

RESEARCH & INNOVATION

ISSUE 1 2015

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Message from the DV-C Research & Innovation



Challenging and rewarding: that is the simplest and most fitting way to describe the past year in research. There have been many successes, and it is impossible to mention all of them in such limited space. It is perhaps more appropriate to attempt to demonstrate the breadth of UOW research, innovation and resources with a few of the many highlights here.

In engineering, we were thrilled to launch the ARC Research Hub for Australian Steel Manufacturing. Wollongong, with its steel manufacturing tradition and depth of engineering expertise at the University, is an ideal location for leveraging knowledge and know-how in this sector. The hub will undertake research to advance manufacturing techniques and processes, innovation in new products and best-practice pathways for bringing new ideas to market with benefits set to flow to UOW, local industry and beyond.

A landmark Twitter Data grant for PetaJakarta, a pilot study utilising a geosocial intelligence framework to map instances of flooding in Jakarta, was awarded to SMART researchers Dr Etienne Turpin and Dr Tomas Holderness and received significant international media exposure.

In another example of an innovative partnership with a non-government organisation, the Movember Foundation awarded \$2 million to Dr Stewart Vella, from the Faculty of Social Sciences, to undertake a collaborative study to promote

better mental health by engaging the medium of sport (with Team U-Mo-W supporting the cause and raising over \$12,000 for the Movember Foundation as well).

It was pleasing to see our success in national competitive grant rounds. The Minister for Education, the Hon. Christopher Pyne MP, announced 17 Discovery projects, five Discovery Early Career Researcher awards, one Linkage Infrastructure award, and a Discovery Indigenous grant for UOW in 2014, totalling \$8.9 million. As well, seven of UOW's academics were named among the nation's Future Fellows, with \$5.39 million awarded

It was pleasing to see our success in national competitive grant rounds... totalling \$8.9 million for UOW in 2014.

for their projects.

In innovation news, the iAccelerate Hub was officially opened in the Mike Codd Building at Innovation Campus and by the end of 2014, the iAccelerate team were supporting 19 startup companies, 13 of which are making sales. Also, in collaboration with Artesian Capital, a \$10 million venture seed fund was launched.

Our Global Challenges program supported more than 240 researchers across 39 projects spanning each of UOW's five faculties, as well as external organisations, to create projects that are truly multidisciplinary. Many of the Global Challenges projects, including PetaJakarta and the Movember project, were successful in winning external funds, whilst others achieved success by bringing together researchers and seeding ideas that would not have otherwise come about. As ever, many of our academics are being recognised with high honours and awards. The Statistical Society of Australia awarded Professor Noel Cressie with the prestigious Pitman Medal, in recognition of his outstanding achievements and contributions to the field of statistics. In the early career sphere, UOW PhD student Melinda Waterman, from the School of Biological Sciences, was awarded a 2015 Endeavour Research Fellowship to study the cell walls of Antarctic moss with collaborators from Chile and the US. This is just a brief snapshot of the great work happening here at UOW. I want to thank everyone in our research community whose work has contributed to our success so far, and I look forward to more rewards (and challenges!) ahead.

**Professor Judy Raper
Deputy Vice-Chancellor (Research & Innovation)**

New research to target superbugs in cystic fibrosis patients

Bacterial lung infections resistant to antibiotic treatment are the leading cause of death for sufferers of cystic fibrosis. Superdrugs targeting these 'bacterial fortresses' are the focus of a new research project led by UOW's Associate Professor Michael Kelso.

The treatment of potentially fatal lung infections in sufferers of cystic fibrosis will benefit from new research, which aims to develop new drugs against antibiotic-resistant pathogens. An international team of researchers, led by Associate Professor Michael Kelso at UOW, has received a \$588,687 grant from the Australian Cystic Fibrosis Research Trust (ACFRT) to gain a deeper understanding of a new class of multi-action antibiotics that show outstanding potential for treating life-threatening antibiotic-resistant 'superbugs'.

"Cystic fibrosis sufferers are constantly at the mercy of opportunistic pathogens that love to colonise their highly susceptible lungs. Respiratory biofilm infections are in fact the major cause of death in CF patients. We believe that our 'Trojan Horse' antibiofilm drugs will significantly impact these infections and improve the quality of life and the life-expectancy in sufferers of this devastating illness," A/Professor Kelso says.

The project builds on the world-first 'Trojan Horse' drugs, developed three years ago by the same team of scientists, who engineered antibiotics to release nitric oxide and directly target bacteria in high density communities, known as biofilms. Biofilms occur when bacteria grow together as communities, usually on surfaces, encased within a protective polymeric blanket, forming what is effectively a bacterial fortress. These fortresses give rise to chronic infections and are unresponsive to antibiotic treatments.

"We now want to create superior 'all-in-one drugs' that show both broad-spectrum bacterial cell-killing activity and biofilm dispersing properties. The improved antibiotics will be suitable for use as single-agent mono-therapies, meaning that the medicines are effective on their own," A/Professor Kelso says. An autosomal recessive genetic condition, cystic fibrosis affects around one in every 2,500 babies born in Australia. It means the body secretes an abnormal amount of excessively thick and sticky mucus within the lungs, airways and digestive system. This causes impairment of the digestive functions of the pancreas and traps bacteria in the lungs, resulting



in recurrent infections which lead to irreversible damage. The grant to A/Professor Kelso and his team is the first to be awarded to UOW by the ACFRT since its establishment in 1989. The fund supports high-quality research with a view to putting Australian medical research at the forefront of international efforts to manage and control life with cystic fibrosis. A/Professor Kelso is a medicinal chemist from the School of Chemistry and the Illawarra Health and Medical Research Institute (IHMRI), who for the past 18 years has worked in pharmaceutical

chemistry and drug discovery. His primary expertise is in the design and synthesis of new agents for treating antimicrobial-resistant bacterial infections and new anticancer drugs.

The research team also includes Associate Professor Scott Rice from Nanyang Technological University (Singapore) and Dr Nicolas Barraud from the University of New South Wales. They are actively seeking partners to develop the technology further and welcome inquiries from interested partners: mkelso@uow.edu.au

big ideas



We've got ideas - Big Ones! UOW's newest professors will come together to pitch their bold ideas and innovative research at the Big Ideas Festival on 25 August.

From using seaweed to delve into our understanding of the human brain, to creating a 'green' form of nuclear power, some of UOW's newest professors will come together to share their research that could change the world at the UOW Big Ideas Festival on Tuesday, 25 August 2015. Following on from the success of the 2013 event, this year's Festival will see 12 of UOW's recently promoted and appointed professors sharing their research with the community at University Hall. Interactive research stalls, live music and performance, and networking drinks will cap off two sessions of short and sweet 10 minute talks on a range of topics.

AVOIDING THE GREAT AUSTRALIAN BITE PROFESSOR ANDY DAVIS

The safety of many Australian beachgoers is currently reliant on 19th century technology. A long-standing shark-meshing program is purported to protect swimmers on more than 50 NSW beaches. While the efficacy of these nets in protecting swimmers is debated, their ability to destroy harmless marine life is well established. Annually, these nets entangle and kill an array of marine creatures, some of them critically endangered! So what are the alternatives? In this talk, Professor Andrew Davis

will consider some of the technological advances based on our improving understanding of the behaviour and movements of dangerous sharks.

THE LAST GREAT FRONTIER OF OCEAN GOVERNANCE PROFESSOR ROBIN WARNER

For many of us, the open ocean and deep seabed remain shrouded in mystery. These vast uncharted areas cover about half of the Earth's surface and host a major share of the world's marine resources and biodiversity, but remain largely ungoverned. With increasing threats to open ocean ecosystems from destructive fisheries, shipping impacts, and emerging uses such as bioprospecting, now more than ever we need a high seas conservation agreement. Professor Robin Warner will discuss the political momentum building in the United Nations for negotiations on a high seas conservation agreement and the potential elements of such an agreement.

**I AM TITANIUM
PROFESSOR MADELEINE DU TOIT**
Titanium is critical in applications in the chemical, aerospace, marine and medical fields on account of its low density, excellent corrosion resistance

and high strength-to-weight ratio. Titanium products can be manufactured using a number of processes, but larger components for engineering applications are typically produced using costly machining processes. Using fusion welding to join smaller subassemblies into complex components, or using arc-wire deposition additive manufacturing techniques can serve as alternatives, but may result in the formation of coarse titanium grain structures that reduce the strength and toughness of the component. Professor Madeleine Du Toit investigates the in-situ grain refinement of titanium alloys to produce a more superior product for worldwide use.

GREEN NUCLEAR POWER PROFESSOR HUIJUN LI

Human beings are currently heavily reliant on fossil fuel power, which has had a huge impact on the environment. Renewable energy sources are good supplements but they are not capable of supplying base load electricity. A promising solution to the current energy crisis is Thermonuclear fusion. A large amount of energy is produced and the generated nuclear waste has a very short lifetime. However the reaction occurs at very high temperatures. Equipment and materials need to be able

to perform under extreme heat as well as cope with any irradiation damage. In his talk, Professor Huijun Li will discuss his research in the development of innovative new structural materials to be used in fusion nuclear power stations.

WHEN ARE CHILDREN TO BLAME FOR THEIR ACTIONS? PROFESSOR MARC DE ROSNAY

Marc's research focuses on emotional development in early childhood, with particular emphasis on the ways that young children understand emotions and the inter-play between such understanding and their emotional experiences. In this talk Professor de Rosnay will ask the audience to consider the nature of self-control and responsibility for action. Questions of this kind are familiar to the law and to philosophy, but they should also be at the heart of our everyday thinking about children, and our understanding of their development. A proper consideration of these factors in early childhood takes us some way to a framework for social justice that will be acceptable to most members of our society.

TAKING CANCER PERSONALLY PROFESSOR MARIE RANSON

"You've got cancer!" Not something any of us want to hear. But is it a potential killer version, or a relatively harmless lump that can be easily removed and forgotten about? Professor Marie Ranson is working on deciphering which tumours are the really dangerous, or metastatic, ones, based on their genetic markers. Determining the genetic changes seen in metastatic versus non-spreading cancer will allow a quick safety check of a tumour which can help doctors stratify risk and guide their treatment choices. Professor Ranson is also working to develop cell culture systems using cancer tissue to rapidly test how well cancer cells actually respond to a particular treatment. These systems could be used to help steer decisions for effective personalised treatments.

"GETTING MEDIEVAL"? THE MIDDLE AGES IN MODERN POLITICS PROFESSOR LOUISE D'ARCENS

When people in Australia today hear the word 'medieval', what springs to mind is a world like that depicted in HBO's Game of Thrones: brutal and superstitious, governed by tribalism and revenge rather than justice or the rule of law. It is a word that conjures up everything we believe that we, as members of a modern democracy, have left behind. But if this is so, why do recent Australian parliamentary records show a marked increase in politicians describing today's world as medieval?

Why do the Middle Ages crop up so often in modern debates about anything from global terrorism to industrial relations or the environment? Why do satirists resort to medieval imagery so often when portraying politicians? In this talk Professor Louise D'Arcens will trace the surprising but revealing resurgence of the medieval into the global political vocabulary, and explore why the Middle Ages have again become so important to how modern societies think about themselves.

TENDRILS OF HUMAN THOUGHT FROM WITHIN A SEAWEED BRAIN? PROFESSOR ROBERT KAPSA

Seaweed materials are common ingredients in many foods and cosmetic products used every day by millions of people around the world. For centuries medicinal applications for seaweeds have been proposed for human illnesses including tuberculosis, arthritis, colds and influenza. Whilst these applications for seaweed are largely unsubstantiated in scientific communications, more recent applications for seaweed and seaweed products have emerged in tissue engineering and regeneration. Professor Robert Kapsa has been using seaweed products such as alginate to create small "brain" structures from the blood of a person with a neurological disease to study the function of their own brain. In this way, seaweed is providing a helping tendril into our understanding of human brain structure, function and disease.

YOU CAN'T HANDLE THE TRUTH! PROFESSOR DANIEL HUTTO

Our minds are in our heads; their contents are furnished by our senses. Our eyes and ears transmit information from the world that is received by the brain. Our brains compile this information to construct models and representations of the outer world, allowing us to deal with it intelligently. This has been the standard view in the sciences of the mind for centuries. But what if it isn't so? What if it isn't possible to 'pick up' information from the world? What if we can't really 'handle truth' or information? We would need to rethink our age-old picture of the mind, fundamentally. Perhaps brains do not really take in and process any information at all. Perhaps having a mind is more a matter of continually and actively engaging with selective aspects of our environment in sensitive ways. In this talk, Professor Daniel Hutto will promote such a major rethink about thinking itself, which should make a practical difference to how we approach the training and embedding of skills, both in adults and children, and provide a basis for new therapies in mental health.

**3D PRINTING ROBOTS IN JELLY
PROFESSOR MARC IN HET PANHUIS**
Jelly - a soft, wet and squishy substance, can be found in many kitchens around the world. 3D-printing is a new technology which is changing manufacturing and other industries. Traditional robots are made from metals and have problems picking up and handling fragile items such as an uncooked egg. So what have jelly, 3D-printing and robots have to do with each other? In this presentation, Professor Marc in het Panhuis hopes to show that jelly-type materials can be combined with 3D-printing to manufacture softer and edible robots.

THE DANGEROUS IDEA OF THE DIGITAL NATIVE PROFESSOR SUSAN BENNETT

Young people today are often referred to as 'digital natives'. The label makes intuitive sense because young people have grown up surrounded by digital technology and seem to be constantly engaged with their computers, phones and other devices. Some have argued that technology has fundamentally changed the way young people learn and that revolutionary change is needed across the education sector to meet the needs of these new learners. These ideas have led to a large body of recent research which, in fact, tells a different story. This research shows that the ways young people use technologies, the things they do with them and their reasons for using them are much more diverse than many once thought. Professor Susan Bennett will argue that this complex reality makes the digital native label much more than just a harmless stereotype. It makes it a dangerous idea.

THE MOLECULAR MACHINES OF LIFE UNDER THE MAGNIFYING GLASS DISTINGUISHED PROFESSOR ANTOINE VAN OIJEN

All living organisms are made up of cells, who themselves consist of a variety of biological molecules, such as proteins, DNA and lipids. The organisation and housekeeping of a cell is controlled by proteins, little machines that coordinate thousands of specialised tasks at the microscopic level. What seemed to be science fiction a few decades ago has become reality: using powerful microscopes with lasers and ultrasensitive cameras we are now able to visualise individual proteins and watch them do their various jobs. In this talk, Professor van Oijen will describe how we use these so-called 'single-molecule' techniques to visualise one of the processes fundamental to life: the copying of DNA. These tools are rapidly revolutionising diagnostic approaches to detect disease. **Register to attend this free event at: <http://bit.ly/1zbKvnT>**

It's an honour



Leading food science and diet expert, Linda Tapsell, has added another accolade to her name: Member of the Order of Australia. Here Professor Tapsell, AM, reflects on the career highlights and opportunities that led to this national recognition.

Is there a particular body of research which you think is the basis for the Member of the Order of Australia award?

The DAA noted the areas of "outstanding service and dedication to Australian Nutrition and Dietetics; in dietetic education and training, the development of professional competency standards, basic and applied nutrition and dietetic research, national nutrition policy development and publication and editorial leadership". All of the above areas are subject to scholarship. The body of research which relates to basic and applied nutrition and dietetic research was conducted in the 25 years I have spent at UOW. It began with clinical research on the effects of dietary polyunsaturated fatty acids on insulin resistance and later energy balance and body composition. This involved collaborations in the basic sciences with Professor Len Storlien. With my dietetic and clinical background I was able to develop dietary models (sets of foods) and intervention protocols that drew on understandings of mechanisms of dietary action from animal model studies. This transcended to studies of effects of whole foods (primarily containing polyunsaturated fatty acids, such as walnuts) on disease risk factors such as weight, cholesterol levels and blood glucose control. The next extension was studies of whole

dietary patterns with idealised dietary fat/or food composition - and eventually to lifestyle interventions linking clinical nutrition research with psychology and exercise science. This is currently the focus of the HealthTrack trial conducted with the Illawarra community through the Illawarra Health and Medical Research Institute. Overall, the body of research has exposed a conceptual framework that recognises the fundamental interdependence between nutrients, individual food, diets and overall lifestyle (and environments) in chronic disease prevention.

The complex understanding has significant implications for the development of policy related materials such as Dietary Guidelines and Nutrient Reference Values (standards) for Australians. In more recent years I have worked on national expert working groups developing these positions.

Are there other areas which complement the above areas?

The conceptual framework from the research is critical to education and professional training in the discipline. It has helped form the design of the textbook (Food, Nutrition and Health, Oxford University Press) which I edited and partially wrote with my colleagues here at UOW, so the link between research and teaching remains strong. I began my career as a Dietitian in Sydney

Teaching Hospitals: in fact I was a NSW government cadet through my science degree in Biochemistry and Pharmacology and postgraduate Dietetics studies, so it reaches back to my school days. I finished those 15 years working at a public health level in NSW Health and I have never lost sight of the relevance of science to practice. This also enabled me to lead two big centres in food and health research, the ARC Key Centre for Smart Foods and National Centre of Excellence in Functional Foods when government funds were available.

I have edited the practitioner journal Nutrition and Dietetics for many years and supervised over 15 PhD graduates. It has been one of my great joys to see the profession develop through efforts in research, and to watch my colleagues excel at what they do.

What do you feel is your greatest achievement in your research in Nutrition and Dietetics?

I think it has been the ability to 'connect the dots' in the very large body of research undertaken in nutrition and see how it can be incorporated into 'practice'. I see 'practice' having many meanings, from giving dietary advice, through to developing policy documents, undertaking food innovation, developing new research methodologies and working within food

standards for nutrition communications. These are all applications of a knowledge set. It also has significant implications for professional training and interdisciplinary research and education. I wouldn't have been able to do that if I hadn't addressed research questions myself and then had to think about where that effort fitted into the broader scheme of things. I also wouldn't have been able to get there without the very many colleagues I have had the pleasure of working with over the years. Clinical nutrition research is not something you can do as a sole researcher. Mentoring and encouragement is also important. This research has to involve a great many people, including study participants. It is complex and challenging to implement on a number of levels.

How important is it for people to continue this type of research?

In my mind, this research goes to one of the fundamentals of life – 'you are what you eat'. At the individual level it is about understanding how food delivers components that drive the human system, sustains it and/or helps to bring about its demise. The next step is to put that in a social and environmental context and you start to see how that can translate to practice.

There is so much to know and the knowledge comes from all directions – to the point where we (practitioners) now have agreed methodologies for categorising and systematically evaluating studies so we can arrive at a clear and transparent position on the evidence for effects. We need to keep doing food based research to contribute to this body of evidence. This enables decisions to be made on an agreed basis in science whether it be for guidance on food intake, or the development of the future food supply.

What would be your ideal meal for dinner?

Probably salmon steak with nut crust, mixed salad leaves, tomato medley, cucumber, red onions, fresh beetroot, walnuts (of course), lime and chilli dressing. Yum.

Professor Linda Tapsell is based at the Faculty of Science, Medicine and Health and the Illawarra Health and Medical Research Institute.

National recognition for academics

An eminent social researcher, a social science professor, and an expert in early childhood education are among other UOW researchers awarded honours recognition. UOW Honorary Professor of Social Sciences, Hugh Mackay (pictured below), was awarded an Officer of the Order of Australia (AO) for "distinguished service to the community in the areas of social research and psychology, as an author and commentator, and through roles with visual and performing arts and educational organisations".

Also on the Australia Day Honours list was Professor John Rossiter, from the Faculty of Business, who was made a Member of the Order of Australia (AM). Meanwhile, Professor Iram Siraj, an expert in early childhood education who divides her time between roles at University College London and as a Professor of Early Childhood Education, at the UOW Early Start Research Institute, was awarded an Officer of the Order of the British Empire (OBE) for services to education in the Queen's New Year Honours.



"Stop worrying about how "happy" you are, or how wealthy you are - the pursuit of personal happiness and material prosperity are the two great distractions from goodness in our lives because they promote self-absorption." UOW Honorary Professor Hugh Mackay on leading a good life.



Visiting International Scholar Awards

Ten outstanding researchers from across the globe have been offered an opportunity to work with the UOW research community through the Visiting International Scholar Awards (VISA) scheme. The VISA scheme will provide funding to support these internationally based researchers from the UK, USA, Asia and Europe to visit UOW for 2 to 6 months, with the aim of enhancing our research collaborations globally and building new linkages and connections with high quality international research institutions.

Recipient	Research Area	UOW Nominator and Faculty
Kent Hale Smith Professor Liming Dai Case Western Reserve University	Extend UOW's energy storage program in the area of Li ion battery research	Distinguished Professor Hua Kun Liu, Australian Institute for Innovative Materials
Associate Professor Michael Evans University of Maryland	HDR student masterclass in quantitative data analysis: Understanding atmospheric, oceanographic, and long-term climate interactions	Dr Helen McGregor Science, Medicine and Health
Professor Yong-Cheng Lin Central South University	Develop a new process to manufacture nickel-based superalloys	Professor Kiet Tieu Engineering and Information Sciences
Associate Professor Michael Beets University of South Carolina	Healthy eating and physical activity in after school settings in disadvantaged communities	Professor Tony Okely Social Sciences
Professor Colin Green Lancaster University	Socioeconomic effects of early exposure to alcohol, alcohol availability and regulation	Associate Professor Peter Siminski Business
Dr Tavis Potts University of Aberdeen	Emergence and significance of coastal low carbon economics in mitigating and adapting to climate change	Professor Clive Schofield Law, Humanities and the Arts
Dr Anshuman Mondal Brunel University London	A new ethics of dialogue across difference: exploring listening and reading as forms of ethical response to others	Dr Tanja Dreher Law, Humanities and the Arts
Professor Romuald Lepers University of Burgundy	Cortical contributions to the coordination of posture and movement, evaluate motor deficits post stroke and corticospinal changes with eccentric exercise	Associate Professor Paul Stapley Science, Medicine and Health
Dr AbdouMaliq Simone Max Planck Institute for the Study of Ethnic and Religious Diversity	Understand and promote the resilience of the urban poor to extreme weather events and long term infrastructure transformation as a process of climate adaptation	Professor Pascal Perez Engineering and Information Sciences
Professor Kevin Mark Hannam Leeds Beckett University	Embedding new theoretical and methodological approaches in AUSCCER	Professor Gordon Waitt Social Sciences

Vice-Chancellor's Postdoctoral Fellowships

The Vice-Chancellor's Postdoctoral Fellowships program sees six high achieving Early Career Researchers join the UOW research community in 2015 for three years. The researchers selected have a highly competitive track record and are set to make an exciting contribution to the University's research profile.

Candidate	Project Title	Faculty
Mathew Horrocks University of Cambridge	Breaking the concentration barrier: single-molecule techniques to study dynamic biological complexes	Science, Medicine and Health
Anja Kanngieser University of London	L2C Listening to climate and community - sound-mapping sea-level rise	Social Sciences
Tran-Vu Khanh National University of Singapore	Partial differential equations in several complex variables	Engineering and Information Sciences
Chong Yong Lee University of Cambridge	Design and development of novel nanoporous materials for functional energy applications	Australian Institute for Innovative Materials
Ginu Rajan University of NSW	Advanced composite materials embedded with high sensitivity fibre optic sensors	Engineering and Information Sciences
Glenda Lucila Satne University of Copenhagen	From acting to thinking: how do distinctively human minds emerge through cultural scaffolding?	Law, Humanities and the Arts

NHMRC funds new radiation technology to aid cancer treatment

Researchers from the Centre for Medical Radiation Physics (CMRP) will receive \$337,000, from the National Health and Medical Research Council (NHMRC), to develop a new sensor technology for radiation detection and dosimetry. The project, which will be funded through the NHMRC's Development Grants Scheme, builds on a highly successful quality assurance system recently developed at the CMRP which is currently the only such system in the world able to perform real-time dosimetry for Synchrotron X-ray Microbeam Radiation Therapy (MRT). The research team, led by Associate Professor Michael Lerch (pictured right), will work to develop a commercial prototype of X-RATE, a dosimeter based on a completely new and novel radiation detector platform that utilises silicon-on-diamond semiconductor technology. "The silicon-on-diamond technology for radiation detection and dosimetry is a world first. In combining these two materials we will be able to create a unique technology that responds to radiation in the same way as human tissue, which is very important for quality assurance in MRT," A/Professor Lerch says. "It is this ability, which has eluded semiconductor dosimeters to date, that makes the X-RATE dosimeter such an exciting commercial prospect."

The silicon-on-diamond technology will be unique in the radiation detector market space as it can be utilised and further developed for new medical dosimetry devices in the wider radiotherapy market, according to A/Professor Lerch.

"This project has the potential to define a new paradigm in Australian designed and developed radiation detection technology with strong potential for commercialisation."

"This technology is unique and represents a new concept in quality assurance for use in combination with a novel radiation treatment modality that has shown great signs of success in the treatment of some cancers where the treatment outcomes of either surgery, chemotherapy and/or radiotherapy is limited so unfortunately the long term prognosis is very poor."

"This project has the potential to define a new paradigm in Australian designed and developed radiation detection technology with strong potential for commercialisation." The Australian Government's Development Grants scheme supports the commercial development of a product, process, procedure or service that if applied, would result in improved health care, disease prevention or provide health cost savings. The grant was announced by Federal Minister for Health, the Hon. Sussan Ley MP, in March.

>> <http://eis.uow.edu.au/cmrrp>



The AFTER life

UOW entomological and archaeological experts will collaborate in the landmark new Australian Facility for Taphonomic Experimental Research.

In a quiet space, tucked away in bushland west of Australia's biggest city, a new research facility is set to advance our understanding of what remains when a human does not.

The Australian Facility for Taphonomic Experimental Research (AFTER), the first of its kind in the Southern Hemisphere, is focused on the study of human decomposition and will involve the placement of human cadavers for research purposes. Despite the natural feelings of revulsion and distress that this project may raise for many people, its potential for advancing knowledge across a range of forensic science disciplines, as well as archaeology and palaeontology, is enormous. The multidisciplinary project will bring together experts from across Australia, led by forensic scientists from the University of Technology, Sydney, and include Chief Investigators from UOW: Associate Professor James Wallman from the Institute for Conservation Biology & Environmental Management, and Distinguished Professor Richard Roberts and Dr Gert van den Bergh from the Centre for Archaeological Science (CAS). The team received an Australian Research Council (ARC) Linkage Infrastructure, Equipment and Facilities grant of \$430,000 to establish the Facility.

A major constraint to advancing the study and practice of forensic science in Australia is the lack of local data. Currently, the only facilities that conduct human decomposition research are all based in the United States, and the information provided cannot be applied directly to the Australian environment due to differences in climate, geology and ecology. The new facility will change this, by allowing the study of decomposition of remains in an Australian context, especially focused on the eastern seaboard. For UOW Centre for Archaeological Science academics collaborating on research at the AFTER, it will also provide a locally available, controlled environment to validate scientific methods in two fields of expertise allied to forensic studies: archaeological chemistry of residues and the post-mortem preservation of bone assemblages.

Archaeological chemistry

When stone artefacts are discovered, they are comprehensively examined and analysed – including the microscopic and chemical residues 'stuck' to the item that might provide further clues about how it was used and the type of innovations occurring in early societies. However, researchers can't know for sure that the compounds identified on the

artefact were on the it at the time it was discarded or buried, or whether movements in the soil over time left residues of the compounds later. "Of course, this is critical to know," says Distinguished Professor Richard Roberts, an ARC Australian Laureate Fellow and the Director of CAS. "If we can better understand the degradation and movement of compounds commonly found on buried artefacts, we can make much more accurate predictions about the use of the artefacts, and the types of societies using them." Professor Roberts and his team, including archaeological chemist Dr Susan Luong, are looking forward to using the AFTER to conduct a series of controlled experiments and blind tests to "validate our inferences about the likely origins of particular residues and the probability of their long-term survival in nature". The chemical compounds found on stone artefacts – such as tools and weapons – are usually lipids, such as fats and triglycerides, resins and turpenoids. Professor Roberts uses an example of a stone weapon uncovered with traces of the chemical residue of a poison and the inferences it may raise. "If we take the opinion that the residue was put on to the weapon by humans at the time it was being used, we infer that the

society using the weapon at that time was developing into one that deliberately used it to kill or maim. But what if the residue just happened to 'stick' on to the stone tool following natural soil movement from a plant decomposing nearby, for example? "If we can conduct experiments that assist to rule possibilities in or out, the information we can use to study societies of the past will be much more robust. "It's an exciting prospect because the data we generate from the experiments at the Facility has the potential to reveal novel understandings about the evolution of human societies in the Asia-Pacific region."

Bone displacement

Senior Fellow at CAS, Dr Gert van den Bergh, will use the AFTER to extend his ARC Future Fellowship research to provide tighter constraints on the effects of the early stages of selective bone loss, which is commonplace at archaeological and palaeontological sites, owing to the wide range of physical, chemical and biological processes. "As such, bone assemblages remaining after a period of time are distorted relative to the initial bone accumulations and this can also give rise to biased interpretations of past human activities and biodiversity. "Much of the taphonomic damage to faunal assemblages is thought to take place soon after death, as this is when scavenging is

greatest and the chemical constituents of a cadaver degrade most rapidly."

Entomological interest

Along with the potential to inform our understanding of human history and artefacts by experimenting with organic residues and bone, the AFTER is expected to primarily contribute new information in forensic investigations that will benefit local police and forensic services by enhancing techniques for searching, locating, recovering and identifying victims remains. Leading entomologist, A/Professor James Wallman from the Institute for Conservation Biology & Environmental Management, will bring expertise to the project focused on understanding how insects - particularly flies - can add to the complex calculations about time since death. "This has never been examined before on human remains in an Australian context," A/Professor Wallman says. "There's a critical need for this new Facility because forensically important insects vary geographically, and they must therefore be studied in the Australian environment for the data to be applicable to local and national police services." A/Professor Wallman and collaborator Dr Melanie Archer, from the Victorian Institute of Forensic Medicine, will investigate

fundamental entomological topics at the Facility, including the factors that determine insect attraction to remains, the dynamics of the temperature environment governing insect activity and the effect of insect sampling strategies on death time estimates. Another research angle A/Professor Wallman will pursue at the AFTER is validating the accepted experimental pig model for the study of human decomposition and degradation. "This Facility presents an excellent opportunity to establish baseline information for the local conditions and environment on many levels. There is great potential for advancing our knowledge and research in all of the disciplines represented in the project," he says.

Institutions collaborating in the Australian Facility for Taphonomic Experimental Research project include: University of Technology (Sydney); University of Wollongong; Australian Nuclear Science and Technology Organisation; Victorian Institute of Forensic Medicine; University of Sydney; University of Canberra; The Australian National University; The University of New England; Australian Federal Police; Victoria Police; and NSW Police Force.



Main image: This fish scale was preserved on the edge of 30,000-year-old Siberian stone tool. Top left: Most stone tools were hand held like this core chopping tool found in Vietnam. Top right and above: Associate Professor James Wallman will use the AFTER to shed more light for forensic services on the role of insects in decomposition in an Australian context.

Food as medicine: diet can help control epilepsy

Diet can play a part in reducing seizures as well as decrease reliance in anti-seizure drugs in people with intractable epilepsy, according to a study by UOW Nutrition & Dietetics Honours student Cinthya Wibisono.

Providing further evidence of 'food as medicine', Cinthya and her team found that by following a ketogenic diet, young epilepsy patients reduced reliance on anti-epileptic medicine, and some even became seizure free, when following this style of diet. The study was conducted under the supervision of Natalie Rowe, paediatric Dietitian at the Sydney Children's Hospital.

Ketogenic diets are based on including a higher proportion of dietary fat, relative to the dietary protein and carbohydrates combined. The ketogenic diet was developed in the 1920s following the discovery that they induce a 'fasting' state, known as ketosis. In a state of ketosis, fatty acid oxidation is stimulated, producing ketone bodies that cross the blood-brain barrier and provide anti-convulsant and anti-epileptogenic effects. A well-publicised example of a ketogenic diet is the Atkins diet. Within this clinical setting, a modified version of the Atkins diet was used. The study retrospectively analysed 10-years-worth of medical notes and correspondence regarding 48 patients receiving three ketogenic diets as part of their treatment for epilepsy at a major Australian children's hospital. It found that three patients became seizure free, 35 reported a 50-90 per cent



reduction in seizures, and 21 reported a reduction of between zero and 50 per cent over varying periods following the ketogenic diet.

The findings reinforce that these types of diets are an efficacious treatment for intractable epilepsy, Cinthya says.

"There's also indications that ketogenic diet can improve temperament of the children, which despite a lack of improvement with seizures, is still considered a benefit by parents. "Also while not related to epilepsy, there is now exploratory use of the KD as a non-pharmaceutical form of treatment, and perhaps complementary, for other disease such as cancer," Cinthya says.

Side effects of the three ketogenic diets were also examined, with the most commonly reported being constipation and cholesterol elevation. The modified Atkins diet – which had a closer ratio of fat compared to protein and carbohydrate – reported lower rates of side effects. It was also found that incidences of kidney stones as a side effect of the ketogenic diet were reduced with the introduction of potassium citrate.

>> The study, *Ten-year single-center experience of the Ketogenic Diet: Factors influencing efficacy, tolerability and compliance*, is to be published in the *Journal of Pediatrics* (in press).

Mindfulness app aims to alleviate HSC stress

HSC students are the target of a new stress-busting app developed by a UOW clinical psychologist.

By combining age-old mindfulness techniques with modern smartphone and tablet technology, the HSC Stress-Less app aims to engage students to regularly practice meditative strategies demonstrated to manage stress and anxiety.

Prompted by the proportion of people presenting at youth mental health services citing HSC stress as a significant issue of concern, clinical psychologist Dr Rebecca Sng began developing the app last year with the input of Year 11 students. Dr Sng is now keen for HSC students to download and use the app to study if it can assist alleviate stress and anxiety,

and whether it's engaging students on a regular basis.

"The HSC can be a particularly stressful year for students with pressure from family, schools and themselves to achieve, as well as uncertainty about the future, yet many young people hesitate to seek help," Dr Sng says.

"Regular practitioners of mindfulness meditation show actual differences in their brain scans, compared to the larger population, particularly in ways such as the connections between the thinking and emotional centres of the brain.

"Studies have shown the benefits of mindfulness for clinical populations of young people including those suffering depression and anxiety.

"This app aims to bring those benefits to

students anxious about their HSC studies in an engaging way."

The HSC Stress-Less app will collect usage data and quick mood scales before and after use. From this information Dr Sng will examine whether students find the app engaging enough to use on a regular basis, as well as the effectiveness of the mindfulness meditation techniques provided on the student's mood.

Dr Rebecca Sng is Deputy Director, Clinical Training at the School of Psychology, Faculty of Social Sciences.

>>Download the mindfulness app by searching *HSC Stress-Less* in your app store.

Discovery of 'go' signal for spinal cord nerve re-growth



Researchers have found the 'go' signal to encourage nerve cell growth to repair nerve damage and spinal cord injuries. Due to the scar tissue that forms after injury, a damaged spinal cord cannot repair itself naturally – the scar tissue acts as a roadblock to nerve regrowth. Paralysis below the site of the injury occurs because

the electrical signals from the brain can't get through to the body.

Scientists have been working to develop an implant which could 'bridge' this gap. The implants can take the form of a 'tube' filled with hydrogel, a bio-jelly that mimics the cells native environment.

Though these kinds of cellular highways have been made before, its been a challenge to encourage the cells to take the on-ramp. A key signal for directing nerve cells has been missing - until now.

Getting nerves from A to B

A research team across Australia and the United States has mimicked the body's natural way of encouraging nerve growth – with gradients of proteins called growth factors.

The researchers wrap a protein-laden coil around the hydrogel channel. More turns on the coil correspond to a higher concentration of the growth factor along the length of the channel. This enables three dimensional control of the concentration.

The growth factor gradient acts like a traffic signal to the neurons, encouraging them to grow along the channel. The team showed that nerve cells grow longer and

straighter through channels with such a gradient.

Going the distance

Distinguished Professor Gordon Wallace from the ARC Centre of Excellence for Electromaterials Science says the use of the growth factor chemical extends the distance nerves can regrow.

"This greatly improves the potential for regeneration through reconnection of severed nerves," according to Professor Wallace.

Co-author Professor Mario Romero-Ortega from the University of Texas at Dallas says the growth factor gradients are crucial for guiding nerves to their targets.

"Three dimensional molecular gradients in multi-channel devices have never been achieved before."

So promising is this technology, its been patented and licensed to a Texan tissue engineering company, Tissue Gen Inc.

"We are hopeful that a commercial product will be realised in the near future," Professor Wallace says.

In the meantime the team is focused on improving the fabrication of the implants.

>>The work has been accepted in *Brain Research*.

UOW leads clean air theme for major new research hub

UOW expertise in atmospheric chemistry will make a key contribution to a new \$8.88 million research hub focused on supporting environmental quality in urban areas, announced by the Federal Government. The Clean Air and Urban Landscapes Hub, led by the University of Melbourne, will bring together researchers across the nation to form evidence based policy and best practice implementation in urban environmental planning for better air quality over the next six years. UOW researchers from the Centre for Atmospheric Chemistry will lead the hub's Clean Air theme, bringing expertise in

atmospheric composition measurement and modelling. The theme will be directed by Professor David Griffith and Dr Clare Murphy in collaboration with Dr Jenny Fisher, Associate Professor Steve Wilson, Dr Nicholas Jones, Dr Frances Phillips and Dr Nicholas Deutscher.

SMART researchers Professor Pascal Perez and Dr Nam Huynh will also contribute expertise in infrastructure planning to the hub through the Urban Systems and Liveability themes. "Clean air and urban landscapes are key to Australia's future economic prosperity, environmental sustainability and

population health," Professor Griffith says. "Our Centre has over 25 years of experience in atmospheric composition measurements, covering remote sensing of tropospheric and stratospheric gases, in situ measurements of greenhouse gases, volatile organic compounds, reactive species and aerosols and atmospheric radiation measurements.

"We look forward to helping this major collaborative project deliver a strategic, end-user focused, integrated research program that will improve the liveability of Australia's cities and towns for the long term."



Sterilisation of women and girls with disability discriminatory: expert



The legal construction of women and girls with disability as incomparable to those without disability has far reaching consequences, according to Dr Linda Steele.

Women and girls with disability are considered incomparable to individuals without disability – and on this basis can be legitimately subject to discriminatory treatment through sterilisation, says Law expert Dr Linda Steele. Despite lobbying by disability advocates for the introduction of legislation prohibiting sterilisation of women and girls with disability, Australian governments have resisted introducing legislation to explicitly prohibit sterilisation and have supported the continuation of legal frameworks regulating sterilisation through court authorisation. In a presentation to a recent symposium, *Feminist Perspectives on Medical Bodies*, Dr Steele, from the UOW Faculty of Law, Humanities and the Arts, focused on the

legal construction of women and girls with disability as abnormal: as different in kind and the absolute other to individuals without a disability. “The sterilisation of women and girls with disability is undertaken for various reasons including contraception, an individual’s distress at menstruation, behavioural changes during menstruation, and the risk of pregnancy from sexual abuse. “Sterilisation constitutes discrimination on many levels. I focus on the impact of legal and medical discourses, practices and institutions to the framing of sterilisation of women and girls with intellectual disability in such a way that renders these individuals beyond comparison for the purposes of discrimination. “At the same time as being considered

to operate outside of rights of non-discrimination and equality, sterilisation is considered to realise other rights of women and girls with disability such as inclusion in the community and equality of access to medical treatment. This in turn produces sterilisation as not only ‘not discriminatory’ but a beneficial and even empowering procedure for these individuals,” Dr Steele says. The legal construction of women and girls with disability as abnormal has three key implications, according to Dr Steele. Firstly, that women and girls with disability can be located in a discrete legal space subject to its own standards of acceptable treatment. Secondly, that these standards are informed by a drive

to manage abnormality through medical intervention. Finally, Dr Steele argues that, “perversely, sterilisation becomes a benevolent medical procedure which can support the realisation of the rights of women and girls with disability”. Dr Steele has drawn on critical disability studies to examine the arguments against sterilisation as discrimination, focussing on two documents: the Full Family Court decision of *Re P* (1995) 126 FLR 245, and the 2013 Senate Community Affairs References Committee report *Inquiry into the Involuntary or Coerced Sterilisation of People with Disabilities in Australia*. Held in February, the *Feminist Perspectives on Medical Bodies* symposium addressed the ways in which female bodies are being ‘adjusted’ biomedically, with some bodily functions enhanced and other functions disallowed. Organised by the Legal Intersections Research Centre (LIRC) at UOW, the

Feminist Research Network (FRN) and the *Forum on Human Rights Research*, it examined the follow-on implications for the normality of these people’s lives legally, ethically and medically. Through her presentation and her larger research project on sterilisation and disability, Dr Steele hopes to provide deeper insights into the significance of underlying ideas about disability to the realisation of human rights, and prevention of violence against women with disability with the aim of providing new directions for scholarship on and advocacy around disability law. “As an early career researcher I feel incredibly fortunate to be a member of LIRC and FRN, two research groups which support interdisciplinary, critical, social justice-oriented research. “The research events that these groups host are vital to receiving feedback from scholars across a range of disciplines and

encouraging ongoing interdisciplinary research connections within UOW and with other institutions. “The opportunities provided through these groups to connect my research with social justice oriented community engagement is important to ensuring my research benefits those who it is focused on.”

Dr Linda Steele is a lecturer at the UOW School of Law. Her research focuses on the intersections of disability, law and critical theory. She has a professional background in the community legal and social justice sector and has been a solicitor at the Intellectual Disability Rights Service and is a member of the Executive Committee of the Women in Prison Advocacy Network.

Local tiger quoll population a cause for conservation

Australia's largest surviving marsupial carnivore - the endangered tiger quoll - is a critical predator helping to maintain the delicate ecological balance within our bushland. While a UOW study has recently spotted tiger quolls in the local region, further research is needed to inform future strategies for its ongoing conservation.

A UOW study has discovered the endangered tiger quoll still lives in areas within the Illawarra region, but more research is needed to understand how populations of feral animals such as foxes and cats affect the ongoing habitat of this important carnivorous predator. Dr Katarina Mikac, from the School of Biological Sciences, and student Elira Reynolds, placed meat baited motion trigger cameras at 70 sites in an area south-west of Wollongong to see if they could attract and capture images of the tiger quoll. The cameras spotted tiger quolls at two of the sites – at Barren Grounds where a tiger quoll population is known to have previously existed – and on a fire trail close to the top of Macquarie Pass. Although only two tiger quolls were spotted, Dr Mikac says that an analysis of local historical records going back to the mid-1800s undertaken for the study shows sightings of the mammals has always been considered rare. Therefore the two images of the tiger quolls captured in this study, as well as another by a private land owner near Barren Grounds, is exciting. And although the tiger quoll wasn't found

widely across the camera sites, critical information about their direct competitors – foxes, feral cats and wild dogs – in the same area was.

Foxes in particular contest for the same food - smaller mammals including possums, gliders and bandicoots - and den types, such as log hollows and rock crevices, as the tiger quoll. Anecdotally, it is understood that tiger quolls do not coexist in the same area as their competitors. This was backed up by the local study, where the two cameras which captured images of the tiger quoll did not capture any foxes – which were seen at 21 of the locations – and vice versa. Dr Mikac and her team are now keen to investigate inter-species interaction among tiger quolls and introduced species, with a view to understanding and developing the most effective methods for their conservation.

"This would include more research into defining the resident population of the tiger quoll in this area, as well as more investigation of how the demarcation between tiger quoll habitat and fox habitat actually plays out," Dr Mikac says.

"For example, we'd like to investigate if the tiger quolls we captured actually live nearby the camera sites, or if they are travelling along corridors, including through fox invaded areas. Are foxes preying on the tiger quolls? Or just on their food source which limits their ability to inhabit an area? This is the sort of information we need to gather."

A research project examining the interactions between tiger quolls and their competitors would help to provide scientifically sound information for the ongoing conservation of the species.

"Tiger quolls are the last top down native predator on mainland Australia," Dr Mikac says. "If they are pushed out of the ecosystem, there will be flow on effects that reach beyond the extinction of another native animal."

As the top dwelling carnivorous land predator, the tiger quoll has the role of a "cleaner" in the ecosystem, according to Dr Mikac. By limiting the population of middle sized herbivores, such as possums and bandicoots, the tiger quoll helps regulate the balance between the growth of plants and grasses, and the animals eating that vegetation.

The study also found evidence of two additional threatened species in the Illawarra, with a southern brown bandicoot captured at one camera site and the long-nosed potaroo captured at 10 camera sites.

>> *If you are a local resident or landholder who has seen a tiger quoll in the area in the past 20 years or suspects that a tiger quoll is living nearby, please contact kmikac@uow.edu.au*

Dr Katarina Mikac is a lecturer in the Faculty of Science, Medicine and Health and conducts her research within the School of Biological Sciences. Her research interests include conservation and populations genetics, agricultural entomology, and the diagnostics of insects of quarantine and biosecurity importance.



Grant to improve surveys about rehabilitation care

Improving the quality of patient experience information available to rehabilitation services is the focus of a new UOW research project awarded \$83,000 in funding.

A team from the Australian Health Services Research Institute led by Frances Simmonds will investigate the potential for a patient experience survey targeted specifically at rehabilitation patients. The project will be conducted in collaboration with researchers from the University of Sydney.

In the rehabilitation setting, patient experience and adherence to treatment and medication regimes is positively associated with more favourable outcomes for health. However there is currently no nationally consistent, or specific, survey used to capture the experience of rehabilitation patients.

The project will evaluate a rehabilitation specific patient experience survey, which aims to provide rehabilitation providers



with enhanced feedback about the quality of their services and offer further avenues for service improvement, future planning and ultimately, patient outcomes, says Project Manager, Jacquelin Capell. "A well-designed rehabilitation specific patient experience survey has the potential to provide rehabilitation services with an important additional avenue for exploring the rehabilitation outcomes achieved by patients participating in medical rehabilitation and identifying potential

areas for improvement in the quality of services provided," Ms Capell says. "This is particularly important as demand for rehabilitation services in Australia increases in line with an ageing population, socio-economic changes and medical advances that result in improved recovery rates from acute illness and trauma." The project is one of eight to be funded by the 2015 Medibank Health Research Fund grant round, announced in March. *For more information: jcapell@uow.edu.au*

Funding boost for health services supporting personality disorders

Support for people with Personality Disorders presenting at NSW hospitals will be boosted thanks to funding from the NSW Government for a training program for health staff developed by UOW's Project Air. In total, the Project Air Strategy will receive \$1.8 million from the State Government over two years to work with NSW health services to better support people with personality disorders. This includes \$600,000 this financial year to be spent on implementing Project Air training programs in NSW hospitals and on setting up dedicated rapid-response psychological clinics for people in crisis.

The funding will significantly improve the capacity of health services to diagnose, manage and provide effective treatment for people with personality disorders, according to Project Air Strategy Director, Professor Brin Grenyer.

"People with personality disorders tend to present with histories of trauma, interpersonal breakdown and comorbid problems including drug and alcohol abuse, self-harm and suicidal behaviours," Professor Grenyer says. "Fear and stigma also remains a significant issue for this patient group, not only from the community but by hospital staff, because they are mistakenly perceived and stigmatised as annoying or manipulative.

"The good news is that new, holistic, person-centred approaches can help people



From L-R: Professor Brin Grenyer (Director Project Air Strategy), NSW Minister for Mental Health Jai Rowell MP, Karina Whitehurst (consumer advocate), Wendy Smith (Psychologist), Wayne Borg (Psychologist), Professor Judy Raper (Deputy Vice Chancellor Research & Innovation, UOW)

re-build their relationships, self-esteem and capacity to work.

"The funding announced by the Minister will allow us to continue our important work and expand the reach of the training to all services across NSW."

Project Air is based at the Illawarra Health and Medical Research Institute and is the outcome of a competitive tender won by UOW in 2010 to create a more personality disorders-friendly health service through the application of evidence-based research

and the development and evaluation of treatment guidelines and resources. The strategy has since become a clinical centre of excellence for the assessment and treatment of personality disorders, providing high-quality training, consultation and resources to health staff across NSW.

>> *For more information about the Project Air Strategy for Personality Disorders: <http://ihmri.uow.edu.au/projectairstrategy/>*

Dykes on bikes and the long road to Mardi Gras



Attending the Gay and Lesbian Mardi Gras is more than leading the parade and attending parties for the Queensland Dykes on Bikes, according to PhD student Anna de Jong.

Attended by hundreds of thousands of locals and tourists every year, the Mardi Gras parade is the pinnacle of the Sydney Gay and Lesbian Mardi Gras festival. Since its inception, Dykes on Bikes have led this colourful, loud and flamboyant procession down Darlinghurst's Oxford Street revving their engines and blasting their horns to mark the beginning of the party. For the Queensland Dykes on Bikes, however, Mardi Gras is about more than leading the parade and attending parties. Much interest in Mardi Gras is given to its historical legacy, to commodification and to questions of political identity. Seeking to build on these conversations, for the past three years I have been documenting the personal stories of those who travel vast distances each year to attend this event. As part of this research, in a new article published in *Australian Geographer*, I sought to examine the complex relations between the Queensland Dykes on Bikes and the Mardi Gras Parade.

Dykes on Bikes – a brief history

Who are the Dykes on Bikes? And what is their connection to Mardi Gras? The Dykes on Bikes is an international group for women who ride. In a subculture dominated by masculine working-class identities, the Dykes on Bikes play with femininities and masculinities through motorcycle skills, dress and riding styles. These performances challenge dominant sexual and cultural expectations of what a woman is and what a woman can do. In addition to dominant conceptualisations of motorbike riding as synonymous with freedom, escape and individuality, the Dykes on Bikes celebrate and value notions of a collective identity and a sense of belonging. These are forged through the enforced rules and codes of the Chapter, and ideas of sticking and riding together. The Dykes on Bike identity is not felt through following codes of membership alone; becoming, and remaining, a Dyke on Bike also occurs through riding together and

leading pride parades. The Dykes on Bikes and pride parades are historically entangled. The group first formed at the 1976 San Francisco Pride Parade when a small group of women motorbike riders informally came together to ride as part of the parade. One of these first riders is said to have coined the phrase "Dykes on Bikes". Receiving traction in the media the group rode with the name. Growing in numbers the group became formally structured in the mid-1980s. Today there are 22 chapters internationally, three of which are located in Australia (Queensland, Sydney and Melbourne); all of which are governed by the San Francisco Chapter. In 2003, the group changed its official name to the Women's Motorcycle Contingent/ Dykes on Bikes. This move aimed to overcome simplistic understandings that all women who ride motorbikes are "dykes". Inspired by the original Dykes on Bikes leading of the 1987 San Francisco Lesbian and Gay Freedom Day Parade, the 1988

Mardi Gras Parade saw the arrival of the first Australian Dykes on Bikes.

The road to Mardi Gras

Today, around 20 Queensland Dykes on Bikes members ride annually from Brisbane to Sydney for Mardi Gras. The return journey is 1,800 kilometres. It takes four days – two each way. It entails more than 20 hours on the bike. Riding a motorbike, in a group of 20, is not like driving a car. The body has to remain in the same position. The group has to remain in a choreographed formation. Each rider has to ride with their entire luggage. There are often heavy rains at this time of year; and lots of traffic. It's challenging, tiring, yet characterised as incredibly enjoyable and rewarding by the group's members. For some members of the Queensland Dykes on Bikes, riding to Mardi Gras is conceived as more pleasurable than the event itself. It provides a unique opportunity to learn the rules and codes of the Chapter, pick up riding skills from other members and collectively practice riding in a group formation – opportunities not available through the shorter, Sunday rides

normally organised for once a month. Riding to Mardi Gras is therefore crucial in sustaining a sense of collective belonging among group members and performing a shared Dyke on Bikes identity. The parade, conversely, is surprisingly a source of anxiety for some members. The combination of waiting, managing the bike and voyeuristic screaming crowds led some riders to don gas and surgical masks to enable anonymity and create boundaries – practises that inhibited feelings of connection and belonging. While travel to Mardi Gras is crucial to the Dykes on Bikes it is not the parade itself, but rather the immense journey, that serves as a fundamental dimension in sustaining a collective sense of belonging among group members.

Anna de Jong is a PhD student at the Australian Centre for Cultural Environmental Research. Her research interests are focused in three interconnected areas: sexualities; identity and belonging; and urban pride parades. Her doctoral research explores return journeys to the Sydney Mardi Gras Parade.

>> *Dykes on Bikes: mobility, belonging and the visceral*, was published in *Australian Geographer* Volume 46, Issue 1, 2015 <http://bit.ly/1CRSlYd>



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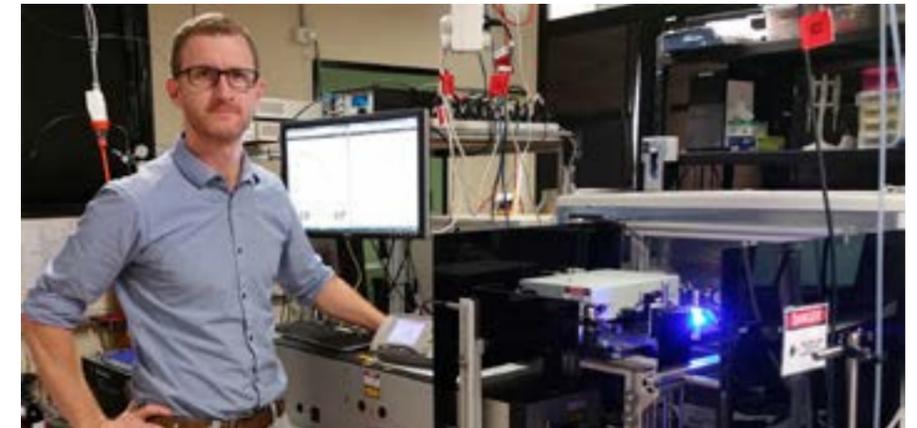


CELEBRATING
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AWARDS

High reward for excellence in mass spectrometry

Associate Professor Adam Trevitt (pictured right), from the School of Chemistry, has been awarded the prestigious Bowie Medal from the Australian and New Zealand Society for Mass Spectrometry (ANZSMS) in recognition of "excellence in mass spectrometry research". The Bowie Medal is dedicated to recognising young researchers and is awarded at the ANZSMS biennial conference, this year in July. As part of the honour, A/Professor Trevitt will also present the Bowie Keynote at the conference.



What's your response to learning you would receive the Bowie Medal?

It was excellent news to hear about this award. Professor John Bowie (University of Adelaide) is a living legend of mass spectrometry, so to be in any way associated with him is a huge honour.

What's your understanding of why you were awarded the medal?

My group has been working over the years to combine tunable laser systems to mass spectrometers with several new innovations. I have been extremely lucky to recruit outstanding students - our Laser Chemistry Laboratory is built on the work and achievements of those students. We have made some nice discoveries about how molecules fall apart after they

absorb light. Using laser light allows us to study these fundamental processes with high levels of precision. In some ways, just like every Tic-Tac (apparently) contains 2 calories, we know exactly how much energy is in each photon.

What are you currently working on?

As physical chemists using lasers we are concerned with the fundamental details of photochemistry and reactivity. These fundamentals underpin the workings of organic solar cells, molecular electronics and other functional molecules. We are also better understanding the formation and fate reactive molecules that play havoc in atmospheric and combustion chemistry.

What do you enjoy about your work and the field of mass spectrometry research?

In my lab, you simply cannot be too nerdy. We use lasers, mass spectrometers, optics, electronics and more. So it's a huge thrill to make all these technical details come together to make important measurements about photochemistry and molecules - it's not easy but it is totally rewarding. It shouldn't be forgotten that there are many molecular mysteries that remain to be solved. Future developments in advanced materials and medicine are enabled by fundamental understandings of chemistry, biology and physics. In all these applications, you can never know too much about the molecules.

International recognition for transport geotechnics expert

Professor Buddhima Indraratna (pictured right), from the Faculty of Engineering and Information Sciences (EIS), will deliver the First Ralph Proctor Lecture in Portugal next year during the International Transportation Geotechnics Conference in recognition of his major contributions to transport infrastructure research and development. The International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) established the Ralph Proctor Lecture in August 2013 in Paris to recognise outstanding professionals in the field. Ralph Roscoe Proctor was a US army engineer who through his dedicated efforts after World War I invented the

theory of soil compaction for railroads, highways and dams. He developed what is now known as the Proctor-test: a way of determining the desired water content of any type of soil to obtain its optimum compaction level when used for roads, railways and dams. The awarding of the Ralph Proctor lecture recognises Professor Indraratna's decades of research excellence and outstanding professional contributions to research on the way modern rail and road transport embankments are designed and built. Through more than 500 peer-reviewed scholarly articles and six academic books, Professor Indraratna has been



instrumental in changing industry practices, including revisions to some Australian and International Standards for road embankments and railways.

Global Challenges announces Seed Funding successes

Global Challenges has held its second round of Seed Funding, with applications from across UOW's five faculties representing the scope of the challenges.

Multidisciplinary research teams are invited to apply each year for Seed Funding, which provides between \$5000-\$15,000 to projects for research exchange, proof of concept, events, pilot studies, and engagement with policy makers or stakeholders. Six projects were successful in receiving Seed Funding with a

further seven projects awarded Strategic Funding, which sees \$5000 given to teams to further develop their ideas with the help of the Global Challenges leaders.

Following the success of the 2013 Seed Funding round, which has seen many projects develop into strong initiatives that are making a tangible difference in the world. Profiled here are three of the 2014 Seed and Strategic projects. For more information, visit: www.globalchallenges.uow.edu.au



X-Ray Paint
Manufacturing Innovation
Seed Funding

Imagine being able to see through layers of paint to what lies beyond, without having to manually chip away at the work. This project will use the emerging technology of terahertz spectroscopy to examine the many layers of paint on decorative and protective coatings. Bringing together researchers from science, engineering, and art, the project will focus primarily on paint on metals, which could have considerable implications for manufacturing in the Illawarra.



Visible Parenting
Transforming Lives and Regions
Strategic Funding

In this day of family-friendly workplaces, discrimination against parents is still widespread. This project will explore how and when employees make their parenting choices visible in the workplace, from pregnancy and flexible working hours to taking time off to care for sick children, and what reception they consequently face. With the concept of visible parenting front and centre, the project harnesses the research expertise of sociologists, geographers, and scientists.



Shark Conservation
Sustaining Coastal and Marine Zones
Strategic Funding

Each year, as summer rolls around, sharks become a hot topic. But opinions remain mixed over how to managing shark species. The coastal regions of the Illawarra and Shoalhaven are home to a number of threatened, and threatening, shark species. This project aims to ask how we can govern species that are threatened, and threatening to humans, without being ruled by fear? It brings together researchers from geography, fisheries governance, and marine ecology.

Warm as toast

Researchers behind Warm as Toast, a Global Challenges project, spent last winter interviewing high-income households throughout the Illawarra about their heating habits, examining how they stay warm as the temperature drops. They also put the questions to the Twittersphere, using the hashtag #WarmAsToastUOW.

The answers ranged from knitted booties and hot tea to plenty of clothing layers. It was an interesting insight into different methods of beating the cold, often without resorting to the trusty old heater.

Warm as Toast was launched in 2014 as a Global Challenges Seed Project, with a multidisciplinary team drawn from geography, engineering, social marketing, and business.

Using the data gathered in the initial stages, Warm as Toast has since developed into a more ambitious endeavor and was recently awarded Global Challenges Project Funding, the top level of funding available.

The project will now focus on developing a Home Energy Retrofit Tool in the Illawarra, to provide tailored and automated

information for households on thermal comfort and energy efficiency. It will continue to target high-income households and be expanded to summer and winter.

The diversity of the team reflects the multidisciplinary nature of the project with researchers from the Australian Centre for Cultural Environmental Research, the Sustainable Buildings Research Centre, Global Challenges, and the Faculty of Business. Warm As Toast builds on UOW's relationship with the NSW Government's Office of Environment and Heritage, after the two parties signed a Memorandum of Understanding last year with the aim of encouraging greater environmental sustainability. Led by Global Challenges Director, Professor Chris Gibson, Warm As Toast aims to marry changes in human behaviour with technological advancements in home energy efficiency.

The project aligns with the challenge of Transforming Lives and Regions by improving liveability and comfort in the home, and boosting awareness of the importance of sustainability practices.

CriticalArc's SafeZone app expands to Europe



iAccelerate advanced resident company CriticalArc has announced that two UK universities have launched their app SafeZone to assist with improved campus safety and security.

Northumbria University, Newcastle selected SafeZone to enhance student and staff safety for 30,000 people on campus, while reducing costs through increasing the efficiency of everyday security operations across its six campus locations. University of York is the first university in the Russell Group to launch SafeZone making the innovative system available to 20,000 staff and students across four campus areas.

Through unparalleled situational awareness, SafeZone enables University security teams to coordinate responses to incidents quickly and efficiently.

The intuitive SafeZone app makes it easy for students and staff to get help for any kind of emergency via a simple tap on their phone, allowing security personnel to pinpoint their exact location.

Denis Fowler, University of York's Director of Health and Safety, says: "Our campus is already very safe but 'SafeZone' gives students and staff extra reassurance that assistance is no more than the touch of a button away. The system allows us to monitor the positions of security personnel and first aiders so we can deploy them swiftly and efficiently to provide assistance and support where necessary."

SafeZone also permits staff working in potentially hazardous environments or alone after hours to 'Check-In', giving the security team visibility of their location at times when daytime resources such as building wardens are not on duty.

Glenn Farrant, CriticalArc CEO, says after uptake among Australia's universities, it's great to welcome two forward-thinking and innovative UK universities as customers. "Universities and institutions of higher education in the UK and Australia share similar student demographics with very significant percentages of international students - for whom well-being and safety on campus is a top priority," Mr Farrant says.

"SafeZone eliminates language difficulties and enables the fastest possible response to incidents to ensure the best outcomes." Providing situational awareness across large geographic areas, SafeZone supports a rapid and coordinated response to incidents by distributing information to first responders and allowing them to collaborate as events unfold.

"SafeZone improves compliance with existing policies and protocols, while increasing the overall efficiency of security and response teams across often-complex estates and dynamic environments," Mr Farrant says.

CriticalArc, a global technology innovator, designs and delivers a distributed command and control solution. Headquartered in Australia, CriticalArc has offices and operations in the UK and Middle East providing an international reach and delivery capability.

>> www.criticalarc.com

New initiative to open up UOW labs and equipment

New collaborations between UOW research staff, external researchers and industry groups are set to be enhanced following the launch of Labs OnLine, an initiative of Innovation and Commercial Research.

UOW has a vast range of laboratory assets, many of which are available for internal and external use. Through LabsOnline, UOW academics and clients can now access laboratory facilities collaboratively, subject to availability and degree of familiarity with the techniques.

Equipment currently available includes a Mass Spectrometry User Resource and Research Facility, a Laser Chemistry Lab and Isotope and Microscope Labs. Also on offer is an Anechoic Chamber – a facility that allows for research and experimentation into sound recording and playback for a range of applications, both in Engineering and the Creative Arts.

Details of the laboratory facilities and equipment available for use can be found at: www.uow.edu.au/research/icr/labsonline/



LIVING WELL, LONGER: DEMENTIA CARE & RESEARCH GLOBAL CHALLENGES

Global Challenges invites you to partake in a round table designed to collectively create a vision for Dementia Care & Research in the Illawarra.

Dementia Care & Research Think Tank: Get involved and have your say!

As part of UOW's Global Challenges' Living Well, Longer research initiative, this opportunity allows key parties, involved in either Dementia Research, Care and/or Treatment, to come together to share and discuss ideas about how we can contribute to the future of Dementia patients and their quality of life.

Date: Monday 20th April 2015

Location: Room 102, SMART Building, University of Wollongong

Time: 10am– 12pm (followed by a light lunch)

RSVP: Thursday 16th April to Kate Piccirillo:

global-challenges@uow.edu.au



NEWS

Literary lauded

Duende, a story paying homage to the poet Lorca and written by UOW PhD candidate Michelle Cahill, has won the inaugural Kingston Writing School Hilary Mantel International Short Story competition. Michelle is undertaking her doctorate in Creative Arts and was a Creative Writing International Writer in Residence in the School of Arts, English and Media in 2013. Her short story was judged by Dame Hilary Mantel as the top of 11 stories shortlisted for the prize. In *The Guardian*, Hilary Mantel said of *Duende*: "[Michelle's] story exhibits a poet's economy in cutting to the heart of time and place. Her deftness and linguistic grace masks her purpose, till she reveals a shocking glimpse of the price that art can exact".

Michelle writes poetry, fiction and essays, and edits *Mascara Literary Review*. Her other awards include the Val Vallis Award, the Inverawe Prize (minor), the VPLA shortlist and a highly commended in the Blake Poetry Prize. She is co-editor of *Contemporary Asian Australian Poets* (Puncher and Wattmann, 2013) and her work has appeared in *Meanjin*, *Southerly*, *The Age*, and *Australian Literary Review*, among others.

Lymph Sleeve fast track

Selected from a competitive field of graduates from the NSW Medical Device Commercialisation Training Program, Dr Sheridan Gho and Michael Weaver won the NSW-QB3 Rosenman Institute Fellowship for their work on the Lymph Sleeve. The Lymph Sleeve is made from intelligent fabric and aims to help

breast cancer patients who develop lymphoedema, a painful and incurable condition that causes swelling of the arm. Dr Gho and Mr Weaver will travel to California to work with clinicians and local organisations recognised for their expertise in medical device innovation and translation.

Dementia research funding

Two UOW researchers received funding from the Alzheimer's Australia Research Dementia Grant Program late last year. Dr Lyn Phillipson, from the Centre for Health Initiatives, received the Resthavens Inc Dementia Research Award of \$150,000 for her project titled 'The development and trial of an innovative community-based Respite Action Intervention for carers of people

with Dementia'. Chris Brennan-Horley from the Department of Geography and Sustainable Communities was successful in securing a Project Grant of \$50,000 for his project 'Geographic Gerontology and Dementia-friendly environments: Illuminating the perspective of people with Dementia and their carers in a local community'.

German connection

Associate Professor Samantha Thomas from the UOW School of Health and Society will collaborate with colleagues at the University of Tübingen as a distinguished visiting professor at the Institute of Sport Science. Associate Professor Thomas' area of expertise includes risk behaviours, marketing

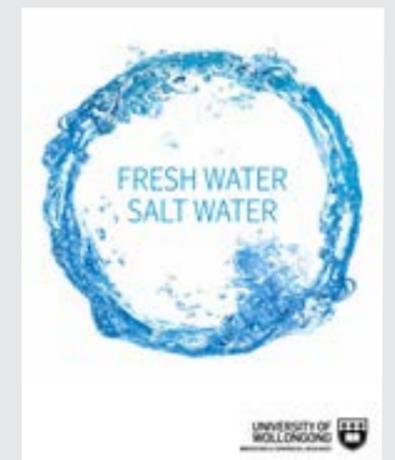
campaigns and understanding the impact of industry tactics on health and social behaviours. She is leading and collaborating on a number of ARC funded research projects, including an examination of the ways in which Australian families interpret and respond to weight messaging.

Fresh Water, Salt Water

Land based water resources are under sustained and increasing pressure through rising populations, industrial development, and climate change. There are heightening concerns about water security and river health. At the same time, seemingly increasingly destructive floods in Australia and around the globe also emphasise the need to more effectively manage water resources and systems. The oceans dominate the world spatially, covering 72% the surface of the globe. These extensive maritime spaces and their associated coastal zones are critically important to sustaining life on Earth.

UOW researchers are conducting research in a range of water related issues and disciplines. It is the first university in Australia to implement a Water Savings Action Plan, bringing about massive reductions in water consumption while maintaining the amenity and appeal of the campus. 'Fresh Water Salt Water' has been developed to demonstrate some ways in which UOW is working and can work with organisations and communities to better manage our precious water resources.

Further Information:
Bruce Thomson: brucet@uow.edu.au
or Klaus Krauter: klausk@uow.edu.au





Clockwise from left: The view of icy Ottawa from the plane; looking towards the administration building at King Saud University; Professor in het Panhuis and UOW Alumni, Dr Ali Aldalbahi

From freezing to sweltering: a tale of international connections

Professor Marc in het Panhuis, Associate Dean (International) of the Faculty of Science, Medicine and Health, recently travelled to Canada and Saudi Arabia to recruit students, to establish international links and to promote research.

Cold Canada

Canada is a key market for recruitment of international students for the Graduate School of Medicine (GSM). In Canada, Professor in het Panhuis was joined by GSM members Associate Professor Lyndal Parker-Newlyn (Admissions Director) and Ravi Daga (International Manager). They attended Canada GoAbroad fairs in Vancouver, Ottawa, Toronto and Montreal, interviewed prospective GSM students, liaised with UOW agents and gave presentations to the pre-med clubs at Simon Fraser University and the University of British Columbia.

"We had a lot of interest from prospective students at these fairs. TV and radio interviewed us on the purpose of our trip to Canada, which gave us an opportunity to promote UOW. The team worked very hard at student recruitment, and the immediate impact of that effort is evident from the first confirmed international GSM student for 2016," Professor in het Panhuis says. At the University of British Columbia, Professor in het Panhuis visited the laboratories of Professor John Madden and gave an overview of the 3D/4D printing effort at UOW. Professor Madden is a

regular visitor to UOW and is an expert in actuator materials. These materials are key component of the ACES Soft Robotics program.

"At UOW we are developing hydrogels for soft robotics applications, in other words the development of soft bodies that generate soft movements in order to interact with its environment, including humans. There are a number of great opportunities to link with Professor Madden's established research in actuator technology as well as his new research into hydrogel devices."

Sweltering Saudi Arabia

"It was -25°C (which felt like -40°C due to wind chill) when I left Canada, and I was greeted by +35°C upon arrival in Riyadh, Saudi Arabia!

"It was great to tap into the UOW alumni network as several of my former MSc and PhD students are now working in Riyadh. They had arranged an intense program for me, keeping me busy from 8am in the morning until 11pm." Through a former UOW student Dr Ali Aldalbahi (MSc and PhD), Professor in het Panhuis was able to meet with the Deans

of Science, Nanotechnology and Medicine at King Saud University (KSU). They discussed areas of mutual interests for KSU and UOW, and areas for exchange and potential research collaborations.

"King Saud is going places – there is a general 'can-do' attitude, they want to do things and are spending big. Founded in 1957, it's a University that is higher ranked than UOW on the world rankings, and is currently undergoing an enormous expansion in buildings, in particular for the medical school or 'medical city' as they call it," Professor in het Panhuis says.

"Both countries are interesting, and we can't ignore Canada as a market for international students. I'm currently planning my next trip to Canada in the much warmer month there of June. I might pass on combining it with Saudi Arabia as by then, it will be close to 50°C there."

Professor Marc in het Panhuis is also a Chief Investigator in the ARC Centre of Excellence for Electromaterials Science (ACES).

>>Follow Marc on Twitter @SoftMaterials

RESEARCH

New approach for games and sports teaching

By identifying the common concepts underpinning all games and sports, UOW's Dr Greg Forrest aims to bring in a new era of teaching and assessment in the Personal Development, Physical Health and Education syllabus. Here Dr Forrest explains the Grammar of Games.

The playing, teaching and coaching of games and sports has been integral to Australian society and Australian identity. For many of us, a key feature of our exercise, health and physical activity is through involvement in games or sports as players, coaches, teachers or spectators. Much of the teaching and learning of how to play games and sports comes in our Physical Education classes at school. However, over the last 20 years, there has been a reported decline in participation in games and sports and an increase in sedentary behaviours in our communities. This has raised a number of issues related to the purpose and success of our games and sports programs. These include whether the role of a teacher is to give students experience in a broad range of games and sports, or develop intellectual quality and depth in specific sports; deciding what games and sports students should learn, how we choose them and how we assess them fairly and consistently; and how the various levels of games and sports expertise of PE staff are best managed to maximise potential when teaching, learning and assessing games and sports.

Over the last 15 years, much attention has been devoted to resolving such questions, both in schools and tertiary environments. There have been attempts to encourage more inclusive approaches to teaching games and sports that have been linked to quality teaching practices. However, these efforts seem to have made little difference to teaching or assessment practices because we still view individual games or sports as separate entities to be learned and understood in isolation from others.

To develop expertise in any activity, the well-accepted figure is roughly between 5000 to 20,000 hours. These numbers are obviously incompatible with lesson

time allocated to learning a game or sport or even yearly coaching schedules in an individual sport.

Yet this is what we are attempting to achieve with the students in our games and sports programs - irrespective of whether at a Primary, Secondary or Tertiary level - a task that is next to impossible, if not impossible.

This has a significant impact on our capacity and ability to develop appropriate levels of content knowledge in both staff and students in all of the games and sports, and on our capacity to understand and participate in games and sports when we leave school.

However, what would happen if we did not view games and sports as single, isolated entities that must be learnt but simply as representing the context in which certain concepts take place, with one sport no more or less important than another? This would mean we would have to identify and develop content knowledge in these concepts. But where would we start?

The 'Grammar of Games' identifies these concepts and their relationship in games and sports. It is an alternative approach to teaching, developing content knowledge and improving understanding of all games and sports.

Just as grammar in language is the content that gives meaning to the signs and symbols of language, the Grammar of Games identifies four 'grammatical' concepts that underpin and give meaning to all games and sports.

These concepts are:

- Strategy and Tactics
- Decision Making
- Movement Skill Execution / Action
- Communication and Concentration

Using the Grammar of Games allows a complete change of perspective in how we understand games and sports. By developing a deep understanding of these grammatical concepts and understanding the interrelationship between them in games and sports play, players, students, coaches and teachers can view games and sports as examples or contexts of these concepts in action.

This means that it does not matter whether we teach, assess or program water polo, football, rock climbing, board cross, surfing, lacrosse, lawn bowls, cycling or even chess whether at an elite or beginner level.

They are all simply examples of these four concepts interacting together through movement and can be treated as so. Using the Grammar of Games as the foundation of understanding in games and sports and beginner coaching programs gives educators the capacity to address the issues we currently face in games and sports programs.

The Grammar of Games allows a complete change in perspective on what are key concepts and contexts in relation to what we wish all students to learn and understand in games and sports. Using the model gives us a unique opportunity to take great strides forward in this important area and allow more people to have the potential to understand, participate in, and be active in games and sports in their life.

Dr Greg Forrest is the Director of Academic Studies (Secondary Education) and a lecturer in the School of Education, Faculty of Social Sciences. This is a condensed version of a keynote address delivered at the the NSW PDHPE Teachers Association Annual Conference.



Justin Westgate brings a creative approach to his PhD study of the implications for human society of a 'post-natural' world



"I'm interested in the implications of planetary scale issues we face – global warming, ocean acidification, species extinctions and the like – and subsequent arguments for an 'era of humans' – what has been termed the Anthropocene. Taking this notion seriously upends ideas of normality or stability, pulling us into what we might call a 'post-natural' world. Consider that humans have never lived through some of these planetary conditions – more than 400ppm of CO₂ for example – and indeed human civilisation has only been possible due to the last ten thousand years of relative climatic stability.

These pose some big questions, and so I'm interested in how we think through the implications – the science only goes so far. How do we actually imagine some of this – the 'known unknowns', but also the 'unknown unknowns'. That's where the creative comes in.

I'm investigating pockets of thinking that respond to imagining 'unnatural' futures, and then consider how we might do things differently.

I had interests in issues of environment from early on. When I first studied at art school that drew me to the emerging area of environment-conscious design. I then embarked on a career as a communications designer dealing with social, cultural and environmental issues, working on campaigns and projects at all levels, from grassroots through to national-political. I have also worked as a lecturer in design on and off over the last 10 years.

After my last stint in the UK working in the development sector I felt the need to ground myself more critically in current thinking around culture and environment issues, so I returned to NZ to do a research masters in geography. A PhD was the next step.

It took me a little while to find a place where I felt I could investigate my hybrid and somewhat eclectic interests, but I managed to find it here in the Department of Geography and Sustainable Communities and with my supervisor Professor Chris Gibson.

For me creative tools are useful in moving beyond the 'what is' and exploring possibilities of the 'what if'.

I've been involved in many different kinds of projects. As a creative practitioner I'm interested in agile creativity and playfulness. Over a number of years as a side project I explored different modes of performance such as socio drama, open-form improvisation, contemporary clown. I trained with an experienced Brazilian clown performer and we developed a political street theatre performance which we got funding to perform.

Performance gave me new insights into the creative process such as embodied ideation, the importance of listening, and connections between generousness and generativity.

I've been inspired by a varied range of both thinkers and practitioners. For instance, designer Tibor Kalman's projects challenging cultural politics; Kalle Lasn's cultural activism through the likes of Adbusters magazine (which helped mobilise the Occupy movement). But also the likes of James Lovelock and Fritjof Capra for their novel, systems-based perspectives of the world, and more recently Bruno Latour with thinking that destabilises the modern project. The future will be different to the past. The impacts of climate change for instance are already being felt, things will only get messier, there will be unanticipated knock-on effects.

We'll need agile ways of responding and adapting, and reimagining how we do things. This can't just be 'more of the same,' it needs to be fuelled by a fundamental shift in the human relationship with nature. Finding the collective humility to do that I think is really the biggest challenge we face. I'm interested in ways that social thought is mobilised into social action. For me creative tools are useful in moving beyond the 'what is' and exploring possibilities of the 'what if.' I'd like to see my contribution as furthering the generative – and slightly more provocative – pathways that are developing with social research practice."

>>Follow Justin on Twitter: @Justin_Westgate

EARLY START CONFERENCE

UNIVERSITY OF WOLLONGONG, AUSTRALIA

28-30 SEPTEMBER 2015



The University of Wollongong is excited to invite you to the inaugural Early Start Conference, to be hosted at our new \$44M Early Start research, teaching and community engagement facility in Wollongong, Australia, from the 28th to the 30th of September, 2015.

Early Start is a strategic initiative of the University that recognises the significance of early experiences in shaping life trajectories. It centres on a multidisciplinary approach to exploring the earliest years of life through research pursued in conjunction with national and international scholarly, industry and government partners.

The Early Start Facility, based at the University's Wollongong campus, houses state-of-the-art teaching and research areas as well as public access to a Discovery Space that offers exciting learning experiences for young children and their families. Technological innovations allow collaboration with a network of early childhood education and care centres across regional, rural and remote areas of Australia, connecting communities with researchers and specialist practitioners.

CONFERENCE THEME:

Improving Children's Lives: Translating Research For Practice, Policy And Community

At the core of the Early Start mission is the goal of improving children's lives. Our research efforts are founded on a commitment to bringing together academics from across discipline boundaries and working closely with government and the sector to improve early childhood policy and practice.

This conference will address the challenges that exist in policy and practice for children, families and educators by exploring current approaches to research in the early years of life and proposing strategies for the future that will both inform and improve work in the field. Target audience: researchers with a focus on investment in young children from the perspectives of education, health, law, psychology, sociology, economics, policy, indigenous affairs, social work and other related areas as well as practitioners and policy specialists.

International and National Speakers include:

Prof Catherine Snow, Harvard University

Prof Iram Siraj, UCL, Institute of Education and University of Wollongong

Prof Edward Melhuish, Oxford University and University of Wollongong

Prof Michael Wald, Stanford University

Prof Marc de Rosnay, University of Wollongong

Prof Dianne Ward, University of North Carolina

Prof Fred Paas, Erasmus University and University of Wollongong

Prof Susan Danby, Queensland University of Technology

For further information and to register please visit:

earlystart.uow.edu.au/conference





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