process he describes as "drawing out" his ideas: there is no storyboard and no script until he needs something to show funders. "When making films, I create the worlds and stories in pictures". "I don't write scripts. This is because I see film as 'talking pictures'. So rather than drafts of scripts, I have hundreds of notebooks full of drawings".

The drawings in which Ings immerses himself are incorporated into his films either as part of the sets or literally painted in to the frames of the film to create an ethereal in-between world that is neither fiction nor fact. He draws with cheap coloured pencils, children's watercolours (from those little squares in tin trays you had when you were a kid) and even cheaper coffee - the instant sort that has dye in it that stains the paper in beautiful sepia tones.

Obsessive about the look and feel of his sets, Welby took two abandoned houses for Munted and rebuilt them to match the pictures he'd drawn. He pulled down part of the awning on an old villa and filled the guttering with weeds, restored a coal fire range with papier-mâchē, and designed labels for every product on the shelves in the 1960s grocery store that is in the film for a total of nine seconds. He slept in a paddock while building the sets and the sounds he heard and the flora he drew became part of the film. The unreliable narrator is a 12-year-old girl, Katrina, who leads us through the story of her friendship with a misfit who may or may not have a criminal past, but is certainly unwelcome as far as the small-town rednecks are concerned.

When Welby isn't making films he continues to be innovative and fun as professor of art and design at AUT University in Auckland, where he is known, when lecturing on design history, for dressing in the costumes and even speaking with the accent and attitudes of the era.

Welby was the inaugural winner of the Supreme Award for Tertiary Teaching Excellence in 2001- some achievement for a man who was expelled from secondary school, suspended from Hamilton Teachers' Training College and dragged before various school boards for political activity on issues ranging from immigration and Springbok rugby tours to homosexual and prostitution law reform.

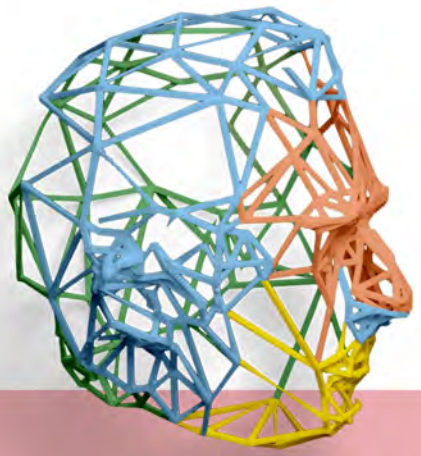


Modern filmmaking from old techniques

Form Next to Form Next to Form (2012) is a book publication by Nova Paul composed from still images taken from Paul's experimental 16mm film *This is not Dying* (2010). Using an early cinematic optical printing process of three-colour separation, Paul's films render the landscape in prismatic shards of technicolour. In Paul's book, stills are printed using RGB colours designed to echo the optical process of the three-colour separation film itself.

Form Next to Form Next to Form includes a 7" LP 'Whakarongo Mai', played by famed Maori show band figure and Kaumatua, Ben Tawhiti, and produced by Karl Steven. The book also has two essays: Karl Steven's liner notes on musician Ben Tawhiti, and Gwynneth Porter and Nova Paul's essay 'The Virtues of Trees', a text that grew from conversations over a year, spanning ideas of sovereignty, resistance, film analysis and art history, genealogy and care of self and the world around us. *This is not Dying* was filmed around Paul's family home, under Whatitiri-mountain, and at her marae, Maungarongo, in the north of New Zealand's North Island.

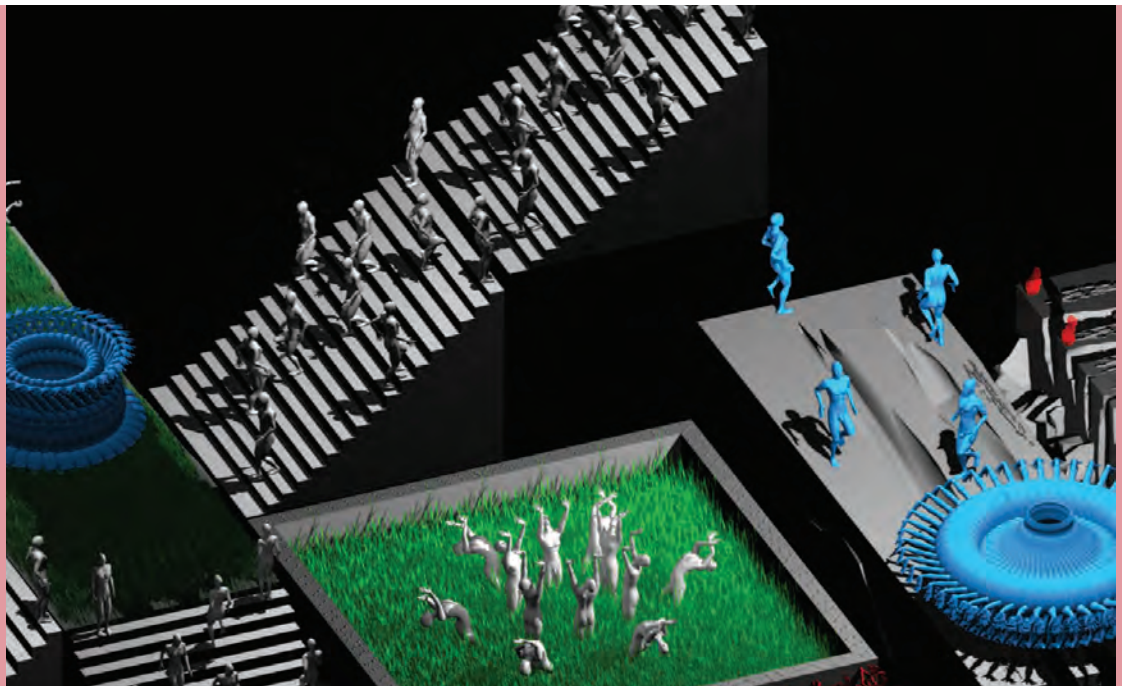
The film captures simple moments from everyday life, activities such as fixing motorbikes, preparing food for a communal meal at the marae, making tea in the kitchen, walking to the water-hole and bathing there. Paul's experimental filmmaking practice has developed a craft and language utilising the early cinematic process of three-colour separation. Her films are composed of three film sequences of the same scene, shot in repetition with red, green and blue filters and layered together in an analogue optical printing process, into a single scene of vivid technicolour.



Visually, the film is made up of rays of light and coloured blocks, and interplays of smudged forms that have the look of early 20th century abstract painting, with a similar effect. Solid shapes dissolve and interrupt a standard filmic sense of being, time and place. As planes of red, green and blue intersect in *This is not Dying*, like sedimentary geological forms, an accretion of layers occurs. These planes collapse into blazed light, like the burning afterglow of an image behind closed eyelids, into entities of turquoise, pink, lilac, and apricot mixing into a palette of purple, lemon, crimson. Figures are reconfigured as they cross each other's paths, rebuilding a floating world, appearing like ancestral ghosts, walking with the living and blending with the environment and each other, constantly changing hues, register and form. Underpinning Paul's film-work is a search for how to create the self and what to aim for. What sorts of films make spaces, or act as support structures for the self-determination of both the filmmaker and viewer alike? And so this film, in some sense, is slowing down in order to see the way in which we are composed in layers.

Filmmaker Barry Barclay writes about capturing the essence of the subject, where much is about listening and letting the environment figure itself, and for people to show themselves to each other in their own time and with cyclic methods of communication intact. He concludes that we might do well to further explore how to make the camera a listener. The music, a Nga Puhi love song, 'Whakaromo mai', is an improvisation on slide and steel guitar by Kaumatua Ben Tawhiti that, like a karanga, calls the viewer into the film and this homeland. *This is not Dying* has screened nationally and internationally including Rotterdam International Film Festival, 2011; *Recontres Internationale*, George Pompidou Centre, Paris, 2011; New Zealand International Film Festival, 2010. *Form Next to Form Next to Form* (Nova Paul, Gwynneth Porter & Karl Steven, Clouds and Dent-de-Leone, 2012) was the recipient of the inaugural 2013 Most Beautiful Books—Australia & New Zealand award from Monash University's Department of Art Design & Architecture.

▸ *Form Next to Form Next to Form*, 2012. Nova Paul, 2012



▸ Gregory Bennett, Utopia Part 1

Projecting motion capture

Complex 3D animation and motion capture software tools and the on-going proliferation of new screen and projection technologies offer ever-expanding and increasingly flexible possibilities for the moving image artist in both the production and exhibition of animated content.

Gregory Bennett's practice-based research focuses on issues concerning the representation of digitally-generated figures and environments, utilising 3D animation and motion capture - the digital sampling of 'real-life' movement - to create intricate digital colonies and landscapes, which can be read as simultaneously utopian and dystopian. Taking the looped actions of a generic 3D male figure as a foundation, Bennett works in a modular fashion, building up units of performed movements, repetitions and cycles, via both key-frame and motion capture processes, creating an often complex movement vocabulary. The never-ending loop situates the figures in a kind of eternal present, relentlessly mobile, rooted in modules of parallel and/or asynchronous time in which temporal progress is both enacted and arrested.

Recent projects have also explored a range of cutting-edge screen and projection technologies from the intimate scale of domestic media players, to wall-sized high-definition projections in art galleries, to extra-cinematic public spaces such as a monumentally-scaled video projection onto a seven-story inner city building façade, and a large screen-based interactive artwork in the foyer of a public building, using a 3D game engine.

Bennett's projects in 2012 include several solo exhibitions of video projections: *Omnipolis* at Two Rooms Gallery, *The Digital Multitude* at the James Wallace Arts Trust, and *Multiply* at the Hastings City Art Gallery. His *Utopia* series has been shown internationally, with an exhibition at Gallery 101, Lamar Dodd School of Art, University of Georgia: *The Real-Fake: Simulation Technology After Photography*, and also screened at the 2012 International Symposium on Electronic Art in Albuquerque, New Mexico.

His work has featured in public art exhibitions in Auckland; *Impossible Choreographies* was shown during T*he Living Room Project, Metropolis Dreaming*, curated by Andrew Clifford in 2011 and Crowd Control, an interactive work, was presented at the Aotea Centre as part of *Digital Art Live* in 2012. His work *Panorama* is a featured artist-project on the *Anti-Utopias* website curated by Sabin Bors, and he is included on the *Real-Fake* website for digital art practice curated by Rachel Clarke and Claudia Hart.

Bennett has also been selected by curator Rob Garrett as a participating artist for NARRACJE – I*nstallations and Interventions in Public Space*, a public art festival in Gdansk, Poland, November 2013, for a large-scale site-specific video projection mapping work.

Bennett's on-going use and exploration of Motion Capture in his research has been facilitated by the development of capabilities around this technology at AUT over the past few years, including the establishment of a new Motion Capture Lab in 2013. On-going theoretical debate as to the status of the animated body - what kind of 'life' does the animated figure create in the space between the animate and the inanimate - is a central concern of Bennett's research. Examination of a range of aesthetic and technical issues around the process of translation, from embodied live performance to digital movement data, forms an important branch of this research. In reflecting on his engagement with digitally-based processes Bennett's research also acknowledges some complex areas for reflection on the changing dynamic between production, content and exhibition, and of possible designations of the animated figure itself.

Remarkable consistencies in certain formal engagements such as the subjection of the human form to looped action can be traced back through the history of animation from pre-cinematic optical toys, to the capture and schematising of indexical images of the moving figure by Muybridge and Marey, the treatment of the live-action body in the elaborate geometric choreography of 1930s Hollywood musical choreographer Busby Berkeley, the animated gif, and the video game character in the constant remediation of the language of animation.

Bennett's creation and manipulation of the loop in the patterns of his production process also recalls Lev Manovich's notions of the digital database and the loop as an 'engine of narrative'. The loop forms the most elementary articulation of the structures of programming language. Key research concerns include how principles, such as those of modularity, automation and variability, influence or even operate as intrinsic conditions for conception and fabrication processes.

Also crucially influential to these processes are the array of delivery options facilitated by proliferating presentation technologies and conduits which take animation out of traditional cinematic spaces and into reception-diverse public arenas, where notions of the screen are often radically expanded.

▸ Andrew Withell

Sustainability & Design Group

The *Sustainability and Design* Group incorporates a broad range of design researchers working in arenas of social innovation and sustainability, product design, design for health and wellbeing as well as design-led social ecology projects, along with research in design thinking and pedagogy. The Group has a number of branches, including the Design for Social Innovation and Sustainability Lab, part of the international (32 schools across the world) DESIS consortium. School researchers involved include Idil Gaziulusoy, Shane Inder, Lisa McEwan, Rachelle Moore, Stephen Reay, and Andrew Withell. We focus on three researchers in design innovation and sustainability, with the Design Thinking approach of Andrew Withell, design and social innovation research of Idil Gaziulusoy, and the sustainable product design work of Stephen Reay.

Developing expertise in design thinking

Design Thinking describes a human-centred methodology for innovation, which has evolved from the study of the unique ways in which designers 'think', and 'practice'.
There is growing evidence of the increased uptake of Design Thinking in the design, business, and engineering disciplines, as well as not for profit businesses and community organizations to drive creativity, innovation and change. While there is an emerging body of research, there is a need to develop sound university curricula that are founded in relevant theory and research findings. There appears to be a relatively small amount of rigorous research on the learning and teaching of Design Thinking.

As a design education researcher, Andrew Withell has a strong interest and passion for developing positive, empowering, learning environments and helping students develop strong creative and thinking capabilities.

Andrew believes that designers and design thinkers have a responsibility to contribute to the economic, social, cultural and health wellbeing of individuals, businesses and organisations, the community and country. Andrew is mainly interested in exploring and developing innovative approaches to learning, specifically in the areas of Design Thinking, Product Design/Product Development, Additive Manufacturing and Sustainable Design. A key focus for his research is how to best develop Design Thinking expertise. He is currently undertaking a PhD that explores how Design Thinking expertise can be best introduced, developed, nurtured and enhanced.

The resulting curriculum development process involved conceptualising and designing a detailed four-week teaching plan including a six-stage Design Thinking process model, learning goals, structured session plans, presentations, learning activities, project brief, assessment criteria and deliverables.

Six-stage design thinking process model

The research process itself focuses on evaluating the students' learning and teaching experiences and the impact of the curriculum on the development of their Design Thinking expertise. It uses Action Research, Design, and embedded Case Study methods. Data is currently being collected from two student participant groups:

(a) approximately fifty first-year Product Design students undertaking a paper (or course) titled Product Design Studio II in the three-year Bachelors of Design programme; and

(b) approximately fifty first-year business students undertaking a paper titled Design Thinking within a Bachelor of Business programme.

All students enrolled in the two papers over two years are invited to participate in a 'pre', and 'post' Design Thinking curriculum survey and complete a portfolio of Design Thinking practical work. A stratified sampling case frame was developed to identify a purposive sample of students to participate in key informant interviews. In addition, all students participating in the research are invited to participate in creative co-design sessions in which they help co-design improvements to the Design Thinking curriculum (based on initial findings of the research) and their own experiences.

The findings of the research will be used to enhance the Design Thinking curricula of the Bachelor of Design, Product Design and Bachelor of Business, Design programmes at AUT.

- Idil Gaziulusoy

- Brain storming session

System innovation for sustainability

With a MSc degree in Industrial Design and a PhD degree in Sustainability Science and Engineering, Dr Idil Gaziulusoy is an academic researcher with a change agenda.

Her broad area of interest is system innovation for sustainability, i.e. transformation of socio-technical systems which meet our needs, such as mobility, food, recreation, to achieve sustainability. She is particularly interested in how design and innovation decisions can be aligned with longer-term societal changes that are necessary for us to achieve sustainability.

Dr Gaziulusoy's research focuses on generating foresight and insight to shift business-as-usual thinking in companies to innovative thinking aiming to address socially relevant real life problems. Businesses have a key role in society to generate value. This "value" has traditionally been seen as profit and therefore making profit has become the sole purpose businesses associated themselves with. With the changes taking place at environmental, social and institutional levels, this worldview needs to be challenged. Profit is not a goal but a means to generate value in society and that value can be in any form which meets the needs of society in ethical and environmentally and socially responsible ways.

The research represents a new form of thinking in sustainable business and innovation for sustainability areas. It is a line of thinking that puts emphasis on shifting efforts from incremental efficiency gains to radically transforming how business is done through innovation. System innovation for sustainability cannot occur in isolation, so linkages with local and international industry and research partners are key. Dr Gaziulusoy has worked with Enviu-The Innovators for Sustainability in the Netherlands, Fisher & Paykel Appliances and Zenergy in New Zealand. Currently she is working on strategic innovation for sustainability projects with Gaze Commercial and Auckland Council. As a visiting researcher at Technical University of Delft, the Netherlands, she is collaborating with researchers from the Design for Sustainability Research Group of the Industrial Design Engineering Faculty on system innovation for sustainability projects.

Given the urgency, diversity and size of the challenges society faces today, from the requirement of mitigation of/adaptation to climate change impacts to the requirement of alleviating poverty, Idil believes that design has a major role to play with its integrative approach to solution generation.

At AUT School of Art and Design, together with Dr Stephen Reay, Dr Gaziulusoy has established the Design and Innovation for Sustainability Research Cluster with the aim of providing a platform for collaborative, trans-disciplinary projects. As an initiative of this research cluster, an affiliation has been set up with the DESIS network (Design for Social Innovation towards Sustainability) as a member of an international network of design schools working in the area of design for social innovation and sustainability.

- Stephen Reay

Sustainable futures: collaboration between Science and Design

Stephen Reay's research is built around two areas. The first builds on his background in biology and ecology. Stephen worked as a research scientist for several years before arriving at AUT. A current research interest lies in exploring the potential benefits of collaboration between science and design, specifically how to move toward more sustainable futures. In particular, he believes that design and innovation for sustainability should ideally be undertaken with understanding or awareness of ecology and an intimate knowledge of ecological systems.

A main focus of his research is to explore the interaction between products and the environment, with a specific focus on how design may have a positive impact on biodiversity and conservation. Stephen is also interested in developing a better understanding of how communities, society and the wider environment relate and interact, and how design may be used to positively enhance these interactions.

A number of collaborative projects with Art & Design Moving image researcher, Andrew Denton, have been established exploring the role of art and design in communicating ecological issues.

Stephen is also actively developing research in the area of design for health and wellbeing. This includes collaborative projects with researchers from the Faculty of Health and Environmental Science and the Faculty of Cultures and Society at AUT, as well as external organisations, such as the Auckland District Health Board.

Current design and research projects Stephen is involved with include the Move Active Office Furniture Ecosystem with Human Potential (AUT), and postgraduate projects exploring how design can improve the experience of dementia care in the hospital environment for patients, caregivers and staff, and the pediatric experience in Starship Children's Hospital.

Art installation and performance group

Under a broad platform of visual arts installation, collaborative practices and performance, this Group incorporates a series of discrete practices, including *UFT's* focus on investigating modes of collaborative practice, *Orange Theory*, with a concern for temporal installation, and the *Art & Performance* group, engaging an expansive definition of performativity, blurring boundaries between the arts, technologies and creative industries.

Researchers engaging this spectrum of the visual and performing arts include Chris Braddock, Paul Cullen, Sue Gallagher, Andy Thomson, Maria O'Connor, and Emily O'Hara

In the following stories, we focus on the collaboration practices of Andy Thomson, Paul Cullen's site-specific installation work and Chris Braddock's research into the performativity of performance.

- Collaboration of Eugene Hansen and Andy Thomson, *Fieldwork 2*

- 2012 *The Green Text* (iteration #3) with Laresa Kosloff at PartickhIll Lawn Bowls Club, for the Glasgow International Art Festival, Scotland UK

- 2012 *Weak Force*, at Anna Leonowens Gallery NASCAD University Gallery, Halifax, Nova Scotia: a collaboration between Bruce Barber (Canada), Kim Morgan (Canada) Laresa Kosloff (Aus), Andy Thomson (NZ) and Paul Cullen (NZ)

Unified field theory

The Unified Field Theory Project (UFT) is a visual arts research project conceived and initiated by Associate Professor Andy Thomson which has run for the last four years. It is conceived as a significant, high functioning infrastructure for producing and publishing research activity. The UFT project acts as an enabling support and driver to the internal research and postgraduate culture of AUT's Visual Art Department, and as a means with which to better (and more strategically) disseminate the outcomes and practice of AUT staff and collaborators. It is an international project including researchers from Korea, UK and Australia amongst others.

The capacity to learn from and extend the outcomes of this collaborative academic and artistic research, as realized through UFT, is currently limited to the collaborator's own internal research community. The key artists and academics currently working on this configuration of research groupings and current projects are Dr Paul Cullen (AUT), Bruce Barber (NASCAD Nova Scotia), Professor Lee Ihnbum, Sanmyung University Seoul, Dr Matthew Sansom, Surrey University UK, Dr Laresa Kosloff, RMIT University Australia and Associate Professor Andy Thomson, AUT.

It is the intention of this coming together, or 'centring' of individuals, projects and academic institutions to build the collective agency, and national and international reach of co-operative creative visual art research; primarily through increased and concentrated publication and dissemination of the research (the AUT/UFT website) and the development of new pedagogic models for learning & teaching.

The UFT project has already made a major contribution to the research environment in the faculty. Each of the 11 projects successfully realised thus far and the three to be realised in 2013, have brought about genuine collaboration and new developments in art praxis.

Moulding the body

In 2011 – 2012 Chris Braddock worked on a solo authored book, *Performing Contagious Bodies: Ritual Participation in Contemporary Art*, published in early 2013 with Palgrave Macmillan, London. The book's most original contribution lies in its exploration of performance art – together with its photographic documentation and object/material traces – through theories of magic ritual. Accordingly, the book focuses on ethnographies on magic as well as the writing of a number of non-anthropological thinkers on magic such as Roland Barthes (1915–80), Walter Benjamin (1892–1940) and Roman Jacobson (1896–1982). Concepts of contagion, animism and ritual participation are employed to open up a range of hotly debated questions about the temporal aspects of live performance art and their relation to 'event' and where 'liveness' lives. At its most ambitious the book avows the work of art with a status beyond mere appearance; to claim a direct correlation between the sign and the *real thing*. In getting to this point of view, the operations of post-structuralist deconstruction (Jacques Derrida in particular) are framed as spectacularly and marvellously 'savage' and magical.

And as a corollary to this proposition, *Performing Contagious Bodies suggests* that there never were any savages, or, put another way, we are all savages.

The book explores the intersections of performance studies, art history, anthropology and contemporary visual art practices. *Performing Contagious Bodies* dedicates full-length chapters to New Zealand artists Alicia Frankovich and Richard Maloy, and to Australian artists Laresa Kosloff and Alex Martinis Roe, together with discussion of a number of widely acknowledged Euro-American artists: Marcel Duchamp, Ann Hamilton, Bruce Nauman, Gabriel Orozco, Felix Gonzalez-Torres and Hannah Wilke.

In late 2012 Chris Braddock prepared sculptures for the exhibition *Material Traces: Time and the Gesture in Contemporary Art*, curated by internationally renowned art historian Amelia Jones for the Galerie Leonard & Bina Ellen at Concordia University, Montrēal, Quēbec, Canada. The exhibition ran from February 16th to April 13th 2013. Braddock prepared table mounted sculptures by pressing handfuls of epoxy resin clay against his body. These sculptures were exhibited alongside Braddock's video artwork. The exhibition is accompanied by a catalogue essay by Jones. The curatorial concept for *Material Traces* reflects many of the concerns in Braddock's art practice. Jones writes: 'Is art an object or a process?' Is it "material" or "trace"? Shifts in art practice over the past 50 years, particularly in art world centers in Europe and the US, and more recently in Canada, Australia, and New Zealand, have profoundly challenged Enlightenment to modern conceptions of the work of art, in European aesthetics, defined as an object, more or less static in meaning and value over time. Braddock's artwork was exhibited alongside international artists such as Francis Alÿs and Angel Vergara as well as other New Zealand artists Alicia Frankovich and Alex Monteith.

- Chris Braddock prepared sculptures for the exhibition *Material Traces: Time and the Gesture in Contemporary Art*

- Paul Cullen's art installation

Art abandoned - Paul Cullen

A sabbatical and Fulbright Fellowship Award took Dr Paul Cullen to the USA during semester one of 2012 where he spent a great portion of his time at Auburn University in Alabama.

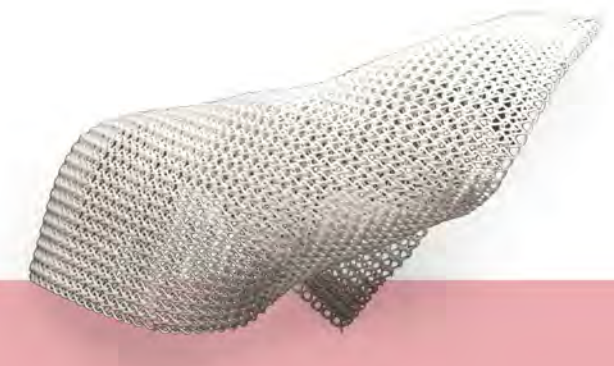
Here Paul worked on a research project with Dr Rod Barnett, Professor and Chair of the graduate Department of Landscape Architecture. As the collaborators relate "Our research was twofold, on the one hand it was an investigation of contemporary landscapes in Alabama, and on the other it was an experiment (on-going) in collaboration between artist and designer".

They carried out extensive research into abandoned residential, commercial and industrial sites in the region and from this two key research outcomes have been developed.

The first outcome was an exhibition of their drawings, models, photographs and primary research, held at the APL Gallery at Auburn University. The second is a website **(www.contingency-project.com)** to make all of the material from this exhibition readily accessible to the general public.

There are plans for further exhibitions and research collaborations in the future, one is a second iteration of their Auburn exhibition and the second is a collaborative outdoor work for a public gallery.

While in the USA Paul also researched art projects in outdoor spaces and remote sites and furthered a future research project planned for 2013 called 'The Orange Theory'.



- Nancy De Freitas

Art unbounded - Nancy De Freitas

Throughout 2011 and 2012, Associate Professor Nancy De Freitas was instrumental in the launch of a pioneering project to publish and critique artistic projects that are unbounded by the physical limitations of conventional exhibition contexts - *Project Anywhere: Art at the Outermost Limits of Location-Specificity* (**www.projectanywhere.net**).

In collaboration with an international group of artists and researchers, this initiative focused, and continues to focus, on the formulation of criteria and processes that will accommodate peer validation and dissemination of advanced artistic research outside of conventional exhibition environments. It is an initiative that breaks new ground in articulating advanced research practices in art and design through a performative paradigm. In 2012 Associate Professor De Freitas received a Fulbright Travel Award in support of her invitational speaking tour in the USA, *'Moving Artistic Research Beyond Practice-Led Explanations'*. During the tour Nancy spoke at PennDesign, University of Pennsylvania, the School of Design, Parsons, The New School for Design, and at the Pratt Institute, both in New York.

Nancy's overseas research trips continued in addition to the Fulbright award accepting invitations to profile this research from Telemark University in Norway and from Aalto University School of Arts, Design and Architecture in Helsinki, Finland.

- Barry King (right) next to wax work model of Steven Spielberg (left) during his sabbatical at the Annenberg School for Communication at the University of Southern California in Los Angeles, 2012

Barry King goes to Hollywood

Professor Barry King's recent work has focused on the impact of digital technologies on acting in Hollywood television and film industries. In 2012 during his sabbatical he took a visiting scholar position at the Annenberg School for Communication at the University of Southern California in Los Angeles.

Barry's research interests encompass three strands of enquiry: the nature of contemporary stardom and celebrity, acting as a labour process and the nature of creative labour within the cultural industries.

A production of culture perspective links these strands, leading to questions about the influence of cultural organizations and practices on how cultural forms and symbols are shaped by the specific context in which they are produced, distributed and consumed. What links them practically is the fact that stars and celebrities are a central part of popular experience as models of desirable self-fashioning. They present to many young people an example of how to succeed through presenting an attractive self-image, thereby escaping from being unknown and ordinary - or in Lindsay Lohan melt-down mode as cautionary tale of how not to look or be, of the necessity of "getting one's act together" a pervasive theme in self-improvement literature.

Pursuing these strands over a number of years, Professor King has explored aspects of popular culture such as the social and cultural significance of recent changes in celebrity and stardom, nature of creative industries and creative work, celebrity gossip and the media confession, global talent contests franchises and New Zealand popular culture, the New Zealand Film Commission as a National Film Producer, and the employment of actors.

In 2012 he was also a co-editor and contributor to the re-published *Studying Lord of the Rings*. Barry is currently completing a study for Palgrave Macmillan, *Taking Fame to Market,* which examines the historical and contemporary relationship between stardom and celebrity and capitalist culture.

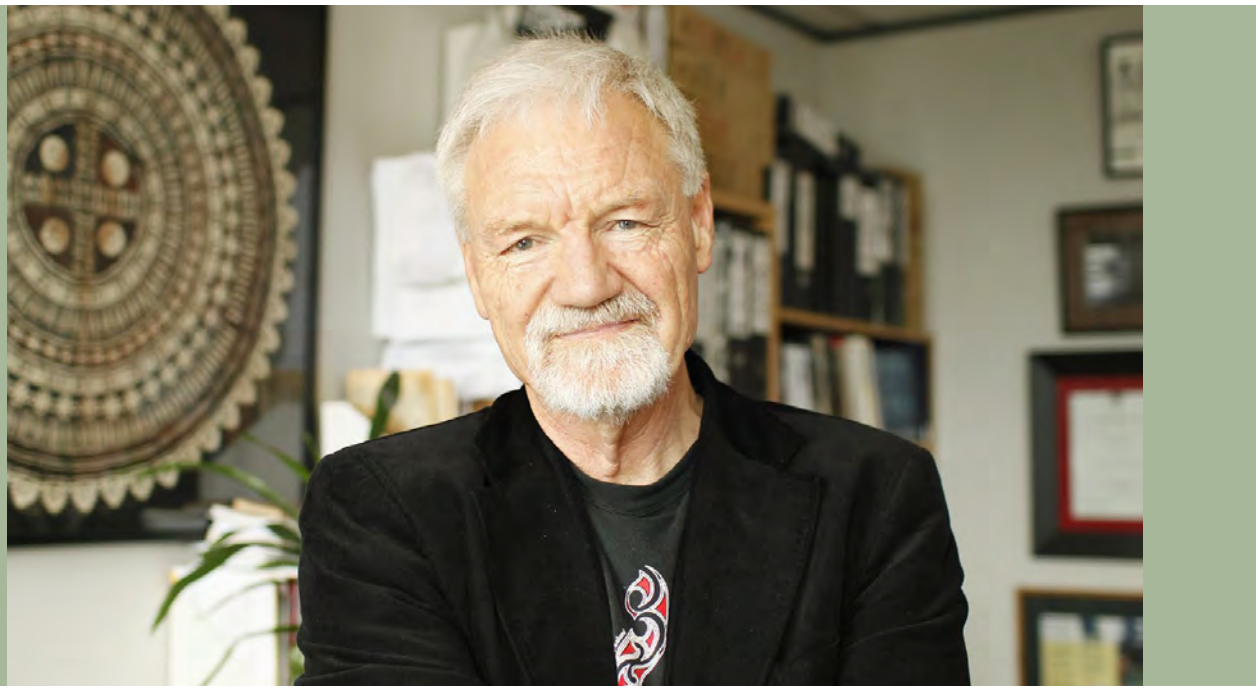
The critical questions that arise in his current research on the impact of digital technologies focus on the extent to which digital technologies are:

a. Re-organizing the division of labour in film and television production as this affects employment, skill sets and patterns of reward.

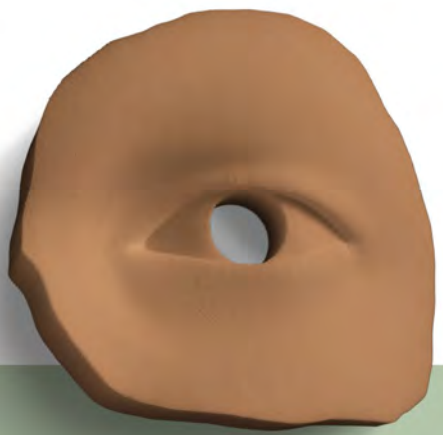
b. Furthering the replacement of living actors by computer generated synthetic actors or *synthespians*.

c. Re-configuring the power and charisma of stars as their on-screen images are enhanced by fantasy and high concept scenarios based on computer generated special effects, motion capture technologies and the generation of photo-realistic immersive narrative worlds in which the limitations of everyday existence are seemingly transcended.

d. How the hyper-real culture of the contemporary media are impacting the kinds of identification that consumers and fans have with stars and celebrities, given that knowledge of the arts and crafts of computer enhancement is now commonplace.



- David Robie



Pacific Media Centre - from Human Rights to climate change survival

It is exciting times for Professor David Robie and his Pacific Media Centre team as they move into AUT University's innovative new home of digital media and education, the Sir Paul Reeves Building, to continue their innovative research on a range of topics affecting the Pacific area.

The Pacific Media Centre has been making its mark in research and publication in topics from climate change to human rights over the last two years. One example is the comprehensive new report on media freedom issues, the region's first, focused on Fiji and Papua New Guinea. But it found the Indonesian-ruled Melanesian region of West Papua to be the "most serious case of media freedom violations in the Pacific". According to the 2012 report, researched and authored by the PMC director Professor David Robie and the centre's *Pacific Media Watch* project editor Alex Perrottet, along with renewed civil unrest and mass rallies demanding *merdeka*, or freedom, "sustained repression has also hit the news media and journalists": "In the past year, there have been two journalists killed, five abductions, or attempted abductions, 18 assaults (including repeated cases against some journalists), censorship by both civil and military authorities and two police arrests (but no charges)," the report stated for 2011.

The report was widely cited by global media monitoring groups in London, New York and Paris. The research has been a continuation of the work of Professor Robie who has been a journalist and media educator for more than 40 years.

For more than two decades he focused on covering the Asia-Pacific region. Professor Robie has reported on post-colonial coups, indigenous struggles for independence and environmental and developmental issues and is the author of *Blood on their Banner: Nationalist struggles in the South Pacific* (Zed Books, London) and *Mekim Nius: Media, politics and education in the South Pacific* (University of the South Pacific Book Centre, Suva) and other books.

The centre has also been researching on Peace Journalism with a focus on conflict resolution in developing nations. A doctoral candidate, Rukhsana Aslam, from Pakistan, has been invited to present a paper on the topic at London University, and Professor Robie, who has been researching Peace Journalism in the Pacific last year presented research papers at the University of Canterbury, University of the South Pacific and University Sans Malaysia; in 2013 he will be presenting at a conference on "Protest Movements, Free Speech and Media" at the University of Westminster, London.

Professor Robie is shortly giving a keynote speech on global environmental journalism at the University of the South Pacific on research work he and his students have done in the past couple of years about Pacific climate change. Taberannang Korauaba, editor of the *Kiribati Independent* newspaper and a community advocate for the i-Kiribati diaspora in New Zealand, gained first class honours in 2012 for a Masters in Communication Studies degree thesis. Exploring the disjunction between government policy on climate change as a "disappearing nation" espoused by President Tong and the lack of media expertise and strategy, Korauaba developed an indigenous research methodology based on the cultural practice of *taono tabon inaim*, a metaphor for the relationship with the home. Korauaba is continuing with an advanced Micronesian study on climate change for his doctorate with the support of a Vice-Chancellor's scholarship.

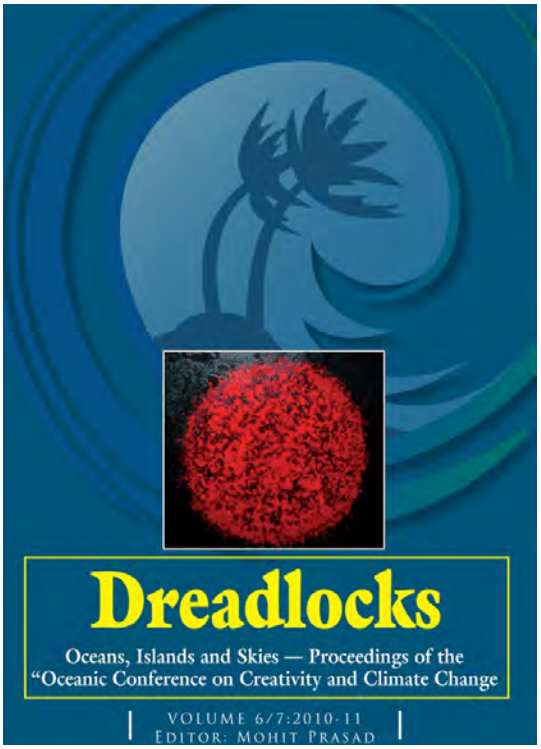
Henry Yamo, a Southern Highlander from Papua New Guinea, completed master's research with a development communication case study about the use of mobile telephones in the health sector of Western Highlands province. As part of his fieldwork, he was forced to drive hundreds of kilometres along rugged jungle roads and across rivers to get to remote medical clinics and outposts to interview health workers. His research in a context of a social media revolution in Papua New Guinea is likely to be a model for other developing countries.

Professor Robie is founding editor of the *Pacific Journalism Review (PJR)*, the only research journal to investigate media issues in the South Pacific, Asia-Pacific, Australia and New Zealand.

It has been publishing for 18 years and during 2012 the research metrics database *SCOPUS* began indexing the publication, a breakthrough for a New Zealand-based journal. Through his role at the PMC, Professor Robie convenes the Pacific Media Watch project, a digital archive of daily dispatches about Pacific journalism and media, ethics and professionalism and jointly publishes the high profile independent *Pacific Scoop* news website with an independent industry partner, Wellington-based Scoop Media Limited.

Postgraduate students involved in the centre won all three prizes in the annual Journalism Education Association of Australia (JEAA) Ossie Awards that went to New Zealanders in 2012. Karen Abplanalp won both the Investigative Journalism award and the Best Feature Writing prize for her investigation "Blood Money" into controversial NZ Superannuation Fund investments in the Freeport mine in West Papua that had been embroiled in human rights violation allegations for many years. Alex Perrottet won a highly commended award for the Most Innovative Use of Digital Media for a special multimedia report on the death of King George V of Tonga.

Professor Robie has written or edited nine books on the region's politics and media, publishes the media transparency blog *Café Pacific* **www.cafepacific.blogspot.com** and has also been a strong supporter of Pacific publishing.



Two books – both collections of research publications – were co-published by the centre in 2012, *Communication, Culture and Society in Papua New Guinea: Yu Tok Wanem?* and *Dreadlocks – Oceans, Islands and Skies*, about creativity and climate change in the Pacific. The centre launched a new publication series during 2012, *Pacific Journalism Monographs*, with two editions published and archived with the National Library of New Zealand, and a third planned for mid-2013.

www.pmc.aut.ac.nz

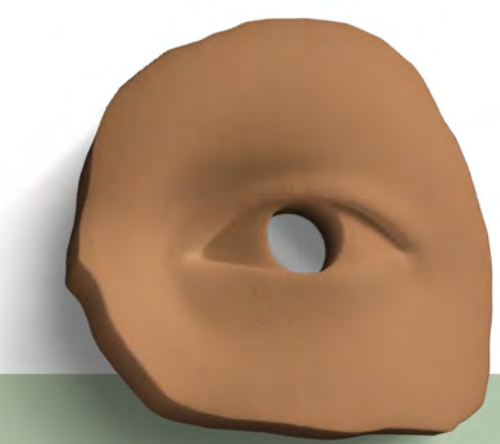
- David Robie, Benny Wenda (West Papuan tribal leader and an international lobbyist) and Henry Yamo

▸ Lorna Piatti-Farnell

Gothic scholarship and media: Preoccupations with the uncanny and gothic culture

The Gothic tradition is branching out from its literary roots. The popularity of Gothic fictions and themes suggests that the genre is the norm as much as the dark underside of contemporary cultural production. Novels, television series, films, music: from vampires to werewolves, from castles to the spectral underground, the Gothic is everywhere. A new brand of 'Gothic media' is establishing itself within the cultural scope of the twenty-first century, where preoccupations with the uncanny are sustained through discussions of an economic, social and cultural nature.

This is where the work of Lorna Piatti-Farnell, PhD in Contemporary Literature and Popular Culture, comes in. Piatti-Farnell, who is also the founder and current President of the Gothic Association of New Zealand and Australia (GANZA), pursues analyses of the Gothic mode from its literary foundations to its extensions into popular culture forms, such as film, television, and animation. Piatti-Farnell's research treads on new and innovative ground by placing itself at the intersection between Gothic scholarship, cultural theory, and media studies. Piatti-Farnell has already published two monographs within the broader field of popular



culture studies. Her most prolific research, however, lies in the Gothic, and it is in this area that her work has gained its highest respect in the wider academic community. Because of its interdisciplinary and multidisciplinary nature, Piatti-Farnell's research has proved to have substantial outreach. Since 2007, she has published on several aspects of Gothic literary and media research, including monstrous bodies, cannibalism, spectral advertising, and haunted domestic politics.

Piatti-Farnell is currently in the final stages of writing for her third monograph, *The Vampire in Contemporary Popular Literature*, for which she was offered a contract by Routledge, New York, in February 2012. This book offers a critical analysis of vampires in contemporary popular literature, and demonstrating how they engage with essential cultural preoccupations, anxieties, and desires. Drawing from a number of intersecting critical perspectives, Piatti-Farnell places the contemporary literary vampire within the wider media scope, also building critical connections with issues of fandom and readership. In re-assessing the formulaic elements of the Gothic tradition, Piatti-Farnell's project shows how vampires have been moulded into enigmatic figures who sustain a vivid conceptual debt to contemporary consumer and popular culture. Piatti-Farnell's project highlights the changes - conceptual, political and aesthetic - that vampires have undergone in the post-2000 era, simultaneously addressing how these changes in 'vampire identity' impact on the definition of the Gothic as a whole.

In June 2012, Piatti-Farnell also began working on *Gothic Histories*, an edited collection which is being compiled in collaboration with Maria Beville, PhD, at University of Limerick. The project focuses on connections between the Gothic tradition, historical currents, and the media. The edited book will be published by a major UK academic publisher in 2013 and will include essays by Gothic scholars from around the world; eminent presences in the group include renowned Gothic scholar Professor David Punter. The idea of seeing the Gothic mode as a constantly changing presence within contemporary cultural forms also spurs Piatti-Farnell to work on projects that highlight the innovative nature of the genre. In October 2012 Piatti-Farnell began a collaborative project with Professor Donna Lee Brien of Central Queensland University, aimed at the publication of an edited collection entitled The *Gothic Compass: New Directions in Scholarship and Enquiry*. The book has the interest of an American academic publisher, and includes innovative perspectives on Gothic studies, drawing strength by an interdisciplinary approach to the field that comprises a number of areas of scholarship, including canonical ones such as literature and film studies, and newly discovered grounds for Gothic research, such as food studies.

In April 2012 Piatti-Farnell founded the Gothic Association of New Zealand and Australia. GANZA brings together scholars, students, teachers, artists and writers who have a shared interest in the Gothic. The association is academic in nature and takes an interdisciplinary perspective which unites all aspects of Gothic culture, including literature, film, music, technology, popular culture, digital media, and architecture.

In collaboration with a number of Gothic scholars from around the world, Piatti-Farnell planned the Association's inaugural conference, which took place in Auckland on 22-23 January 2013.

The conference represented the first research event for the Association, but will certainly not be the last.

In pursuit of structures that allow automated reasoning

The discipline of computer science spans the range from theory to programming, with theoretical computer science as a challenging sub-field in its own right. Theoretical computer scientists' study of data structures and algorithms helps them develop fundamental insights leading to new approaches that provide better performance from computer systems in many different contexts. Operating systems, mobile phones, computer networks, computer languages, the world wide web, Google and other search engines, Facebook, Amazon, Enterprise scale databases, commuter train systems, space exploration, genomic databases and radio-astronomy telescopes all benefit from underlying computer science concepts.

Dr Jiamou Liu, who works within the School of Computing and Mathematical Sciences, was awarded a highly prestigious Marsden fast-start grant in 2011. This award for promising young researchers, worth over $300,000 covering a period of three years, will allow him to look into his main research focus area of automatic structures within theoretical computer science. Dr Liu's research focuses on finding inherent properties of automatic structures. On one hand, the goal is to show that automatic structures are "computationally tamed". In other words, the goal is to find ways to characterize classes of automatic structure, and to find algorithms for automated reasoning. On the other hand, the goal is also to show that automatic structures are a rich class. In other words, the class is wide enough to capture natural structures that are relevant to computer science.

An automatic structure enjoys all the properties of a computable structure. Moreover, the presentation of an automatic structure is restricted to a particular type of program called finite automata. As research has showed, the class of automatic structures, although severely restricted from computable structures, still captures a wide class of structures, and moreover, automated reasoning is possible to be carried out on them.

This research area is concerned with structures that appear naturally in computer science: data that is associated with relations, information that is arranged in a list or a hierarchical model and configuration spaces of computer programs.

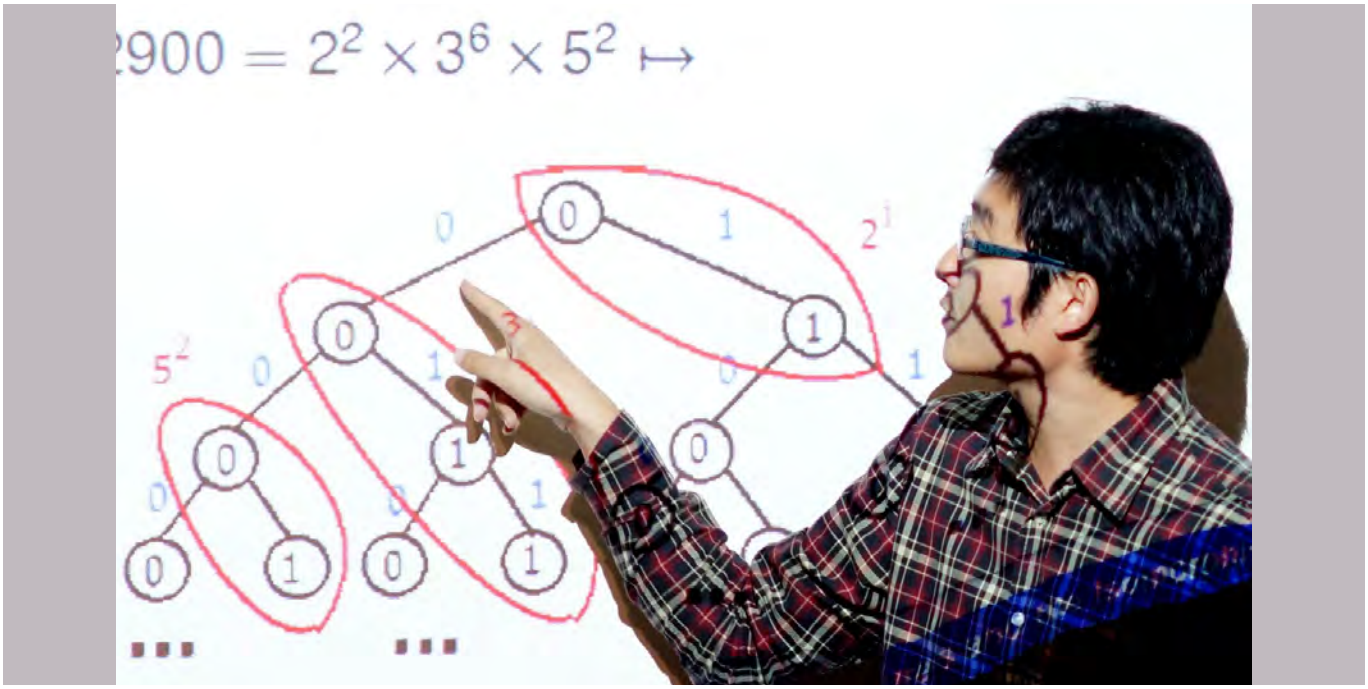
Instead of focusing on structures that have finite size, Jiamou turns his attention to infinite structures that contain an infinite amount of data. Automated reasoning over an infinite amount of information has become increasingly desirable. This is partly because the amount of information people now face has become so large that in theory it is sometimes beneficial to consider it infinite, and partly because some naturally occurring structures, such as the number system or the program configurations, are indeed infinite.

The goal is to study facts relating to computations on these structures: How can we decide if a piece of data in the structure is related to another one? How can we classify structures? Can we perform automated reasoning on a structure with a potentially infinite amount of information?

In the pursuit of answers to the above questions, Dr Liu needs to put restrictions on the structures under investigation. Firstly, the structures need to have a finite presentation, so that they use a finite amount of space if storing them in a computer. Secondly, the structures should allow certain basic reasoning mechanisms. In other words, there should be algorithms that run on the finite presentations of these structures and compute certain basic information contained in the structure.

From an abstract point of view, such structures are called "computable structures", meaning that extracting basic information within the structures is effective. However, as further progress in the study shows, the type of information that one could compute from these structures is very limited. In other words, although these structures are called "computable", they are not really suitable for automated reasoning.

The Marsden fund is extremely competitive, in 2011 there were just 88 research projects being awarded funding out of a total of 1078 proposals. Dr Liu's project is one of only two awarded projects in the category of Information and Mathematical Sciences (fast start) in the country.



- Jiamou Liu, Marsden fast-start grant recipient, 2011

- Stephen MacDonell (centre)

Themes in software engineering research

In 2011 the Software Engineering Research Laboratory (SERL) re-focused its research activities around a small number of research themes and in 2012 many of SERL's staff and students moved into a single location. These two changes have been instrumental in SERL's growth and development as a research group.

SERL accounts for the work of more than 20 staff and students, with most working across multiple research themes.

SERL conducts its work under a small number of research themes. One of the defining characteristics of the work that applies across the themes is that the focus is on almost 'anything but the software'; that is, for SERL the emphasis is on the people involved and how and why they work, individually and collectively, to develop, manage, deliver and use software systems.

This focus is illustrated by the work of a few of SERL's recent graduates. Paul Leong's PhD (2012) utilised a survey and in-depth interviews to address the use and benefits of mentoring in IT project management; in her Master's thesis (2012) Lois Dai considered how project managers could be better supported in estimating schedules through methods that accommodate, rather than avoid, uncertainty and imprecision; and in his Honours dissertation Andrew Smith (2012) developed a system to support the learning of novice software developers in large lecture classes.

Some of SERL's highlights of the past 2 years under the aforementioned themes are highlighted below.

Under the **Requirements Engineering (RE)** theme SERL has been delighted to welcome Professor Didar Zowghi (UTS, Australia) as Adjunct Professor at AUT. Professor Zowghi spent some time in the Lab in December 2012 and will return this year, working primarily with theme leader Jim Buchan and SERL students Waqar Hussain (PhD), Issam Jebreen (PhD) and Amrita Shinde (MCIS). Jim and the team are working on RE topics focused on the development of shared understanding among stakeholders and the expectations of quality user involvement. With Professor Zowghi, SERL plans to run a joint Australasian Workshop on RE for researchers and practitioners in late 2013.

Work in the **Process Management, Assessment and Improvement** theme has continued to result in multiple research publications addressing various aspects of software systems development and management, involving theme leader Professor Stephen MacDonell, former PhD student Dr Laurie McLeod and current students Htike Htike Wut Yi (MCIS) and Mujtaba Alshakhouri (MCIS).

The adoption and use of Agile methods continues to be a subject of interest for staff members Jim Buchan, Mali Senapathi and Dr Diana Kirk, and the actions and behaviours of Agile software teams occupy the thoughts of students Sherlock Licorish (PhD) and Dmitry Yakovlev (MCIS).The phenomena of open source survival and adoption are also being investigated in the Lab by students John Graves (PhD) and David Bellinger (MPhil).

Professor Martin Shepperd (Brunel, UK) is another visiting scholar to SERL in the last two years; an internationally renowned researcher in **Empirical Software Engineering**, Martin will be back again in 2013 to conduct a workshop for industry on software project estimation. This theme is focused on the use of measurement and evidence in informing SE research and practice.

Quality is a theme that pervades the research conducted under this theme – either software quality, as addressed by the work of students Jacqui Finlay (PhD 2013), Frederik Schmidt (PhD) and Amjed Tahir (PhD), or the quality of SE research and practice, as addressed by PhD student Michael Franklin Bosu (PhD). Theme leader Professor Stephen MacDonell will also be presenting an invited talk on evidence-based SE at a Workshop at the University of Sao Paulo, Brazil, in mid-2013.

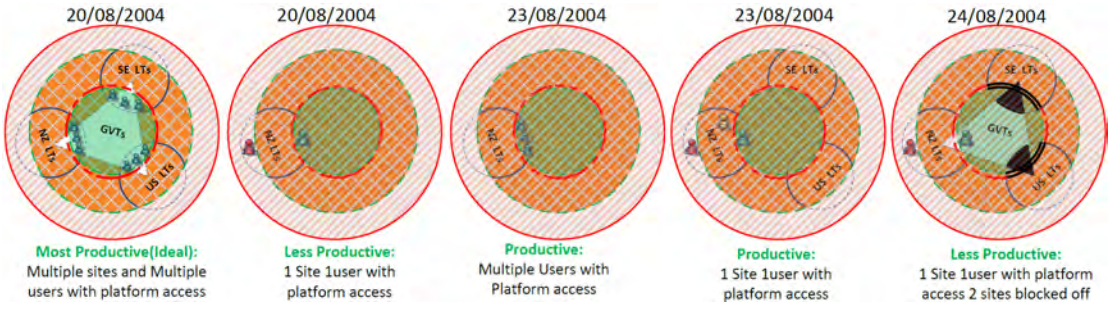
Our international presence in **Global Software Engineering** is being driven by theme leader Associate Professor Tony Clear. A recent sabbatical visitor to SERL has been Adjunct Professor Daniela Damian (Victoria, Canada), who has been collaborating with us on areas of common interest to both SERL and her own Software Engineering Global Interaction Lab. Publications have appeared in the Proceedings of the *International Conference on Global Software Engineering, ASEE/IEEE Frontiers in Education Conference and in Information and Software Technology*. PhD students Bilal Raza, Minjuan (Janet) Tong, Averill Gordon and Da Zhang are investigating topics including: navigating the vendor transition in globally outsourced software projects; the impacts of culture and collaborative technologies within globally distributed teams; leadership patterns in global virtual teams, and modelling mobility and space in such contexts.

The **Programmers, Programming and Professionalism** research theme is led by Dr Jacqueline Whalley and involves staff members Anne Philpott, Phil Robbins and Associate Professor Tony Clear. They are a dynamic, productive and internationally recognised group primarily interested in the teaching and learning of computer science. One key area of focus for the group is the assessment of novice programmers, as one component of a long-standing interest in the pedagogy and cognitive development of novice programmers. The acquisition of knowledge in novice programmers is being investigated by student Nadia Kasto (PhD) and her work, although in its earlier stages, has already achieved notice and has resulted in several peer-reviewed publications. Honours student Andrew Smith completed in 2012 and his work forms part of an on-going investigation into tools to support the teaching and learning of computer programming, software practice and software design. SERL members have also recently launched an on-going programme of research into the novice to expert programmer continuum. The scope of this project extends from "programming in the small" to "programming in the large" and the work of professional programmers.

In 2012 AUT was also the venue for the International Computing Education Research Workshop (ICER), and SERL sponsored the associated Doctoral Consortium. Theme leader Dr Jacqueline Whalley is the co-chair for the Australasian Computer Education Conference for 2013 and again in 2014 when the conference is to be held at AUT.

In resetting the direction of SERL in 2011 one of the Lab's stated goals was to become more actively engaged with industry. A particular initiative launched with this in mind was a fortnightly seminar series that to date has included talks from SERL members, research visitors and industry professionals. In the last year industry speakers in the SERL seminar series have come to us from GE Capital, Xero, Rakon, the Digital Arts Network, Southern Cross Healthcare and ViFX.

We have also had student and staff involvement in research projects with Intergen, AIG, Vero, Hansen Technologies, Orion Healthcare and guest speakers from ASB have delivered classes to our SE students – the next generation of software engineers.



- Mobility and spatial mapping model in globally distributed teams

- Stephen Thorpe

Online group facilitation finds a foundational set of international competencies

Dr Stephen Thorpe is researching into an emerging profession. Group facilitation has yet to develop a significant body of quality-assured research knowledge. A key challenge for the field and professional group facilitators in the International Association of Facilitators is that research on groups often focuses on team composition and task activities.

As yet, the key question on how to effectively lead and facilitate global virtual teams through group process continues to be an area full of research possibilities.

This is where Dr Stephen Thorpe has been hard at work, particularly addressing the area of facilitated group process in global virtual teams.

Because the nature of group work is itself being transformed everyday through the rising use of internet-enabled technologies, Dr Thorpe's research has focused on a range of novel online approaches to achieve group success, including the use of storytelling as a team building process in online groups. In 2012, Dr Thorpe presented a first-of-its-kind paper on online facilitator competencies at the *First International Forum on International Academic Programmes* in Ho Chi Minh, Vietnam. The work, soon to be published in *Group Facilitation*, focused on synthesizing a foundational set of online facilitator competencies. It represents the culmination of four years' work for Dr Thorpe, involving over 60 practicing group facilitators from 13 countries - all engaged in deep discussions on what skills make up a competent online facilitator.

The research offers future guidance for efforts to improve the effectiveness of those leading and facilitating online groups and will further inform the International Association of Facilitators' Core Facilitator Competencies and Certified Professional Facilitator programme.

› Storytelling around the virtual campfire on SecondLife

Albots – A new species for the study of cognitive processes

In the Centre for Artificial Intelligence Research, Professor Yeap is developing a promising new paradigm for using robots to develop models of cognitive processes and his latest result is an exciting new model for spatial cognition.

Professor Yeap observes that theories of spatial cognition have been developed in the past by studying the spatial behaviour of a wide range of species that includes humans, birds, bees, ants, and fish. That those different species have vastly different embodiments and senses suggests that one could program a robot, with its own unique embodiment and sensors, in a cognitively interesting way and then study its behaviour as if it is a different species on earth, to gain an insight into spatial cognition. The robot, programmed as such, "lives" in its own world and performs in its own unique ways the tasks that are also performed by other species. After all, an ant, for example, finds its way home differently from, say, a bee. The insights gained will provide us with a model of spatial cognition that can later be evaluated empirically. Professor Yeap refers to each of these robots as *Alboti*, belonging to a species known as *Albot*.

The novelty of Professor Yeap's approach lies in his emphasis on developing a "cognitively interesting solution" prior to creating an *Albot* to "play out" the solution in the real world. A cognitively interesting solution is one developed to solve a key computational problem concerning a cognitive process that has been identified by researchers working in Cognitive Sciences. These problems are hard problems and often a source of puzzlement for these researchers. This approach is in contrast with the more traditional AI/Robotics approach whereby researchers are keen to create machines to perform tasks similar to that performed by humans/animals. The latter approach places much emphasis on how well the task is performed and this often leads to a race to find the best possible solution. To them, an algorithm is only interesting if it performs better and/or faster and will be much heralded if it excels against humans. An example of the latter is when Deep Blue, an Artificial intelligence (AI) chess-playing computer, beats a world champion.

Nature works in mysterious ways and understanding this is what fascinates Professor Yeap and his team at the Centre for AI Research. For an example of such a mystery, consider how language works.

It is well established that speakers of a language know its grammar rules and how to apply them to process language. Computational linguists and AI researchers have developed many formal models for such rules.

However, there is evidence, famously referred to as the poverty of the stimulus argument, which claims that the input to an infant is not rich enough for them to learn the grammar of their first language. Yet, every normal child grows up demonstrating they have acquired a significant knowledge of the grammar. This observation presents a paradox in language learning.

The challenge, using Professor Yeap's approach, is to find a cognitively interesting solution showing how such learning is possible and then creating *Alboti* demonstrating how the process works by learning a language in its own environment. Finding such a solution, however, requires one to delve deeply into the controversy surrounding the research and to re-interpret many of the experimental findings in a new light.

Once a solution is found, often expressed in the form of a computational theory, Professor Yeap says: "Creating *Alboti* to perform the task according to the theory is fun and exciting". As noted earlier, one is not concerned with whether *Alboti* could excel, say, at humans' performance or whether the implementation of the theory on *Alboti* is most advanced. The latter would favour the use of a powerful robot but this is not necessary. In effect, it is best to utilize the simplest possible architecture to avoid the need to deal with additional but unrelated issues. This is an advantage one should exploit when realizing the theory using *Alboti*. *Alboti* is thus created for two main reasons: first is to establish that the theory is sound (do what it is supposed to do), and second is to create an artificial system that allows one to use it in experiments that are normally performed using other natural species.

▸ Albert Yeap and *Albots*

To date, Professor Yeap and his students have developed two *Albots*, $Albot_0$ and $Albot_1$.

The latter is created to investigate a puzzling question regarding how nature solves its spatial mapping problem. Humans' memory of their environment is fragmented and inexact and yet we can still orient ourselves. How is such a map computed? This is a puzzling problem because many theories of human spatial cognition often assume that the underlying process begins with a representation formed from integrating successive views using a co-ordinate transformation approach. Using this approach, robotics researchers have shown that cumulative sensor errors grossly distort the computed map. To have a useable map then, sensor errors must be corrected and what is produced is an accurate map.

Professor Yeap developed a computational theory to explain how an inexact and fragmented map can be computed and, together with his students, created $Albot_1$, a robot equipped with a laser sensor that maps its environment without error corrections. Studying *Albot's* behaviour revealed that the map computed is a trace map of one's journey through the environment and not a detailed map capturing one's total experience in it.

This now provides an exciting new model for spatial cognition. Professor Yeap and his students are already working on $Albot_2$, a robot that maps using vision to study the effect of vision on the mapping process.

Watch out! *Albots* are coming to town!

- Sergei Gulyaev at AUT's Warkworth Radio Astronomical Observatory

The Sky's the Limit – Research Heaven for New Zealand's Unique Radio Telescope Facility

AUT's Institute for Radio Astronomy and Space Research (IRASR) led by Professor Sergei Gulyaev is busy building exciting research and commercial collaborations. The timing is perfect as AUT's Warkworth Radio Astronomical Observatory increases its arsenal of impressive hardware with a 30m radio telescope (converted from a Telecom satellite communications dish) joining the 12m fast slewing antenna that was commissioned in 2008.

It's the realisation of a dream for Professor Sergei Gulyaev. "Now we have the capability to participate in both large and small projects, routine and extraordinary ones and we are well prepared, if needed, to play a role in one of the most ambitious scientific projects of the twenty first century – the Square Kilometre Array."

The decision by the international Square Kilometre Array Organisation (SKAO) to locate the world's most powerful radio telescope in South Africa and Australia brings some positive spinoffs for New Zealand. Expressions of Interest are being sought for participation in the SKA pre-construction design phase and IRASR is working on being involved.

New Zealand is a member of the SKA Organisation and the NZ government will contribute funding support to the successful proposals. The development challenges push the boundaries of cutting edge technology.

The SKA will generate such massive quantities of data that the hardware and software to cope with it have not been invented yet. So what beneficial outcomes are likely from the $2 billion SKA project? Size really does matter. The SKA will involve huge fields of antennas and radio telescope dishes with a total collecting area of a square kilometre and sensitivity 50 times greater than any existing radio telescope. It will pick up radio signals from the furthest reaches of space. The discoveries that will result are likely to surprise and astound our world and may shed light on some of the most fundamental questions in physics and astronomy: the origins of our universe, the nature of dark energy and whether there are life forms beyond our planet.

The Observatory's geographical position provides a unique view of the sky which is proving to be very useful for space missions. IRASR was approached by the California based aerospace company SpaceX (Space Exploration Technologies) in 2011 with a very interesting opportunity. SpaceX's stated goal is to "help make the human race a multi-planetary species" and, under contract to NASA, is the first commercial company to begin sending supply space craft to the International Space Station.

AUT's 12m radio telescope is now part of the network of international stations that is contracted to monitor these missions which will eventually carry human cargo.

Professor Gulyaev and operations staff members Tim Natusch and Stuart Weston have been able to draw on their experience working with space agencies including NASA, ESA (European Space Agency) and JAXA (Japanese Space Agency). The success of the SpaceX missions to date bode well for long term collaboration.

KEDRI's Spiking Neural Network Projects – Interdisciplinary, Inclusive, International

The **Knowledge Engineering and Discovery Research Institute** (KEDRI), led by Professor Nikola Kasabov has long gained an international recognition for its pioneering research on novel neural network methods and their applications across areas of science, engineering and technology.

Neural networks are computational models that 'borrow' information-processing principles from the brain for the purpose of building intelligent information systems that manifest adaptive learning, robust pattern recognition, associative memory, and approximate reasoning. Spiking neural networks (SNN) are special types of neural networks where information is represented as temporal sequences of binary units (spikes) – similar to how information is represented and processed in the brain.

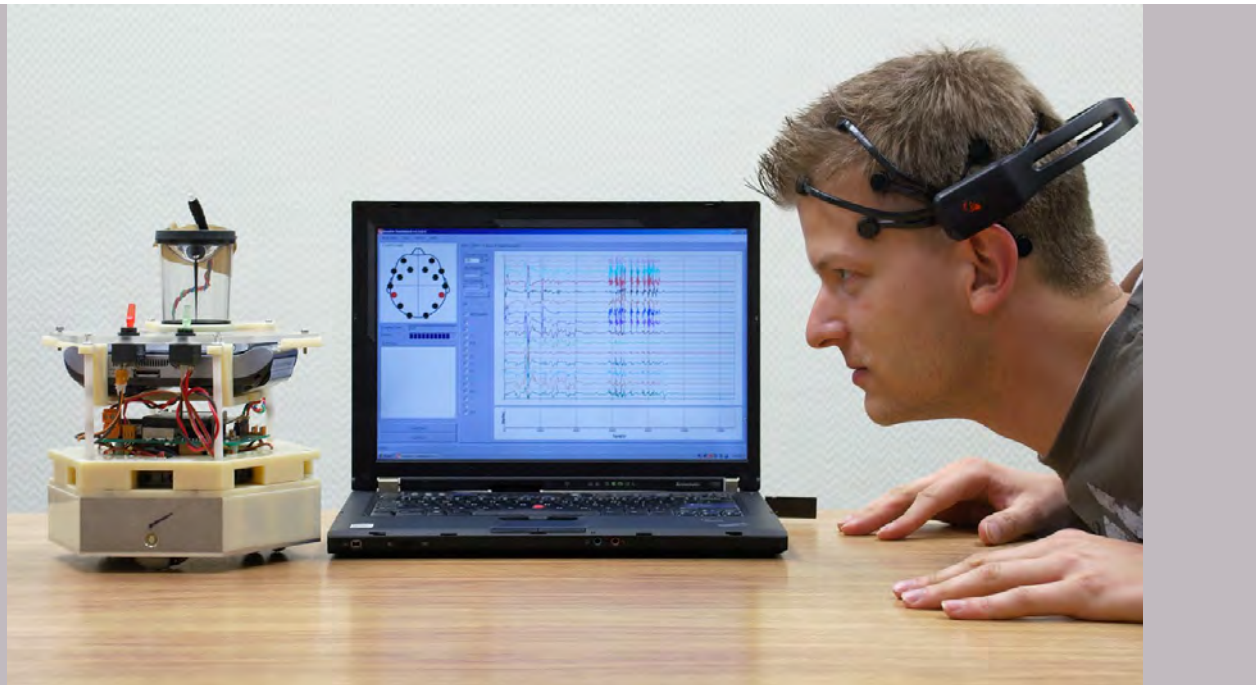
As part of his Marie Curie grant 'EvoSpike', hosted at the Institute for Neuroinformatics at The Swiss Federal Institute of Technology Zurich (ETHZ) and University of Zurich and funded by the European Union, Professor Kasabov has developed new methods of evolving SNN for learning and pattern recognition of spatio-temporal data along with some pilot applications across disciplines, including: information and computer sciences, engineering, environmental and health sciences, cognitive science, neuroeconomics, art and design; communication; sport, medical and clinical practice. Based on SNN, Prof. Kasabov and his team at KEDRI developed recently a new, specific method for spatio-temporal brain data analysis that was the beginning of a new project named NeuCube. The project offers a new way for analysis, modelling and understanding of brain data with applications across disciplines.

Applications under development are: brain-computer interfaces; neuro-rehabilitation robotics; affective computing; decision making; cognitive processes; human- computer and human-to-human communication; stroke occurrence prediction. In its interdisciplinary content, this is a world-first and long-term project, involving KEDRI and other groups from AUT in collaboration with the China Academy of Sciences and several European partners from Switzerland, Italy and the UK.

KEDRI's research has also led to strategic partnerships with China. China is the second largest economy in the world and a strategic partner of New Zealand. The New Zealand government has initiated several cooperation activities with China that include research and tertiary education cooperation. KEDRI has two research collaboration projects with partners from China that aim at research and development and the preparation of pathways for joint commercialisation in the future.

▸ NCEI (Neuro-Computing and Evolving Intelligence) Workshop, Auckland 2012. Hosted by KEDRI

- Nikola Kasabov



- The 12th International Conference on Neuro-Computing and Evolving Intelligence (NCEI'2012) also celebrated 10 years of KEDRI

New Zealand-China strategic research alliance project

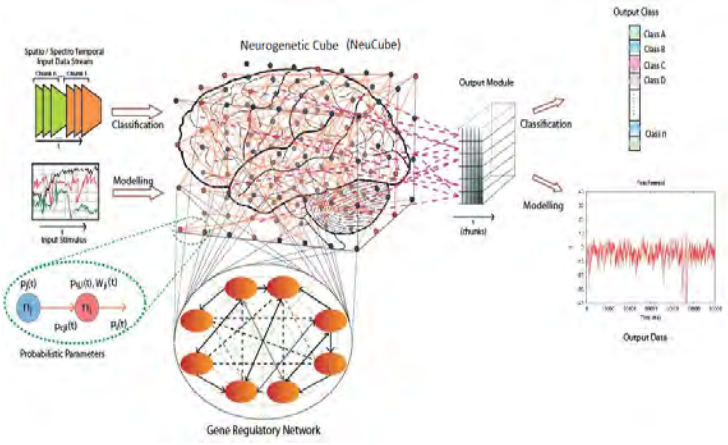
Recognising the educational and science benefits to be gained through a co-operative program promoting scholarly activities and international understanding, AUT and the Institute of Automation at the Chinese Academy of Sciences, Beijing, China (CASIA), entered into a Memorandum of Understanding in October 2010 that formalised the already established research contacts between KEDRI and The Key Laboratory of Complex Systems and Intelligence at (KLACSIS).

In 2010 KEDRI and KLACSIS signed a research agreement in the presence of the Vice President of the China Academy of Sciences and the New Zealand Minister of Science and Innovation to develop novel neural network information methods for advanced robotic systems and their applications for neuro-rehabilitation and stroke prediction and prevention. The project includes researchers from the National Institute for Stroke and Applied Neurosciences (NISAN) and other research centres from the Faculty of Health at AUT and clinical partners from China. The International Relationship Funding Agreement between the Ministry of Science and Innovation and AUT (KEDRI) for $300,000 over 3 years has been finalised.

The joint team integrates expertise on novel spiking neural network methods for brain data analysis (KEDRI), stroke data collection and processing (NISAN) and neuro-rehabilitation robots (KLACSIS).

Other research partners are joining the project that include the Institute of Biophysics at the Chinese Academy of Sciences and Chinese commercial companies involved in producing hardware and software systems for neuro-rehabilitation. The project includes the development of new, joint IP based on the existing IP at KEDRI that will be shared by the partners. Preparation is underway for a larger project proposal to the NZ Ministry of Business Innovation and Enterprise and the China Academy of Sciences for the next 5 years.

The second strategic partnership is the East China – West China Tripartite Project. The purpose of the New Zealand-China Tripartite Fund is to encourage the development of strategic research relationships between New Zealand and China's existing partnerships. KEDRI responded to this initiative and a tripartite agreement was signed in 2008 and renewed in 2012, with AUT (KEDRI), Shanghai Jiao Tong University (SJTU - East China) and Xinjiang University (Urumqi - West China) to cooperate on the development of intelligent information methods and advanced software systems for ecological and environmental modelling and prediction, along with developing long term educational relationships. This also involves researchers from the National Centre for Bio protection at Lincoln University. The methods and systems will be offered both in New Zealand and China for commercialisation at a later stage. The project is funded by Education NZ.



A block diagram of a SNN NeuCube model for spatio-temporal brain data analysis, modelling and understanding

- Eco Sym, interactive installation designed to simulate NZ marine ecosystem, http://leejsimpson.fantailstudios.co/Eco_Sym.html

The Collaboratory for Colab

Colab is the Faculty's newest Research Institute. Formed in 2012, it merges the existing Interdisciplinary Creative Technologies programmes, the earlier Creative Industries Research Institute, and the first iteration of Colab, a TEC funded project to encourage and support innovation, industry partnerships and capability building.

Led by co-directors, Frances Joseph and Charles Walker, their remit is to encourage researchers, students and stakeholders to simultaneously imagine, construct, articulate and navigate rapidly changing social, economic, technological and career environments. They are a diverse community of creative people, working together, in an environment from which new ideas will emerge. Colab researchers come from a range of backgrounds, including art, design, computer science, animation, game design, engineering, mechatronics, architecture, business and organisational development.

Colab has also established a Faculty Labs Network, to strategically manage and develop a number of high end technology facilities, including the Textile and Design Lab, The Additive Manufacturing Lab, The MoCap Lab, the Materials Research Lab and the Interaction and Immersion Lab. This network builds the capacity to contribute to strategic international networks, and raise the profile and attractiveness of AUT's transdisciplinary research programmes. The Colab brand suggests connectivity, community and collaborative inquiry independent of any particular discipline or technology. They recognise that the significant challenges for research and practice in the 21st century are too complex to be solved by any one discipline, and believe that success in the future will depend on people with imagination, advanced technological skills, methodological awareness and the entrepreneurial ability to link-up and apply different kinds of academic or professional knowledge in new ways.

The transdisciplinary, thematic research clusters seek out new perspectives on complex problems. Key emphasis is placed on systems thinking, collective imagination, relational ethics, new materialities, tools and ways of collaborating in response to emerging local and global cultures.

Specific projects have drawn on interaction design, responsive systems, physical computing, transmedia communications, gaming & immersive entertainment, sonic environments, and entrepreneurship. Yet, we recognise that as the technologies and practices that underpin these emerging fields become more pervasive, they continually challenge and transform conventional discipline-based assumptions about appropriate forms for teaching and research. For us, this also raises more general questions about the University's wider role in education for as yet unknown ways of living and working.

‘Meeting the Prince in Merino’ - AUT Textile and Design Lab: Wool based research and development

AUT’s Textile and Design Lab (TDL) has recently entered its seventh year of operation and is continuing to build its reputation as a centre for innovation, research and development in the areas of electronic knitting and digital textile printing.

In November 2012, the lab was invited to showcase some of the work it had developed with its post graduate students at the Shear Brilliance Exhibition hosted by the Campaign for Wool, whose patron, HRH The Prince of Wales, attended. Six AUT post graduate students’ work was selected for the event, which was held at the Cloud on Auckland’s waterfront.

Senior Lecturer in Fashion and Textiles, Mandy Smith, showcased some of her seamless merino wool knitwear that she had developed at the TDL as part of her PhD thesis. Mandy’s work explores the three-dimensional shape possibilities that fine merino wool allows by extending the design parameters of digital knit. Art and Design PhD student, Verena Ziegler, exhibited her felted wool tiles that offer all the benefits of natural 100% New Zealand wool: non-allergenic, fire resistant, air purification properties and moisture control are all harnessed in her sustainable, cost effective modular felt tile system. The tiles are designed to be applied to existing walls and ceilings without the need for building revision.

Master of Design (Textile Design) student Jyoti Kalyanji, displayed her collection of knitted fabrics made from wool, cotton and metallic fibres that were inspired by New Zealand’s native birdlife. Jyoti has recently completed her Master’s degree and will be continuing working with the TDL as she starts her PhD studies in early 2013.

The use of knit technology for non-conventional applications is something that the TDL actively encourages. One of the more novel applications developed with the lab’s technology is the work of Kate Ramsay, a Master of Design (Product Design) graduate who has worked extensively with TDL Technician,

‣ HRH The Prince of Wales, Kate Ramsay, Peter Heslop, at the Shear Brilliance Exhibition

Mandy Smith at the Shear Brilliance Exhibition

Gordon Fraser, over the last two years to create knitted structures for her 'Kotuku' lighting pieces. Kate's work is a fusion of design, art, craft and technology using merino wool in conjunction with fibre optics.

Following the Shear Brilliance exhibition, Kate was invited to showcase her work at the Campaign for Wool's 'Wool House' exhibition in London, which ran from 13-24 March 2013. The venue, Somerset House, is set to comprise seven individual rooms, each showcasing the fibre's versatility in the realms of fashion, art, home goods, and interior design. Kate will rub shoulders with several well-known designers including knitwear impresario Donna Wilson, hotel design director Kit Kemp and rug-weaver Roger Oates, who will exhibit exclusive room sets alongside a giant installation by acclaimed Dutch tapestry artist Claudy Jongstra.

Another 'stand out' at the Shear Brilliance exhibition was Pow Kusolchan's customised table lamps. Pow, a recent Bachelor of Design (Textile Design) graduate, applied her manipulated land and seascape images to light weight woven merino wool fabrics using the Textile and Design Lab's digital textile printer to create a collection of stunning lampshades.

Following extensive research into the processes associated with digitally printing merino wool fabrics, the TDL exhibited three large format digitally printed artworks that had been created by New Zealand artist, John McDougall. Many commercial printers that the TDL has engaged within recent years have experienced difficulties in achieving good quality digital prints on wool fabrics. TDL staff set to work to try and overcome some of these difficulties; with the aid of an experienced textile chemist, were able to achieve some outstanding results on both woven and knitted substrates. As well as being engaged in the further development of knitted and printed wool based products, the TDL has identified a number of key areas in which its research efforts are focused: design innovation through creative projects; e-textiles and smart material developments and applications; sportswear applications; medical and healthcare applications; print design; the development of integrated supply models; and design methodologies and pedagogies for teaching digital textile design.

Digital Art Live

Initiated by a core team comprising Frances Joseph, Nolwenn Hugain Lacirre, Kim Newall, James Charlton and Charles Walker, Digital Art Live (DAL) is an ongoing partnership between Colab and Auckland Council's 'The Edge'. Established in 2011, it is New Zealand's first and only continuous programme of research and production in the field of interactive electronic art. The location within a public space, beyond the confines of a gallery, has also stimulated a plethora of experimental approaches and new opportunities for research, advanced practice and audience engagement.

While digital technologies are increasingly used as tools to make art, and digital art works are occasionally included as part of broader exhibitions or presented in periodic specialized events - such as the Aotearoa Digital Artists (ADA) annual symposia - very little theoretical or applied research has, until now, explored the expressive potential of technology as an artistic medium, *per se*.

Moreover, research into the aesthetics of interaction, as philosophical and critical investigation of the perception and validation of sensuous experiences offered by new technologies, has also been largely neglected Elsewhere, interactive art is recognized as a radically interdisciplinary field, a claim that is also supported by the sheer breadth of interest and engagement evident in the Colab/DAL programme. Interestingly, fewer than half of the DAL exhibitors have so far identified themselves as visual artists. The project has engaged practitioners from diverse fields including spatial design, creative technologies, film, animation, special effects, computer programming and engineering, working in interdisciplinary teams. Some exhibitions have incorporated associated events involving performers (Vitamen S with *Be Tender*), dancers (Carole Brown with *Test Tone*) and musicians (the hip hop group Solid at the opening of *Typeface* and The Spoilers of Utopia with *Crowd Control*). All of this has, in turn, stimulated new relationships between researchers, practitioners and public audiences, as well as spurring the technical development of novel software and hardware interfaces.

As these new interactive technologies become ubiquitous, new areas of research and practice are also developing across an increasingly broad domain, including learning, serious gaming, marketing, experience design and interface design. At the same time, this diversity throws up some equally radical differences in approach by participants working across the technologies and the humanities. The Colab/DAL project works to turn any inherent tensions into creative and productive fusions - not just in terms of the final exhibited product and critical reception, but also in relation to the collaborative *ethos* of production and its symbolic civic value.

The significance of the Colab/DAL project, then, lies in its unique position as a focus for interdisciplinary research, development, creative practice and public presentation of interactive art in New Zealand. The project also addresses the relative lack of experienced practitioners currently in New Zealand by fostering a new research-based community.

In this emerging environment, artists, educators and technologists all contribute to a wider discourse about interactivity as a creative, collaborative and knowledge-based medium. The current volume of the peer-reviewed *Colab Journal of Creative Technologies*, explores this expanded field of digital interactivity. The Colab/DAL project has been successful in attracting external funding from a variety of partners, including Creative New Zealand, *New Terrains: Digital Art in Non Gallery Spaces, 2011*; The New Zealand France Friendship Fund for *Digital Exchanges*, 2012, and Auckland Council's Creative Communities Scheme for workshops for *Wandering Creatures*, 2012.

The project also received AUT Faculty of Design and Creative Technologies Interdisciplinary Research Award for its *Contribution to the Research Environment*. Other AUT staff who have contributed to the Colab/DAL research environment include Ans Bradford, Clinton Watkins and Greg Bennett.

- Digital Art Live

- John Tookey

Developments in Construction Management

Dr John Tookey moved to AUT in 2009 in order to develop the construction management (CM) discipline area in New Zealand. To this end he has assembled a team of five researchers and educators in CM.

This grouping is known as the Centre for Advanced Studies in Construction and Engineering Management (CASCEM).

In addition to the tenured academics and researchers in CASCEM, there is a cohort of some 15 PhD students engaged in CM research, all of whom are closely linked to industry. Dr Tookey is a member of the NZ construction industry 'productivity partnership' and believes that industrial productivity is closely and profoundly linked to the ability of any industry to be able to conduct and learn from research. To that end all of Dr Tookey's and CASCEM's research has a strong degree of application as opposed to theoretical content.

Through Dr Tookey's record to date, CASCEM has leveraged a range of different research projects and developed future CM capacity. These have included:

- CM development activities at AUT (worth $1M over five years)
- A logistics based study of construction materials movement in Auckland. This project (worth $120k over 2 years) addressed the logistics lifelines of Auckland, mapping the movements of construction vehicles and their loading in the central district.
- Dynamics of urban densification in Auckland ($90k over 2 years). This project is focussed on the mechanisms by which Auckland will grow in the future and informs the Geobuild system anticipated by the future online consenting process.
- Evaluation of the costs of a zero waste strategy for construction materials suppliers ($75k over 3 years).
- Evaluating house building productivity by group builders ($38k)

In addition to the projects listed above, Dr Tookey has also secured a range of additional funding for CM research in the School of Engineering. The unifying concept behind Dr Tookey's research in CASCEM is to deliver fast track industry focussed research funded by industry on behalf of industry.

This is a key differentiator between AUT and its peers - developing new concepts, ideas and understanding for industry in an accessible manner.

Looking ahead

Dr Tookey is seeking to operationalise a new concept known as CUBE - the Centre for the Urban Built Environment. CUBE is a research entity that will be housed by AUT aimed at conducting 'quick return' industry-focussed research in the NZ context - something previously ignored by researchers.

To this end CUBE has already secured backing from a range of Auckland/NZ entities with the aspiration of helping Auckland achieve its aspirations for the future as expressed in the Auckland spatial plan 2013.

In the future Dr Tookey is aiming to truly deliver on the notion of AUT being the 'University for the changing world'. This will be achieved by creating research activities with strong industry connections and outputs that are completely linked to industry improvement.

Dealing with pests

New Zealand flora and fauna evolved in the absence of mammalian predators.

The recent introduction of a suite of non-native predator species, either accidentally or intentionally by human inhabitants, has had a devastating impact on the composition of indigenous ecosystem.

The Mammalian Species Control project, including AUT's Shane Inder, is an interdisciplinary, AUT, University of Auckland and Lincoln University, long term research project that addresses biodiversity issues caused by the introduction of mammals into New Zealand's unique ecosystems

The impacts of these introduced inhabitants may be best illustrated through the impact on the bird population. While early settlers to New Zealand often reported on the impressiveness of the 'dawn chorus' reflecting the aural abundance of bird calls, over 40% of the pre-human land bird species are now extinct, and the proportion of birds classed as threatened is now proportionally one of the highest in the world.

The exotic mammalian pests (such as mice, rats, stoats, ferrets and possums) continue to cause irreparable damage to New Zealand's biodiversity. Due to the large areas of inaccessible wilderness, New Zealand has become heavily reliant on persistent anticoagulants and aerially applied sodium fluoroacetate (also known as '1080') for broad scale control of these pests. While manual trapping through ground based operations is common practice, it is very time consuming, labour intensive and not a cost effective solution given the large scale of the problem.

The Ministry of Business, Innovation and Employment (MBIE - formerly Ministry of Science and Innovation) substantially funded the project which started in 2010 and will continue until 2015.

The interdisciplinary team from across New Zealand has recently developed an alternative to 1080 toxin. The team includes researchers from Lincoln University, University of Auckland Chemistry department, Otago University Medical School and industry partners Connovation Ltd. This humane toxin is the first new toxin to be registered for use in New Zealand in over 30 years, and the first with a readily available antidote. Due to the complexity of factors associated with pest control activities, the development of humane toxins is only a small part of the solution. The effective delivery of the toxin to the pests is a significant issue and still needs to be overcome. The current use of toxin-cereal pellets aerially sewn or delivered in ground bait stations is insufficient to fully realize the benefits of the new toxin.

The need for a next generation delivery system has been identified. Such a system needs to reliably deliver multiple kills, without requiring frequent re-supply, to target-only species and while being inert to all other animals (particularly indigenous). The delivery system should ideally be low cost and an effective alternative to existing solutions. The system needs to be small, light, easy to transport and easy to operate in the diverse range of environments rats, stoats, ferrets and possum are found. The need for this toxin delivery system forms the basis of the on-going collaboration with AUT and is the core focus of Shane Inder's research.

- Shane Inder's collaborative project (Mammalian Species Control) with University of Auckland and Lincoln University

- Field trials of prototype devices by the interdisciplinary team

Prior to the involvement of Shane Inder from the Industrial Design and Innovation department at AUT, crude, prototype devices were developed by Department of Conservation (DOC) staff, along with engineers from toxin manufacturer Connovation Ltd.

The approach taken was one of functional pragmatism, which was appropriate given the expertise of the developers. Although DOC staff are potential end-users of the device, they have not been exposed to user-centered design approaches, which aim to address the broader requirements of all stakeholders.

Prototype units to date have been constructed from materials and using processes familiar to those involved and orientate toward basic technical requirements, with little consideration or detailed understanding of design process. Consequently, little time was spent assessing the usability of the potential design solution (e.g. transportation, ease of installation, resupply and maintenance).

The Industrial Design approach aims to research and evaluate not only the technical requirements, but also stakeholder and user needs to help contextualize the project. Before embarking on an iterative process of designing and testing concepts, a variety of research methods were used to gain a greater (empathic) appreciation of user needs as well as a deeper understanding of the 'field' and the constraints imposed by working in varied and often challenging environments. Stakeholder interviews and personal observations 'in the field' were extensively used throughout the initial stages of 'engaging as designers' in the project. Furthermore, the field experience and interaction with a diverse group of experts help to not only inform the project as to the functional/physical constraints of the environment, but also gave first hand insights into the complexities of ecological systems, and the interactions and behaviors of those organisms in those systems.

Nearing a crucial milestone, three student interns were engaged to assist in the development of toxin delivery system prototype devices for rats, stoats and possums. The requirement was for devices to securely house the new, innovative technology. The prototypes were required to be robust enough to be used in extensive field trials, and be a focus for ongoing usability testing.

Disseminating learning from the project was the focus of a recent conference paper presented by Shane Inder at Design Ed Asia in Hong Kong co-authored by Designer and Ecologist Dr Stephen Reay and Design Educator Andrew Withell.

An article titled "Innovative developments for long-term mammal pest control in New Zealand" describing the innovative toxin delivery system, was recently accepted for publication in the Journal of Pest Science. The article was written by Dr Helen Blackie as head and co-authored by the 14 member interdisciplinary team involved in the project.

Autonomous Flying Vehicles

A mini-helicopter designed by an AUT Engineering team capable of fully autonomous flight could be used to detect hazards and help farmers improve yields. With the ability to carry sensors that can detect things like temperature, humidity and chemicals, the Miniature Unmanned Aerial Vehicle (MAV) executes its own orientation and position control without human interferences after receiving commands to complete a mission.

The software designed for the MAV's auto pilot programme communicates with sensors to determine its flight trajectory and control speeds. The result of Dan Reader's Masters of Engineering project, the MAV can fly up to 10km away and has potential applications in the military, industry and the public sector.

The MAV was constructed with a combination of hardware and software that began with a simple computer on a circuit board. The finished product runs on a Linux operating system with a 32-bit/720MHz ARM processor. All the real time computation can be completed on-board, making the MAV truly autonomous.

Mr Reader's supervisor, Associate Professor Loulin Huang says he has already received approaches from industry and other research institutes to work with his team on developing the project commercially."It has many potential applications. For example, if we want to check high rising power lines, we can fit it with instruments (e.g. camera) then instruct the MAV to fly along or hover above the lines to detect any deficiency of the lines while avoiding obstacles; it can also be used to monitor the condition of the soil and the crops in the farm of a large area, and then determine the amount of water, fertilizer or pesticide to be applied at specific locations to avoid waste of resources and reduce pollutions," says Huang. The MAV was built from scratch using a range of expertise in electrical and mechanical engineering as well as software design from AUT's School of Engineering.

Associate Professor Huang says the project was completed by a 'dream team' from within the school.

"Dan has been fantastic. In engineering, theory is important but we must be able to put that theory into practice. Dan is an all-rounder and quick learner. Great with theory and also very hands-on," he says.

Senior engineering technician Jian Huang designed the circuit board used by the MAV. Dan drew on his 10 years working in the IT industry and his knowledge of mechanical engineering gained during his Master's degree to build the MAV. He says the AUT expertise on the project were 'exceptional'.

"Jian designed circuit boards of amazing complexity which was such a fantastic resource," says Dan.

The goal of this project, says Associate Professor Huang, has been to employ lean and practical mathematical models and real time control systems in the development of an autonomous MAV of non-trivial payload with a reconfigurable and expandable structure catering for the needs of different applications.

- Jack Reader, Autonomous Flying Vehicles

Ahmed Al-Jumaily

From pharmaceutical to physical therapies

Over the last 15 years the Institute of Biomedical Technologies (IBTec), led by Professor Ahmed Al-Jumaily, has been using engineering principles combined with physiology and medical expertise and knowledge to produce physical rather than pharmaceutical therapy and non-invasive diagnostic tools and devices Industrial research is one of the key strengths of IBTec. For more than a decade, IBTec's contributions to the Auckland industrial community can be witnessed by the number of projects they have conducted on behalf of local companies and research collaborators, in particular in the area of biomedical devices. Collaborations with Fisher & Paykel HealthCare has led to very strong partnerships which have resulted in many projects, including most recently modelling the upper airways and improving *continuous positive airway pressure* (CPAP) noise level. IBTec focuses on using vibration, acoustics, system dynamics and control to develop medical devices. This has emerged into using Pressure Oscillation (PO) as the main core of many research projects on non-invasive arterial diagnostics and lung therapies.

For the first, IBTEC have used pulse waves analysis to conduct research on behalf of Pulsecor Ltd to validate one of their devices. They also used PO through mathematical and computational modelling and clinical validation to develop different algorithms and techniques for non-invasive arterial diagnostics.

Using animal models and CFD modelling, IBTec recently proved that non-invasive measurements of pulse waves can give a lot of information on diseased arteries. Further, IBTec have recently established collaborations with Counties Manukau Super Clinic to develop a physiological Aortic Arch Aneurysm (AAA) prediction method.

For respiratory therapies, the Institute has developed state-of-the-art methodology in delivering PO to various parts of the lung. It is not all about the PO waves and their generation, rather it is about the way they are delivered, their strength and the characteristics they possess. The IBTec team demonstrated that certain waves with specific characteristics can target a specific part of the lung for a particular treatment. Based on this, the Institute has investigated the effectiveness of PO in treating

(i) Respiratory Distress Syndrome (RDS) in the lower parts of the lung,

(ii) Asthma in the central parts of the respiratory system and

(iii) Obstructive Sleep Apnea (OSA) in the upper airways.

In 2008 the Institute, in collaboration with the University of Western Australia and Fisher & Paykel Healthcare completed the validation of its mathematical model which demonstrated that PO can improve lung compliance, inflammatory stresses and preserve surfactant function in treating RDS patients. Over the last 10 years and in collaboration with the Mayo College of Medicine IBTec has demonstrated that PO does relax contracted airway smooth muscles which are the main driving mechanism for an asthmatic attack. This has evolved into a successful *in vivo* airway bronchodilation in acute asthmatic animal models. Further research is currently undergoing on in chronic animal models. It is anticipated that in the near future this work will evolve into human clinical trials.

From 15 years of implementing PO for lung applications, in 2009 IBTec has developed an innovative state of the art methodology in delivering PO to various parts of the lung. In 2012-2013 and under the scheme of the FP7-Marie Curie International Incoming Fellow (a European Union funded project), the system is being used for the first time on human subjects for a new method of OSA treatment. This research is conducted in collaboration with two international organisations in Switzerland. The host for this research is the Lausanne Institute of Technology (EPFL); however, the research team led by Professor Al-Jumaily comprises members from EPFL and hospital partners at the Centre for Sleep Investigation at the Centre Hospitalier Universitaire Vaudois (CHUV). Professor Al-Jumaily is transferring his longstanding and in-depth knowledge of PO and respiratory system modelling to the host organization through leading the experimental and theoretical studies of this research. The research was planned to be conducted in two stages. Over the last six months the first stage has resulted in very successful clinical trials with significant reduction in the titration pressure and the number of apneas per hour from those normally experienced using standard continuous positive airway devices (CPAP).

The motivation for this research comes from the fact that over the last three decades pressurising the lung using CPAP device has been used as an effective way for the treatment of OSA. Approximately 2% of women and 4% of men in the middle-aged work force meet the minimal diagnostic criteria for sleep apnea syndrome. While CPAP has been found to be an effective treatment of OSA, a number of drawbacks and negative impacts have been reported. Over 45% of CPAP patients report negative side effects including discomfort, dry nose, nasal congestion in addition to the possibility of negative physiological impacts caused by the effect of CPAP on cerebral blood flow (as reported by our collaborators at EPFL CHUV).

Although there are many hypotheses available which support the fact that PO can help reducing the titration pressure without jeopardizing the OSA treatment; our hypothesis focuses on the fact that the upper airway structural dynamics rather than physiology is the main driving mechanism for the new technology. Using mathematical modelling we managed to obtain targeted values of PO waves which can reduce the number of apneas per hour as much as half of those generated during use of normal CPAP devices.

This work will provide new fundamental information about the physiological impact of PO in lung treatments with the potential to have a compact add-on system for the three diseases RDS, Asthma and OSA. It is expected that the new technology will lead to a novel method for lung treatments.

Professor Welby Ings

Professor of Design and Narrative

AUT School of Art & Design

Welby Ings is a professor in Design at AUT University. He is an elected Fellow of the British Royal Society of Arts, and holds a PhD in applied narratology. He has been a consultant to many International organisations on issues of creativity and learning and is himself a multi-award winning designer, filmmaker and playwright. In 2001 he was awarded the Prime Minister's inaugural, supreme Award for Tertiary Teaching Excellence.

Film is created in many ways but generally, the films we watch are conceived as written scripts that are later translated into images by directors, production designers and actors. However, if film may be understood as 'talking pictures' it might also be conceived and developed inside the domain of images. This alternative method reaches far beyond the didactic storyboard. By using it, the creator 'draws' a world into being. By forsaking the script (scriptum), he engages the Greek idea of skariphasthai (to scratch an outline, sketch) as a mode for navigating an enstasic space where thought is pursued, encountered and drawn into tangibility.

Using drawing as an ideational tool, the designer processes ideas that words can't reach, he touches the nuanced, draws into what withdraws, and retrieves from a protean world, a complex story that thinks ... and speaks in pictures. Using Ings' recent short film *Munted* (2011) and reflecting upon considerations of thought (Heidegger, Rosenberg and Rajchman) the address traces a trajectory of practice-led research through the creation of the film's story and treatment.

In doing so, it underpins a screening of the film with an illustrated journey through ideation, and the design of sets, character, sound, animation and narrative.

Munted premiered in the 2011 Montreal World Film Festival. The film went on to official selections in the 53rd Bilbao International Film Festival, 29th Brussels International Film Festival, 27th Berlin InterfilmInternational Short Film Festival, 18th Regensburg Short Film Week, 2011 Vladivostok International Film Festival, 2012 ZUBIAK Getxo Film Festival, and the 2011 Lucerne International Film Festival.

It has to date won: Best Short Film- 2011 Lucerne International Film Festival, Finalist in the 2011 New Zealand Design Awards; Jury Special Honour- 18th Regensburg Short Film Week; and the Audience Award at ZUBIAK Getxo (Spain).

When Ings wrote his master's thesis on Pakehas' relationship with the land, he gave it to his father, who had been an interview subject for the research. His father asked him why he'd written it in language he couldn't understand and so Ings rewrote the entire thesis, and has since then tried to ensure "subjects" of his study are able to understand and engage with the resulting research.

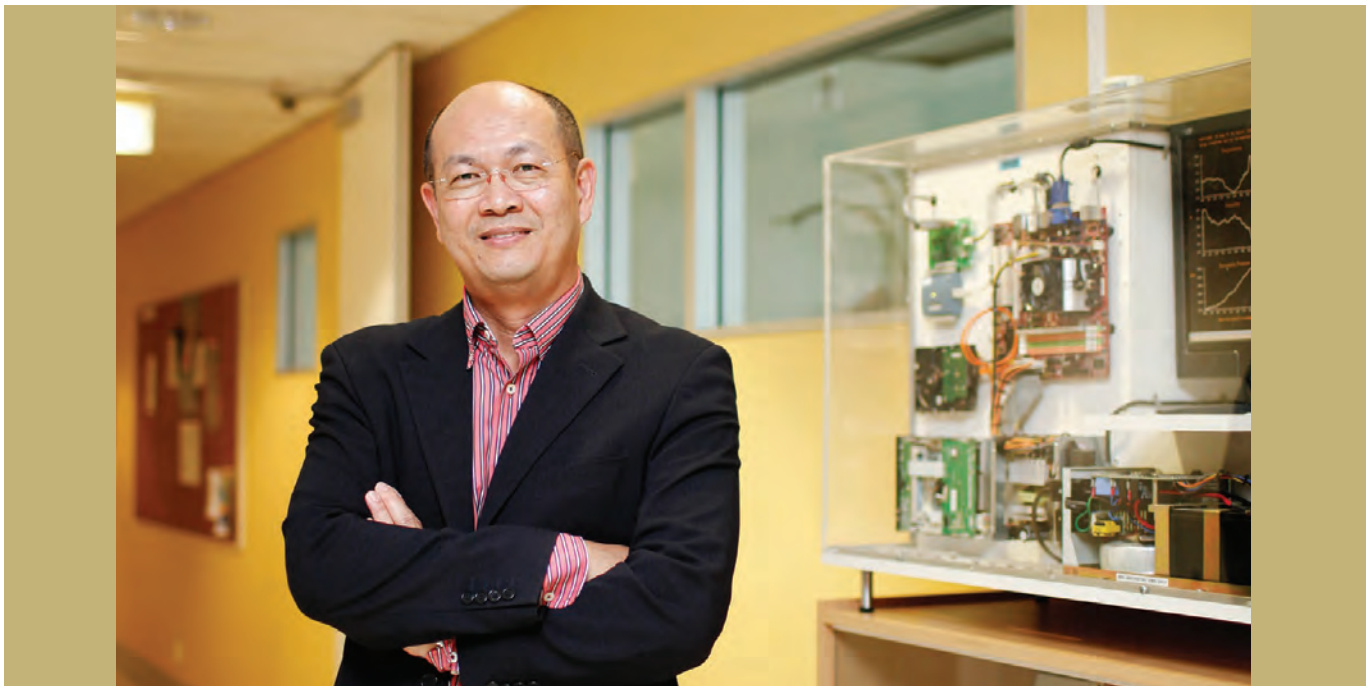
The same approach informs his filmmaking. *Boy* was part of Ings's PhD thesis and
- as well as being long listed for an Oscar
- won Best Short Film in the prestigious Cinequest International Film Festival and was officially selected in competition for over 50 international film festivals.

His next project, a feature-length film about the relationship between a boy who thinks he can fly and a grandfather who was killed as a conscientious objector in World War I, is told through filmed footage embedded into torn photographic landscapes.

Welby Ings

Ings joins a group of artists, academics and story tellers attempting to share appropriately the stories of those who have been previously unheard. In *Boy*, the text that is incorporated into the images and replaces dialogue includes the line: "in my childhood there were no catechisms or blessings of grace, just things bound by tradition and silence".

Ings now creates opportunities in which the silence can be broken. What emerges is not a tragic representation of trauma and sadness, but creative spaces in between mainstream structures where the "misfits" find community, love, respect and adventure, despite the red necks who seek to hurt them and the laws that try to restrict their lives.



- Tek Tjing Lie

Professor Tek Tjing Lie

Head of the Department of Electrical and Electronic Engineering

AUT School of Engineering

Professor Lie is Head of the Department of Electrical and Electronic Engineering at the AUT school of Engineering.

He received his BS degree from the Oklahoma State University, MS and PhD degrees from Michigan State University.

He has previously held academic position in the School of Electrical and Electronic Engineering at the Nanyang Technological University. His research interests are in the fields of Power System Operation and Control, Deregulated Electrical Power Market, Renewable Energy as well as Smart Grids.

The development of energy sources has primarily been influenced by the demand for energy and the cost of development. Regulations promoting competition in the market and the move toward energy conservation and protection of the environment have become important considerations in this process in recent years. Reliability and security of supply issues are aggravated by consumers' expectations of competitive electricity prices on one hand, and demands for better returns by investors in an era of rising fuel costs on the other. From the supply-company's perspective, customer loyalty and retention will be increasingly important as the market evolves amid lowering prices and increasing costs. At the same time, distributed resources that bring generation closer to load centres are emerging as a possible means of safeguarding security and reliability of power supply to consumers. There is an active global trend for the appropriate inclusion of renewable energy in electricity markets, despite their higher costs, because of the push for environmental responsibility and the need to diversify energy sources. These developments mean that we need to take a fresh look at the whole problem and devise appropriate solutions for utilities' future decision making.

They have also sparked the move to distributed generation, using natural gas competing against solar, fuel cell, and wind, among other technological innovations. Interconnection of these co-generators and non-utility generators to both the transmission and distribution systems, while maintaining reliability of supply and safety, will continue to be a challenge.

Professor David Robie

Professor of Journalism, Director of the Pacific Media Centre

AUT School of Communication Studies

David Robie is director of the Pacific Media Centre in AUT's School of Communication Studies and editor of the international peer-reviewed journal *Pacific Journalism Review*. He has lived and worked as an international journalist and media educator in seven countries for more than four decades.

Coups, conflicts and Human Rights
Pacific media challenges in the digital age

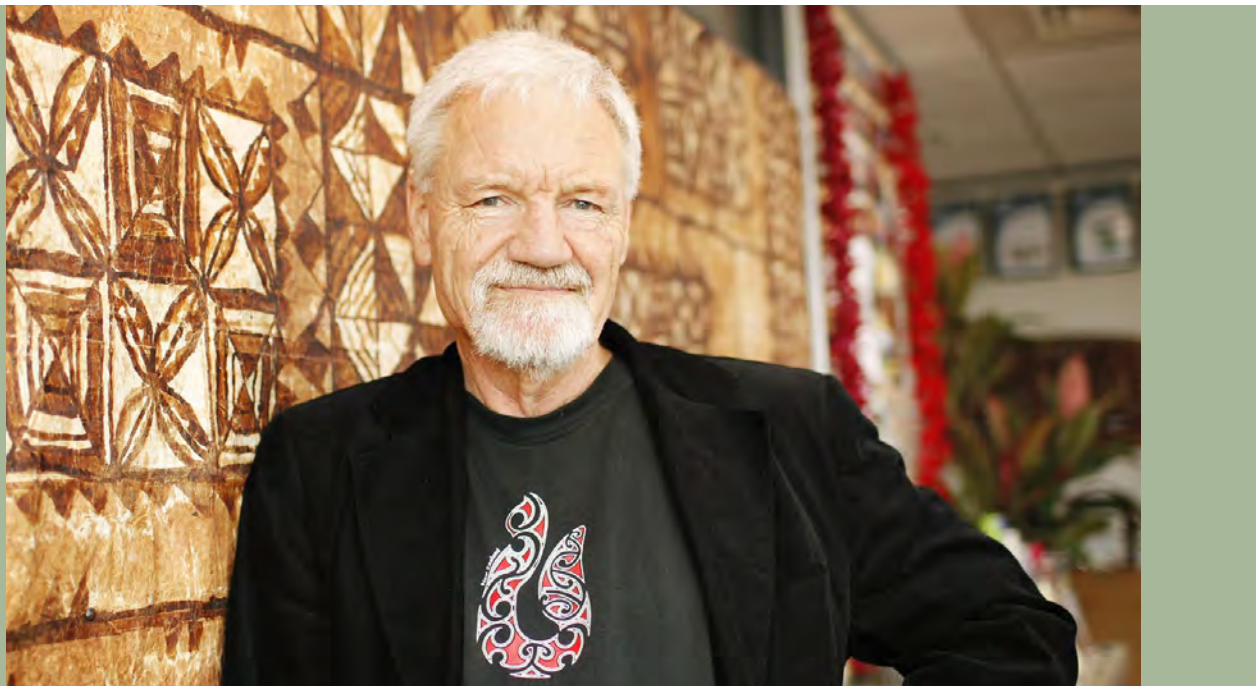
At the heart of a global crisis over news media credibility and trust is Britain's so-called Hackergate scandal involving the widespread allegations of phone-hacking and corruption against the now defunct Rupert Murdoch tabloid newspaper *News of the World*. Major inquiries on media ethics, professionalism and accountability have been examining the state of the press in New Zealand, Britain and Australia. The Murdoch media empire has stretched into the South Pacific with the sale of one major title being forced by political pressure.

The role of news media in developing nations and the declining credibility of some sectors of the developed world's Fourth Estate also poses challenges for the future of democracy. Truth, censorship, ethics and corporate integrity are increasingly critical media issues in the digital age for a region faced with coups, conflicts and human rights violations, such as in West Papua. In his address, Professor David Robie reflected on the challenges in the context of political economy of the media and journalism education in the Asia-Pacific region. He also explored emerging disciplines such as deliberative journalism, peace journalism and revisited notions of sustainable development journalism and citizen journalism. Dr Robie holds a PhD in History/Politics (2004) from the University of the South Pacific, Fiji, where he was formerly head of the Pacific regional journalism programme (1998-2002).

His Masters in Journalism degree was gained at the University of Technology, Sydney in 1996. He was also previously coordinator of the University of Papua New Guinea journalism programme prior to 1998 and acting head of the South Pacific Centre for Communication and Information in Development (SPCenCID) at UPNG.

As a journalist, Professor Robie has worked for a global news agency and reported widely in the South Pacific. He has written and edited several books on Pacific media, politics, social justice and human rights, including *Eyes of Fire: The Last Voyage of the Rainbow Warrior; Blood on their Banner: Nationalist Struggles in the South Pacific; Tu Galala: Social Change in the Pacific; Nius Bilong Pasifik: Mass Media in the Pacific* – with a foreword by the late professor I Futa Helu of Atenisi; and *Mekim Nius: South Pacific Politics, Media and Education*.

He was made an Australian Press Council Fellow in 1999, awarded the Pacific Islands Media Association Media Freedom Award in 2005, won a Vice-Chancellor's Excellence in Teaching Award in 2010, was founding editor of *Pacific Journalism Review*, and co-founded the Pacific Media Watch advocacy and research project.



- David Robie

AUT
UNIVERSITY

FACULTY OF DESIGN & CREATIVE TECHNOLOGIES

City Campus

WA Building (Level 6), Wellesley Street,
Auckland Central, Auckland 1010,
New Zealand.

Phone:
+64 9 921 - 9999 ext 8715

Email:
d&ct@aut.ac.nz