INTRODUCING OUR NEW LAUREATE FELLOW
Meet UOW’s fourth Australian Laureate Fellow: world renowned biophysicist Professor Antoine van Oijen to unravel mechanisms of DNA replication in Wollongong

GALVANISING THE MANUFACTURING INDUSTRY
ARC Research Hub for Australian Steel Manufacturing officially launched in Canberra

RECOGNISING RESEARCH EXCELLENCE
Congratulations to the 2014 recipients of the Vice-Chancellor’s Awards for Research Excellence
The University of Wollongong ranks in the top 2% of research universities worldwide

Source: QS World University & Times Higher Education World University Rankings 2013/2014
Message from the Deputy Vice-Chancellor (Research)

These outstanding results emphasise the value the University places on our people

Australian national in the latest round of 16 Australian Laureate Fellowships announced last month. This is a great coup for UOW, which will see our Centre for Medical and Molecular Bioscience and the Illawarra Health and Medical Research Institute expanded and strengthened in single molecule biophysics and imaging (more on pg 6).

The good news came just weeks after our fantastic results in the ARC Future Fellowship announcement, in which seven UOW academics were named among the nation’s best by the Minister for Education, the Hon. Christopher Pyne MP. Our $5.39 million has been awarded to UOW Future Fellows, on topics as diverse as a critique of crime and justice programs targeted at indigenous populations; assessing the political influence of community media; and the development of a framework to engage men and boys in preventing violence against women (more on pg 14).

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UNESCO study to assess protection of journalist sources

UNESCO journaling academic Julie Posetti has been appointed the chief researcher of an investigation into changes in legal protections for sources of journalists globally, and the effectiveness of those protections in the context of a changing digital environment. The UNESCO Internet Issues Study: Privacy and Journalists' Sources will be undertaken by the World Editors Directory, in conjunction with the UNESCO Internet Governance Forum (WEGF). The study will be published in 2015 and feed into the wider UNESCO Internet Issues Study.

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Professor Antoine van Oijen, a world-leading expert in the field of single-molecule biophysics, has been named as an Australian Laureate Fellow in a national program to attract and retain world-class researchers. He will join UOW to unravel the molecular mechanisms of DNA replication.

For he’s a jolly good fellow

Professor Antoine van Oijen is one of 16 Australian Research Council (ARC) Laureate Fellows announced by the Minister for Education, the Hon. Christopher Pyne MP, at a ceremony in Adelaide in August.

Prof van Oijen’s Fellowship, ‘Under the hood: single-molecule studies of multi-protein machines’, will bring $2.9 million of ARC funding to the University of Wollongong (UOW) for the next five years to strengthen Australia’s biophysical and biochemical research and place the nation at the forefront of this important research field.

THE ART OF REPLICATING DNA
A pioneer in his field of research, Prof van Oijen, from the University of Groningen in the Netherlands, has developed biophysical tools to study, at the level of individual molecules, important molecular processes such as DNA replication, viral fusion, and membrane transport. DNA replication is the process of duplicating genomic information before cell division.

By making real-time single-molecule movies of the replication process, we will be able to unravel the molecular mechanisms of DNA replication, and provide the fundamental knowledge required to gain better understanding of how DNA is copied, how viruses gain entry into cells, and how molecules pass the cell membrane,” Prof van Oijen said.

“Understanding these molecular mechanisms will lead to improved drug development,” he said.

Unravelling the molecular mechanisms of the replication process offers scientists the fundamental knowledge that is required to understand diseases and develop the drugs that counter them.

FIELD FUSION
Bringing together the areas of physics and biology, Prof van Oijen has successfully built an international and interdisciplinary team of researchers. For over a decade he has been a research collaborator with UOW’s Distinguished Professor Nick Dixon, together developing methods to visualise the copying of individual DNA molecules in real time using the assembled components of the DNA copying machine from bacteria.

The five-year Laureate Fellowship will allow Prof van Oijen to develop Australian biophysical research at UOW’s Illawarra Health and Medical Research Institute (IHMRI) and build on his existing collaboration with Prof Dixon in the Centre for Medical and Molecular Bioscience. He will move to Wollongong to take up his Fellowship at UOW in January 2015, on a full-time basis.

Prof van Oijen graduated with a PhD in Physics from the University of Leiden in the Netherlands and completed a postdoctoral fellowship at Harvard to develop his knowledge in biological applications of single-molecule techniques. He was the first in his field to establish a biomedical research group at Harvard Medical School with a single-molecule biology laboratory. Moving to the University of Groningen, he later developed a single-molecule microscope facility, now used by more than 10 research groups internationally.

The Laureate Fellowship will allow Prof van Oijen to develop a team of emerging researchers at UOW and take single-molecule biophysical research to the next level. He will continue to forge new collaborations, hosting workshops for PhD students and postdoctoral researchers and training the next generation of academics in this developing field of research.

>>Follow our Fellow on Twitter: @van___Oijen
$25 M for science research and innovation in the Illawarra

Touring the new facility: Senator The Hon Concetta Fierravanti-Wells (second from right) with Professors David Officer, Gordon Wallace and V-C Paul Wellings, CBE

The Centre will build on more than a decade of internationally recognised fundamental research to fast track development of new industries and manufacturing opportunities around the next generation of batteries, solar cells and medical implants. Including partner and associate investigators, the new centre will combine research strengths from across nine countries, bringing together leading experts in materials, modelling, fabrication and device development.

ACES outstanding research outcomes to date include the development of nanotube yarn to power implantable biomedical devices; the manipulation of fishing line to produce artificial muscles with super human strength; and the acceleration of 3D printing to deliver solutions to a number of medical challenges. The new Centre will support the ongoing development of new industries including the spin-out renewable energy company Aquahydrex as it moves towards prototype manufacturing. New education opportunities will be created through the commencement of a masters degree in biofabrication in partnership with Australian and international institutions. With the support of the Australian National Fabrication Facility (ANFF) and NSW Government funding, ACES will take advantage of advanced customised 3D fabrication equipment and engineering expertise to provide the transition from fundamental research to a workable 3D product. All applications will be supported by an ethics, policy and public engagement program to ensure the community is an integral part new and rapidly emerging technologies.

ACES will be a cauldron of research activity to challenge the most gifted researchers attracted from around the globe

ACES Director, Distinguished Professor Gordon Wallace, said transformative research would be supported by the right people to forge ahead and position the Centre as a global leader in 3D electromaterials science.

"ACES will be a cauldron of research activity that would challenge the most gifted researchers attracted from around the globe as well as provide an excellent training ground for students," he said.

News

We are becoming enslaved by our technology?

Touring the new facility: Senator The Hon Concetta Fierravanti-Wells (second from right) with Professors David Officer, Gordon Wallace and V-C Paul Wellings, CBE

Technology enables us to do many things. But have we gone too far? Will we become so dependent on technology that we lose ourselves - even our humanity - in the things we have made?

Emerging technology expert Associate Professor Katina Michael (pictured) from UOW’s Faculty of Engineering and Information Sciences joined a panel of experts for the Intelligence2 debate forum (IQ) in Sydney. Panel members debated the assertion that “We are becoming enslaved by our technology”, discussing whether sustaining our curiosity, being creative and empowered, and the need to do more in less time with advanced technologies, was better or worse for society.

A/Prof Michael argued in the affirmative at the August 12 event, joined by Alistar MacGibbon (Centre for Internet Safety) and Bernard Keane (The Canberra Times). The team argued against included Professor of Bioethics Peter Singer, Antony Loewenstein (Journalist, author and film-maker) and Asher Wolf (Journalist and information activist).

A/PROF KATINA MICHAEL’S CASE

"Advanced technologies are supposed to grant us freedom and liberation but instead of freedom we have only gained even greater enslavement. A/Prof Michael said.

"We try to throw new technologies at technological problems, only to find this propagates the issues at hand instead of eradicating them. The social implications of technologies have intended and unintended consequences,” she said.

"It is the unknown unknowns which will plague us into the future. Some of us are willing participants to this enslavement, fooling ourselves that we are smarter than the rest and that our destiny is even to become one with technology.

The greatest lie of the 21st century we are now living is that technology will set us free

"Others are unwilling participants to online addiction. Some of our jobs dictate that we spend some 75% of our waking time in front of a screen — What kind of life is that? Endless streams of emails, red alerts, red eyes and back aches, obesity, all in the name of human optimisation and efficiency.”

"Our kids veg-out in front of Minecraft, StarCraft, WOW, and we use the excuse that they are at least interacting with other people they call ‘friends’, building castles and having fun running away from zombies,” A/Prof Michael said.

"But who are these friends? The truth is that we have never been lonelier than we are now.”

"Yes, our five-year-olds can install Linux, it’s that easy, but we teach them to find all the answers on Wikipedia and Google. Are we really smart or just plain-old dumb?”

"We go to sleep with our mobile phones on our chest or under our pillow, waiting for that call from a loved one. Despite the fact that we messaged them only five minutes before shutting eye.”

"We take the phone and read our messages on the toilet seat, in the shower, and even announce to the world when we will make love to a partner over social media. We keep re-playing YouTube clips because it makes us feel good, particularly Reality TV shows which are especially stale,” she said.

"When will we admit that we are addicted to the online world? When will we confess we have a problem with the way we are going about our modern life? Can we call being glued to a screen for 11 hours a day real progress? What will this behaviour lead to — if not the ultimate fusion of flesh and machine?"

"The singularity with all its airs and pomp is flawed — technology will always fail, and it will fail catastrophically if we place all our faith in that scenario, then the new breed called homo electricus will also inevitably fail. Humans will fail victims to their own creations.”

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Six Green Stars for new Sustainable Buildings Research Centre officially launched at UOW Innovation Campus

UOW’s Sustainable Buildings Research Centre (SBRC) has been officially opened, providing a unique hub for academia, research, industry and the community to create, develop and implement ideas that will shape the buildings of tomorrow. The SBRC is made possible through a Federal Government contribution of $25.1 million from the Education Investment Fund and will enable researchers to develop pioneering new retrofitting techniques and technologies, creating more effective places to live and work and generating new skills and jobs for the Illawarra region. The SBRC building, designed by architects Cox Richardson, was constructed with the target of becoming the first certified living building in Australia, and the Illawarra region’s first 6 Star Green Star building. Its many environmentally-friendly features include: ultra-low energy consumption; a solar roof that produces more power than the building consumes; rainwater harvesting to ensure the building is net-zero water; sophisticated natural ventilation and indoor environmental quality features; and extensive monitoring and building control systems to ensure it operates as efficiently as possible.

SBRC Director Professor Paul Cooper said the Centre was an example of how Federal Government funding had delivered more than bricks and mortar and had enabled a hub where academia, industry and the community could work together to bring innovative ideas to life. “One of the great challenges today is the rising cost of energy. The applied research we are undertaking will improve the design and efficiency of buildings, leading to improved quality of life and reduced cost of living,” Prof Cooper said.

“Importantly for the region, access to research-based knowledge will enable up-skilling for the regional workforce that will improve the skill sets and economic opportunities for local companies and their employees.”

UOW Vice-Chancellor Professor Paul Wellings said the SBRC epitomised what the Innovation Campus was all about – cutting edge research and strong industry partnerships. “Not only is it a spectacular looking building, but the SBRC will provide the focal point for an outstanding research team to drive innovations and develop strong links with our valued industry partners. This centre will be a vital link in the regional economy as a driver of new jobs and skills.”

>> Learn more about the Sustainable Buildings Research Centre:

sbrc.uow.edu.au

Japan partnership beams rays of life for cancer treatment

Professor Anatoly Rozenfeld has partnered with the Japanese National Institute of Radiological Sciences to develop heavy ion therapy.

An agreement between UOW and the prestigious Japanese National Institute of Radiological Sciences (NIRS) will allow Australian researchers access to cutting-edge cancer therapy that is currently unavailable in Australia. A Memorandum of Understanding (MOU) has recently been signed between NIRS and UOW, through Professor Anatoly Rozenfeld who is the Director of the Centre for Medical Radiation Physics (CMRP). The MOU will allow the two institutes to share research, training, facilities and researcher exchanges.

The NIRS, in Chiba, Japan, is a leading research institution that is developing radiation therapy for cancer treatment, particularly in the promising field of heavy ion therapy. Heavy ion therapy for cancer involves directing beams of particles called ions at cancer cells. The ions can be precisely targeted to the location and size of the tumour, limiting damage to surrounding healthy tissue. Similar to proton therapy, carbon ions can be stopped at any required depth in a body, sparing normal tissue in front of the tumour and delivering almost zero radiation downstream of the tumour. Such precision is not possible with other radiation treatments such as x-ray therapy. In addition to precision, ion therapy also packs a punch – it has what is known as a high radiobiological efficiency, up to three times that of x-ray treatment. The result is that a smaller dose of radiation is needed to eliminate target cells.

Prof Rozenfeld said this treatment could be hugely beneficial for many types of cancers and particularly for children who would otherwise require high-risk surgery if the tumour was located near the spinal cord or in the brain. “When the child has a brain tumour or a blastoma we have to be careful to avoid irradiating critical organs. With x-ray therapy this is very difficult and sometimes almost impossible to do,” Prof Rozenfeld said.

“With heavy ion therapy we can ensure the tumour is identified with precision imaging and irradiated accurately without harming surrounding tissue,” he said. Heavy ion therapy is not currently available in Australia but through the MOU, the first Australian agreement to develop experience in heavy ion therapy, Prof Rozenfeld’s team will have access to the treatment centre in Japan. Prof Rozenfeld will assist the NIRS with expertise in custom-designed instrumentation to measure radiation dose and radiobiological efficiency of the carbon ion beam. The instrument uses silicon-based microdosimetry and was last year awarded a US patent for the invention. Prof Rozenfeld, who has dedicated his life to finding better treatments for cancer after losing both parents to the disease, said the CMRP detector technology would further develop heavy ion therapies for cancer treatment.

The first 10 medical physics students and two academics from the CMRP will take part in training in Japan in September, supported by an Australian Government Short-term Mobility Program grant and the NIRS.
Wired for sounding out bionic ear innovations

Thirty-two years ago, Professor Graeme Clark’s revolutionary invention, the cochlear implant, was “switched on” in the first ever patient, filling a Melbourne man’s world with sound. Since then, the device has helped more than 200,000 people break through the isolation of profound deafness and thanks to research, improvements continue to be made to the technology and implantation techniques that widen its reach to new candidates.

Many of those improvements have been incubated at the ARC Centre for Excellence for Electromaterials Science (ACES) during the time of Prof Clark’s tenure as a Chief Investigator and Bionics Program Leader, and progress continues to be made through ACES’ association with his protégé, Prof Stephen O’Leary – one of Australia’s leading cochlear implant surgeons and researchers – is the keynote speaker at a community symposium being held to highlight innovation in cochlear implants.

Prof O’Leary will describe how the cochlear story developed, as well as the challenges that are still to be met so that bionic devices can take a new place in augmenting human senses.

“We have moved from a time when the bionic ear could only assist those who were profoundly deaf, to a situation where the best outcomes are derived from combining cochlear implants with natural hearing,” Prof O’Leary said.

This means that more people, including those who suffer hearing loss as part of an ageing process, may be eligible for a cochlear implant in the future.

Prof O’Leary’s presentation is part of the annual Bill Wheeler Community Symposium held each year to celebrate innovation in bionics research at UOW, and in particular its flagship science research centre and ACES lead node, the Intelligent Polymer Research Institute (IPRI).

Presentations will also be made by Illawarra local Mrs Jo Williams, whose son Felix owes his hearing to the cochlear implant, as well as the winner (announced on the night) of the Bill Wheeler Award.

Student test anxiety relieved by new research

While NAPLAN marks slip across the table, our research suggests that allowing students to look at exams before they begin can help reduce anxiety and improve performance. According to child development researcher and PhD student Myths Mavilidi, from UOW’s Early Start Research Institute (ESRI), test anxiety is a major threat to student performance that can lead them to ‘choke under pressure’.

“The stress related to pressure-filled exam situations has physiological effects, such as increased heart rate and blood pressure, emotional effects, such as worries about the situation and its consequences, and cognitive effects, such as working memory load,” Ms Mavilidi said.

“Our research has found that even letting students skim their exams for one minute before they begin can help to reduce anxiety.” Researchers from UOW and Erasmus University Rotterdam (the Netherlands) tested the maths skills of 1,176 sixth grade students across primary schools in Athens, finding that both low-anxiety and high-anxiety students were less stressed and achieved better results if they were allowed to scan the test beforehand.

The study, recently published in the journal Applied Cognitive Psychology, also found that students with higher anxiety levels needed significantly more response time and greater effort because their working memories were consumed by negative thoughts, and so performed worse on their exams. Ms Mavilidi also said other techniques to help students get through exams included: sequencing test problems from simple to complex, making the test situation similar to the learning situation, minimising distraction and having a good sleep between the learning and testing situation.

“Australian policy makers should reconsider how we are schooling our kids, with research from another recent study showing seven out of 10 teachers did not see that NAPLAN was improving literacy or numeracy. Our research is something that could apply to any educational institute and something educational policy officers need to consider,” she said.

Behind anemone lines

Sea anemones may seem like some of the world’s simplest creatures. But research undertaken by Professors David Ayre (University of Wollongong) and Rick Grosberg (University of California at Davis) suggests a deeper complexity to the organisms, showing that different anemone clones can have strikingly different personalities. Although they lack internal organs and possess a simple nerve net instead of a brain, experiments are revealing tactics that anemones employ in their territorial fight for space.

On Californian shores, two species of sea anemones are some of the most abundant predators and competitors in other aspects of their lives. A major focus of the current work has been to understand why, despite their aggressive behaviour, only the bolder anemone can maintain feeding tentacles and inflates its normally hidden fighting tentacles. The white tissue on the tips of these tentacles is packed with more penetrating nematoctysts that are used to attack and kill an opponent. Aggressive individuals are more likely to win fights but also move more quickly and are potentially dominant fighters - traits that aggressive individuals are more likely to win fights but also move more quickly and are potentially dominant competitors in other aspects of their lives.

In the latest research, carried out while Prof Ayre has been on study leave at UC Davis, the study has found evidence of different fighting styles between the species Anthopleura elegantissima and another species, Anthopleura odorifera. The ‘boldest’ anemone then pulls back its feeding tentacles and inflates its normally hidden fighting tentacles. The white tissue on the tips of these tentacles is packed with more penetrating nematoctysts that are used to attack and kill an opponent. Aggressive individuals are more likely to win fights but also move more quickly and are potentially dominant competitors in other aspects of their lives. However, the researchers have argued that instead, the stability of battle lines suggests that “armies” of bold, aggressive fighters must be limited in some way - perhaps by their ability to move into space and produce new recruits.

They tested this theory by assessing the fighting ability of pairs of clones and then another it involves contact of their feeding tentacles. These are lightly armed with stinging cells (nematocysts) that they use to catch and hold prey. On contact with a genetically different anemone (another clone) or another species, these stinging cells discharge and alter the anemone’s ability to move into space and inflates its normally hidden fighting tentacles. The white tissue on the tips of these tentacles is packed with more penetrating nematoctysts that are used to attack and kill an opponent. Aggressive individuals are more likely to win fights but also move more quickly and are potentially dominant competitors in other aspects of their lives.
UOW academics shine bright as new Future Fellows

The future is bright for UOW researchers, following the announcement of the latest round of the Australian Research Council's (ARC) Future Fellowships Scheme, which saw UOW ranked 3rd nationally (relative to size) and placed 8th for total funding awarded.

Seven of the University of Wollongong’s (UOW) academics have been named among the nation’s Future Fellows after Minister for Education, the Hon. Christopher Pyne MP, announced over $5.38 million from the ARC to projects at UOW, led by the Future Fellows, on topics as diverse as a critique of crime and justice programs targeted at indigenous populations; assessing the political influence of community media; and the development of a framework to engage men and boys in preventing violence against women.

LEADING THE FIELD IN ARCHAEOLOGY
UOW’s Centre for Archaeological Science (CAS) has enjoyed outstanding success with three new Future Fellows hailing from the group. CAS is dedicated to fundamental questions about past human life and activities. CAS shell expert Dr Katherine Szabó (pictured) has been awarded more than $800,000 over four years to help improve understanding of Melanesian societies and their transformations over time. The Melanesian region, comprising Vanuatu, the Solomon Islands, New Caledonia, Fiji and Papua New Guinea, has a rich repository of important shell artefacts that Dr Szabó hopes to give due attention.

“Shell money is critical in customary exchanges and still has value as legal tender in the Solomon Islands, so it’s in Australia’s interest to understand how such a different approach to economics works in one of our nearest neighbours,” Dr Szabó said.

The project will take Dr Szabó first to the Solomon Islands to undertake an ethnoarchaeological enquiry involving collaborative work with the Solomon Islands Museum, its local communities and an intensive study of museum ethnographic collections holding Melanesian shell valuables that have been collected over the last two centuries. Dr Szabó shares the honour of being named a Future Fellow with CAS colleagues Associate Professor Benjamin Marwick (currently based at the University of Washington in Seattle) and Dr Bo Li, who joined UOW in 2012 on a Vice-Chancellor’s Postdoctoral Fellowship. Both Dr Szabó and A/Prof Marwick are the only archaeologists to be awarded a Future Fellowship in this round. CAS Director and ARC Australian Laureate Fellow, Distinguished Professor Richard (Bert) Roberts said.

“The Future Fellowship projects of Dr Szabó and Dr Li are complementary to my Laureate project, and together we hope to shed new light on the evolution and exchanges and still has value as legal tender in the Solomon Islands, so it’s in Australia’s interest to understand how such a different approach to economics works in one of our nearest neighbours,” Dr Szabó said.

In addition to Kat’s work in Melanesia, Ben Marwick is an archaeologist with a wealth of experience in mainland Southeast Asia. Bo Li is at the international forefront of his field of geochronology, and will be developing new-generation sediment dating techniques that will have application worldwide. We can expect exciting findings from each of these mid-career researchers,” he said.

The history of human and environmental interactions between Central Asia and northern Australia is the focus of Professor Roberts’ ‘OUT OF ASIA’ Laureate project. The Future Fellowship projects of Dr Marwick and Dr Li are complementary to my Laureate project, and together we hope to shed new light on the evolution and dispersals of humans through the region over the last 130,000 years,” Prof Roberts said.

UOW’s 2015 Future Fellows
Australian Institute for Innovative Materials (AIM):
• A/Prof Shujun Zhang | New dielectric materials: Improving storage density of high temperature multilayer ceramic capacitors to sustainably meet future energy demands
Faculty of Law, Humanities and the Arts (LHA):
• Dr Tanja Dreher | Listening for Media Justice: mapping the response to Indigenous and community media in Australia’s mainstream public sphere
• Prof Elena Marchetti | New dielectric materials: Improving storage density of high temperature multilayer ceramic capacitors to sustainably meet future energy demands

Faculty of Science, Medicine and Health (SMAH):
• A/Prof Benjamin Marwick | The archaeology of Thailand and Myanmar: a strategic region for understanding modern human colonisation and interactions across our region
• Dr Katherine Szabó | Dimensions of value: understanding the role and measuring of shell valuables in the Melanesian past and present

Dr Bo Li | Next-generation luminescence dating techniques for ear and archaeological science applications

>> Jump to the ARC website for more info: http://www.arc.gov.au/media/
Professor Noel Castree has recently published in Nature Climate Change, a monthly journal dedicated to publishing the most significant and cutting-edge research on the science of climate change, its impacts and wider implications for the economy, society and policy. The paper argues that geoscientists must forge new alliances with social scientists and humanists to bring the climate change debate to the next level and allow society to better respond to global environmental change. Below Prof Castree provides a summary of the paper for this publication.

"Should we simply thank or instead seek attacks on geoscience by sceptics are on the rise, and like mechanics, they believe there is no more efficient way of preventing heat illness. The positioning of temperature sensors has led to humans possessing an ability to dissipate the heat with the precision of a surgeon. "This process is controlled by the central nervous system (anterior hypothalamus), and it relies on the processing of sensory information that is provided by temperature sensors. These are located in various deep-body structures (brain, spinal cord, major blood vessels) and the skin," AProf Taylor said. The team has also found new evidence that these receptors may also be found within exercising muscle. According to Co-author Dr Herb Breolley, muscles may in fact have an ability to sense the heat that is produced during exercise. "Muscles also appear to influence sweating. When sweat evaporates, the heat produced by the muscles is transferred to the environment, cooling the body. By having temperature sensors located close to the heat source, humans have more precise control of this evaporative cooling," Dr Breolley said. If correct, the research will not only increase our understanding of physiology, but provide another example of the efficiency of evolution. The positioning of temperature sensors next to heat-producing structures makes for a very effective way of preventing heat illness. "Since our African ancestors were hunters who relied very heavily upon their endurance capabilities to catch larger and faster animals, then the presence of such sensors may well have given them an advantage over their prey, and one that has been passed to contemporary humans," AProf Taylor said.
Are the deaths in Gaza war crime?

According to International Law Professor Gregory Rose, recent civilian deaths in Gaza do not automatically equate to crimes of war. Here is his opinion on the legal bounds.

In the current conflict between Israel and HAMAS, the civilian casualties alone do not tell us whether the two sides of a conflict are observing or breaching international humanitarian law and conventions of armed conflict. This depends on the circumstances that result in civilian deaths, including the care taken in planning and undertaking military action.

The concept of proportionality means that armed force to achieve a military objective may be no more than the force needed to achieve it. It is not a matter of cyclic trading of bullet for bullet, rocket for rocket, through the generations. For Israel, the military objective is to end HAMAS rocket attacks on Israeli communities, 14,000 fired so far, and to neutralise the surprise attacks on Israeli communities, 14,000.

For Israel, the trading of bullet for bullet, rocket for rocket, to achieve it. It is not a matter of cyclic.

Implicit in the rule of proportionality is that a military force can lawfully target enemy military assets only. The proportion of civilians to combatants killed in war in the 20th century was about 2:1. In Afghanistan in Operation Enduring Freedom, in a relatively open environment, the ratio was 1:4. Within treacherous urban environments where fighting irregular military forces, the death civilian toll is much higher, as distinguishing military from civilian infrastructure and personnel is more difficult and the precision of equipment and intelligence varies. (Per cent of HAMAS’s own rockets have landed in Gaza itself). In Gaza now, HAMAS claims that the majority of victims are civilians, 3:1. The UN adopts the HAMAS figures as it cooperates fully with HAMAS, the local authority in Gaza, and is indeed staffed almost entirely by locals. Israeli data supports the claim that the civilian to combatant ratio is less than 1:1.

The first legal issue that complicates decision-making on proportionality of civilian deaths is protection of one’s own forces. There is no fixed formula and the operational solution tends to be a practical mix of best efforts and best technology to protect civilians while protecting one’s own soldiers and ensure mission success. For example, with about 3,000 HAMAS explosive booby traps detonated so far, Gaza is rigged by its leaders to explode.

The IDF efforts to safeguard both civilians and its own soldiers in Gaza therefore include calling for civilian evacuation by means of leaflets, phone calls, phone texts, radio broadcasts and warning shots, and support by careful intelligence, real-time monitoring and abort procedures. A second legal difficulty in assessing proportionality relates to the use of civilian shields. Civilian shielding of its facilities is a declared HAMAS military tactic. There is much incontrovertible evidence of rocket pits and weapon dumps located in, around and under mosques, schools, homes and hospitals, which form passive human shielding.

Passive human shields are victims of HAMAS military policy who haplessly find themselves in the vicinity of its operations. They are to be protected as much as possible and their casualties should not be disproportionate to the military advantage to be gained in targeting the military objective. For example, a decision on whether or how to return mortar fire needs to take into account whether the return fire is necessary, whether it is sufficiently informed by field intelligence, whether higher precision targeting are available and whether target-specific legal advice and real-time monitoring is possible.

In contrast to passive victims, active human shields who voluntarily put their bodies in the service of HAMAS’s war effort intend to block fire in combat. They have an individual combat function that compromises their civilian status and their direct participation in hostilities of their own volition undermines the legal obligation to protect them. They should be forewarned but their casualties are legally caused. Although they themselves are not legitimate targets, the facilities or persons that they seek to shield are.

Unlike any other before, this war leverages mass media against a stronger opponent that is accountable outside the battlefield. Members of the IDF will be charged for any breaches of international humanitarian law committed in the course of this war. Military force used by it must be necessary, discriminate and proportionate.

The HAMAS conduct, in contrast, needs to be understood as another religious war in the Middle East. Its civilian suicide bomb strategy is made possible by jihadist fervour, ruthless absolutism and the premise of paradise in its Islamist conception. The West European-derived legal concepts of proportionality, distinction, civilian protection and war crimes are as relevant to it as disc brakes are to a camel.

In this asymmetrical legal environment, Israel must exercise ingenuity. It remains obliged to ensure that IDF use of force is necessary, discriminate and proportionate, even against jihadists willing to blow up themselves and their last human shield.

OPINION

Professor Rose is a specialist in international law at UOW and Director of the Institute of Transnational and Maritime Security (ITMS)

>>See more: http://bit.ly/1ASFtwR
3D printing promise for manufacturing innovation in the Illawarra

A team of UOW researchers is examining how the future of the Illawarra region may lie in an industrial hub for additive manufacturing – or 3D printing – and how it can position itself at the forefront of this emerging technology.

The project received Seed Funding from the UOW Global Challenges Program last year and has gone from strength to strength in its bid to address the Global Challenge of Manufacturing Innovation. The project, Re-energising the Illawarra through Additive Manufacturing, brings together researchers from a range of backgrounds, including the social sciences, nanotechnology, and engineering, to provide a multidisciplinary solution to the problems facing the region.

Researcher Chantel Carr, a PhD candidate in the Australian Centre for Cultural Environmental Research (AUSCERC), said the contained nature of the cultural and sociological framework of the Illawarra, a region that was built on traditional manufacturing industries but has diversified in recent decades, provides the ideal background to examine the value and potential of additive manufacturing.

"Wollongong is a regional city so there is ease in operating in a smaller environment," Ms Carr said.

"We have the infrastructure, the port, the space, and the knowledge base at UOW. The project is inspired by similar initiatives in Ohio in the United States and in north-west England, where additive manufacturing is helping change the shape and future of regions heavily affected by decades of decline in manufacturing. The team - which also includes Dr Thomas Birchell, Dr Robert Gorkin III and Dr Allan Rennie from Lancaster University in the United Kingdom – have used part of their Seed Funding to meet with researchers internationally and conduct fieldwork.

Re-energising the Illawarra through Additive Manufacturing also recently received Project Funding from Global Challenges, the first in the Manufacturing Innovation challenge to do so. The Project Funding will provide the researchers with $50,000 to further increase the size and scope of the project.

Global Challenges' 2014 Seed Funding Round has now closed and the successful projects are soon to be announced. Undoubtedly, there will be just as many new and exciting multidisciplinary initiatives that will help the Global Challenges Program solve the major problems facing our world.

New study aims to prevent ankle injuries in surfers

A new study that aims to prevent injury in surfers is underway at UOW, with professional surfer Nicholas Squiers one of the first to participate. Nicholas is a recent winner of the Australian Surf Festival Open Men’s titles.

The innovative project is being conducted in UOW’s Biomechanics Research Laboratory, in collaboration with the Hurley Surfing Australia High Performance Centre that aims to teach surfers safer aerial manoeuvres.

"We are trying to find out whether ankle stiffness affects the way surfers land their airs, and what implications this has for injuries," James said.

"It’s been shown that airs are associated with an increase in lower limb injuries, but to date no one has shown how ankle stiffness influences the landing style - particularly in relation to how the muscles of the ankle and knee are affected as a result of ankle stiffness." Competitive surfers from the Sydney Metropolitan and South Coast regions of NSW are being recruited for the study. After physical screening, these surfers will perform a training exercise developed by the Hurley Surfing Australia High Performance Centre that aims to teach surfers safer landing techniques. While performing the aerial manoeuvres, James will monitor their muscle activity and ankle range of motion using highly sophisticated biomechanical instrumentation.

"From this research we hope to be able to identify the importance of ankle flexibility for injury prevention in surfing and to establish whether ankle flexibility screening tests that are used in more traditional sports, such as football, and basketball, are relevant to surfing so that injury risk can be minimised," James said.

Grants & Development celebrate success and new staff

"I have worked in Research Grants and Development for over 12 years now," Stefan said.

"I commenced working in the higher education sector as a programme officer for the Grains Research Development Corporation, a sponsor of agricultural research. In doing so I saw a need to support researchers with their grants to better target funding bodies and subsequeclty I moved to the university sector.”

Stefan went on to work at the Research Offices of the Australian National University and Melbourne University, with time also spent in a faculty for Deilt University of Technology and at Melbourne School of Engineering.

"In all cases I have worked on research grants, and contracts, account management of major sponsors, coordination of major funding rounds/bids and managing research development teams,” Stefan said.

"More recently I have also worked in technology transfer, which was very interesting in terms of looking at Intellectual Property generated by the university being utilised.

"My focus here at UOW is to help the University to grow and diversify its income base. This includes pursuing major funding opportunities for both the ARC and NHMRC but also has a strong focus on relevant other domestic and international sponsors,” he said. "I am fortunate to be assisted in this by an experienced and high performing Grants team who have already made me feel very welcome."

PROFESSIONAL SERVICE LAUNDED

The Research Grants and Development (RGD) team have been presented with the 2014 V-C’s Awards for Outstanding Service for Professional Staff. The team, consisting of Julie Matarczyk, Sharon Clarke, James Walsh, Lucas Hughes, Rochelle Warren, Libby McMahon (pictured L-R below) were nominated in recognition of their significant contribution UOW’s success in securing competitive research grant and fellowship funding. Their nomination for the Award was supported by Professors Judy Raper, William Price, Richard (Bert) Roberts, Tony Ockey and Mr Oscar Gregory. The Award recognises the team’s professional initiative, planning and organisational skills and the critical role they play in maximising researchers’ potential to secure competitive research funding. Last year saw the culmination of these efforts, with exceptional ARC and NHMRC outcomes recorded by UOW. The University was awarded ARC grant funds totalling $49.2M, superseding any amount UOW has ever been awarded in one year. Nationally, these outstanding results saw UOW ranked 2nd relative to size. This meticulous approach to grant processes has strived to ensure UOW researchers achieve consistently high-quality proposals.
Congratulations to UOW’s 2014 Vice-Chancellor’s Research Excellence Award Recipients

RESEARCHER OF THE YEAR

(JOINT WINNER)
Professor Anatoly Rozenfeld
Professor Rozenfeld is an international leader in semiconductor radiation detectors. His major contribution is in development of semiconductor radiation detectors for real-time quality assurance dosimetry in X-ray and charged particle radiation therapy. The research is making error-free treatment delivery and has been implemented in many radiation oncology modalities nationally and internationally. Amongst his most innovative contributions is the world-first solid state microdosimetry detector for estimation of radiobiological efficiency in a charged particle therapy and risk of space radiation for astronauts. Professor Rozenfeld is the founding director of Centre for Medical Radiation Physics. The Centre has played the key role in enhancing UOW’s international standing in this field.

RESEARCHER OF THE YEAR

(JOINT WINNER)
Professor Xu-Feng Huang
Professor Huang is a world-leading scientist in neuropathology and neuropharmacology of schizophrenia. He has had a significant impact in translational research in mental health. His research focuses on the small molecules regulating the brain centres which control body metabolism and cognitive function. These include antipsychotics for treating schizophrenia, molecular nutrients regulating the satiety centre of the brain, and co-drug treatment of schizophrenia with diabetes. He has received 17 years of NHMRC funding since he joined UOW in 1995. His PhD graduates are spread among prestigious institutions and research institutes around the world and many rise to senior leadership positions in the neuroscience field.

EMERGING RESEARCHER

Dr Ngamta (Natalie) Thanwattana
Since receiving her PhD from UOW in 2005, Natalie has pursued an exceptionally successful and influential research program of rigorous mathematical analysis of nano-scale materials. Applications of her groundbreaking techniques include nanocomputing, nano-mechanics, nano-medicine, and models for protein folding. Her work lies in the top 3% by citations, of papers appearing in some of her discipline’s most prestigious journals. Her tremendous impact in her field was recognised through the award of the 2014 J.H. Michell Medal from ANZIAM, the applied-mathematics branch of the Australian Mathematical Society. In short, Natalie is Australia’s top young applied mathematician, and bears all the hallmarks of an international research leader.

With Highly Commended shared by:
Dr Shulei Chou and Dr Kerrylee Rogers

RESEARCH PARTNERSHIPS

Dr Melanie Randke
Melanie receives this award for her work with locally-based foster care agencies CareSouth, William Campbell Foundation and CatholicCare Wollongong. Their multidisciplinary research addresses a critical issue facing Australia today: how to attract enough foster carers to provide for the more than 17,000 foster children currently needing homes. Their collaboration has resulted in over $940,000 in ARC funding, sixteen journal publications, local and national media exposure, direct access to Government Ministers through the provision of briefings and advice, and promoting UOW as a supporter of the local community through the provision of high quality research that informs community service practice.

>> Check out photos from the Awards night: http://bit.ly/1Li5hns

RESEARCH COMMERCIALISATION

Professor Anatoly Rozenfeld
Professor Rozenfeld is not only prolific with new ideas, but also has a good understanding of Intellectual Property. In 2013 alone, two of his patents were granted in the USA and China. Anatoly has immense field knowledge, a large network of industry connections, and a passion to help cancer patients to live a better life. In 2013, Anatoly won a Commercialisation Australia Skills and Knowledge grant for the MOSkin - a novel skin radiation dosimetry technology. UOW has entered into discussions with industry partners; terms include student co-education, consultancy, contract R&D, and research. In particular, a Japanese company has entered into a contractual relationship with UOW on MOSkin’s commercial development.

INTERDISCIPLINARY RESEARCH

Dr Terumi Narushima, A/Professor Christian Ritz, Dr Stephen Beirne, Mr Kraig Grady, Mr Matthew Dalbin
Terumi Narushima, Christian Ritz, Stephen Beirne, Kraig Grady and Matthew Dalbin are presented with this award for their research project entitled “3D modelling, printing and testing of custom fabricated microtanical flutes”. The project successes have been built on the team’s multi-disciplinary expertise in music theory, instrument design, modelling of acoustic vibrations and advanced manufacturing technologies. The result has been the creation of one-of-a-kind flutes that allow for composition and performance of novel forms of music using a variety of microtanical scales. The world’s first performance of the new microtanical flutes is planned for the Darwin Festival in September this year.

RESEARCH CULTURE

Professor Jacqui Ramagge
Her own excellent research aside, the scope and depth of Prof Ramagge’s impact on research culture at UOW cannot be overstated. Over four years as Head of School of Mathematics and Applied Statistics, Jacqui worked tirelessly, using her own infectious enthusiasm and research focus to promote and sustain a cooperative and collegial atmosphere of research intensity in her School and, indeed, her Faculty. Her broader impact on research culture through her support of POGO programs and the ROI’s activities, is also tremendous. Jacqui is enormously generous with her time, her energy and her extraordinary wisdom, in promoting and supporting both research excellence and a
**ACES Director awarded Hanbat University Honorary Doctorate**

Distinguished Professor Gordon Wallace has been awarded the first ever Honorary Doctorate in the science field from Hanbat National University in Korea. Acknowledging Professor Wallace’s significant contribution to higher education and to the development of international exchange between Hanbat National University and the University of Wollongong, the Honorary Doctorate of Philosophy in Chemical Engineering was presented at a Conferment Ceremony in Daejeon, Korea.

Professor Wallace (pictured) is grateful for the opportunity facilitated by Hanbat National University to further develop engagement with Korea. “Global engagement in research and research training is essential if we are to remain at the cutting edge,” he said.

Prof Wallace’s team at the ARC Centre of Excellence for Electromaterials Science (ACES) have worked with South Korean collaborators for more than 25 years, and specifically with Hanbat National University for more than 10 years in developing new energy storage materials, including flexible and wearable devices.

**Distinguished Professor Noel Cressie honoured with Pitman Medal**

Professor Cressie (pictured), Director of UOW’s Centre for Environmental Informatics in the National Institute for Applied Statistics Research Australia (NIASA), has developed innovative methods in statistical methodology and applied statistics and used these methods to solve important scientific problems. His work has had a substantial impact on a wide range of disciplines and applications, especially in the environmental sciences. Prof Cressie is currently involved in a number of research projects, including: NASA’s OCO-2 mission, analysing the precision and accuracy of column-integrated atmospheric CO2; the development of spatio-temporal models for producing small area estimates with the US National Science Foundation Census Research Network; and studies of the biogeochemical cycles in oceans and the dynamic sequestration of carbon in soil with CSIRO.

His other honours include being awarded the Distinguished Achievement Medal of the American Statistical Association’s Section on Statistics and the Environment; the Twentieth Century Distinguished Service Award in Environmental Statistics; the Distinguished Scholar Award of The Ohio State University; and the 2009 Fisher Award and Lectureship from the Committee of Presidents of Statistical Societies. He is also on the Institute for Scientific Information’s (ISI) elite list of highly-cited researchers.

**UOW scientist named one of Australia’s best young researchers**

The 2014 Scopus Young Researcher Award for Engineering and Technology has been awarded to Dr Shulei Chou (pictured) – a research Fellow from the Energy group at UOW’s Australian Institute for Innovative Materials (AIIM). The prize is an outstanding achievement and recognition of Dr Chou’s work in novel material fabrication, characterisation and analysis for next generation batteries. He has been investigating energy storage materials with Li-ion batteries, supercapacitors, Li-air batteries and sodium ion batteries, with the aim to understand improved life cycles, higher energy and power, and lower costs, with applications in portable devices, electric cars and high-temperature energy storage system.

Dr Chou has published 62 journal articles with more than 1,940 citations and has an H-index of 23. Since being awarded his PhD in December 2010, he has attracted more than $1 million in research funding including an ARC Australian Postdoctoral Fellowship, an ARC Linkage project and two ARC Discovery Projects. Dr Chou has established joint projects with many industry partners both nationally and internationally, such as the Australian industry PAfTec Australia (a company specialising in respiratory design and manufacture), DLS Battery (a battery materials company), and Baosteel China. The companies will use Dr Chou’s expertise to improve the battery performance of their products.

**AWARDS**

**The Scopus Award is testament to the quality of the research being performed in energy research at the Institute for Superconducting and Electronic Materials (ISEM) and AIIM more generally. The Scopus Young Researcher Awards are part of an Elsevier global initiative to recognise outstanding young scientists and researchers in Australasia who have made significant contributions in their areas of research. Dr Chou attended an award ceremony where he received a plaque and cash prize at the Australian Research Management Society Conference 2014 at the National Convention Centre in Canberra.**
An international search for novel actuators

UOW’s Dr Javad Foroughi has returned from a work trip fostering international collaborations between Wollongong’s Intelligent Polymer Research Institute (IPRI) and leading lab groups in Germany. He is currently working on a three year project supported by the Australian Research Council DECRA Scheme to develop intelligent fabrics.

IPRI Research Fellow Dr Javad Foroughi travelled to Germany to attend the ACTUATOR 2014. The 14th International Conference on New Actuators and meet international specialists in the field. The event, which has been the key forum for promoting actuators based on smart materials and micro technologies, took place in Bremen from 23-25th June, attracting about 500 participants from more than 30 countries.

An actuator is a material that shows reversible displacement from extra stimulus. A number of established applications for new actuators have emerged from the conference over the years, in particular their well-known use in fuel injection, adaptive shock absorbers, nanopositioning, and precision engineering for things like camera lenses. The conference itself has launched new products that have boasted compactness and performance otherwise impossible in conventional technologies.

During the conference Dr Foroughi presented a paper on his recent work entitled ‘Hybrid Carbon Nanotube Yarn as Artificial Muscles’. He is currently working on a three year DECRA project to develop intelligent fabrics at IPRI. The project aims to create intelligent textiles by developing novel electroactive yarns and demonstrating scaled up processing through adapted knitting, weaving and braiding techniques. By tailoring their structure, these unique carbon nanotubes can be made to act as sensors or artificial muscles.

MATTERS OF THE HEART

While in Germany, Dr Foroughi was joined by UOW Professor Geoffrey Spinks and started with an international team to map out a path for the creation of a novel artificial heart using Smart Materials. The team included the University of Heidelberg’s Dr Bastian Schmack and Cardiac Surgeon Professor Arjang Ruhparvar (Head of Heart Transplantation and Support Systems).

“A novel artificial heart could help patients before and after heart surgery,” Dr Foroughi said. “At this early stage we have developed a first generation biomedical device that we expect to test in the next two months,” he said.

CONNECTING THE DOTS

The team also met with Saarland University’s Laboratory of Actuation Technology, who work on different types of actuators used in biomedical applications. “The Actuation Technology lab are also working with twisted yarn as artificial muscles similar to our recent discovery of ‘superhuman fishing line’, and we have established a new collaborative project that involves novel biomedical devices like the ‘lymph sleeve’ to be utilised for breast cancer treatment,” he said.

What are you studying?

My research examines the ecology of commercially and recreationally targeted fish found on soft sediments in temperature waters of Australia and how likely these species are to respond to protection within marine protected areas (MPAs). I am completing my PhD with the Institute for Conservation Biology and Environmental Management; under the supervision of UOW’s Associate Professor Andy Davis and Dr Andy Knott from the NSW Department of Primary Industries.

From a very young age I was obsessed with fish, fishing and the aquatic environment, and as I got older I became more aware of the issues surrounding sustainable use of fish resources and also of the potential impacts my fishing was having on the habitats I was fishing in. I wanted to know more about these issues and so enrolled in a marine science degree. The PhD has allowed me to delve further into fish ecology and conservation science and rather conveniently lets me do the odd bit of fishing at the same time.

What does your research focus on?

A significant unknown in the design of MPAs is whether no-take sanctuary zones are of sufficient size to provide effective conservation outcomes. Further, much of the focus of marine park research is on reef systems, either tropical or temperate hard substrata; soft sediment constitutes more than 90 percent of the area of MPAs, but doesn’t seem to get much of the research attention.

I use stereo underwater video to compare fish communities found in areas open to fishing and those in no-take zones. I use acoustic telemetry to track fish species from this soft sediment community and quantify patterns of movement relative to the size of no-take sanctuary zones. This should allow a better understanding of the most effective size and design required to protect these species effectively or conversely whether in fact MPAs are a viable method to conserve healthy and sustainable populations of these species.

Acolades from the Nature Conservancy & Ecological Society of Australia

This is the fourth year that the ESA Nature Conservancy Applied Conservation Award has been awarded to support research dedicated towards practical conservation. Established by the Nature Conservancy and the Ecological Society Australia, the Award specifically funds a postgraduate scholarship in the field of applied conservation science. The $99,000 award is open to both lab and field-based research and covers terrestrial, marine and freshwater ecology.

The main selection criteria for the Award are: whether the research will facilitate an improved understanding of ecological responses of Australia’s biota to the impacts of humans and/or facilitate the improved management or protection of Australia’s biodiversity. My thesis will result in a better understanding of fish species found on soft sediments that are targeted by both recreational and commercial fishing in Australia and will, feed directly into the fisheries and marine park management by giving a better understanding of these species and whether marine park design is effective in conserving these species.

I was very happy to receive the Award particularly in light of the extremely high standard of candidates that missed out this year. To be listed alongside past winners who are carrying out some excellent research in applied conservation science is very exciting and a great honour.

What has been the highlight of your career so far? - Probably a close tie between the UOW Marine Science Honours Prize in 2011 and ESA Nature Conservancy Applied Conservation Award this year, however the days spent out on the water filming rate very highly!

Fishy foray into social media - Check out @fish_thinkers on Instagram/Twitter and the Fish Thinkers wordpress blog for all things Marine Science with an Australian bent.

>>Follow Lachlan on Twitter: @fiskeforbrains

http://bit.ly/1etX1Yt

>>Jump to fish_thinkers on Instagram: http://bit.ly/1eijK1Y.

Lachlan Fetterplace

Marine areas overwhelmingly comprise of soft sediment. With popular focus on the health of coral reefs and seagrass meadows, the ecology of our underwater sand often goes unnoticed. Lachlan Fetterplace is working to change the tide of our marine bias.
Dr Sibylle Schwab is a member of the Psychiatric Genomics Consortium on schizophrenia and an expert in molecular psychiatry, with a focus on genetic studies. She joins the Illawarra Health and Medical Research Institute (IHMRI) to undertake research to further our understanding of psychiatric disorders.

Some of her key publications include work on linkage of schizophrenia to chromosome 6, and work on the association between DNA-variants located within the dysbindin gene. Dr Schwab said, “I am further involved in a large project involving researchers at the Universities in Sydney and Melbourne, on linkage of schizophrenia to chromosome 6, and work on the association between DNA-variants located within the dysbindin gene.”

During her tenure at UOW, Dr Schwab will undertake research to further our understanding of psychiatric disorders. “I am often asked to give public addresses about the way my understanding of the First World War, “she said.

Dr Schwab has been teaching history and politics at UOW and Charles Darwin University on a sessional basis for the past 13 years. Since 2008 she has also co-led study tours to Gallipoli in Turkey and the Western Front in France with UOW Associate Professor John McQuilton as part of the HIST265 and HIST270 subjects.

“Terror and the war experience have been of huge interest to the public and I am often invited to speak on this period of history,” Dr Schwab said.

Dr Schwab has a PhD from the University of Munich, Germany. In 1998 she accepted a senior research position at Germany’s University of Bonn in its Department of Psychiatry. In 2003 she then moved to Perth where she continued her work at the University of Western Australia. Dr Schwab returned to Germany in 2010 to take up a Professorship in Molecular Psychiatry at the University of Erlangen-Nuremberg’s Department of Psychiatry. During her tenure at UOW, Dr Schwab will be lecturing for the Faculty of Science, Medicine and Health (SMAH) in addition to corroborating SMAH’s international relationships.

Dr Rahim Mutlu joined UOW’s Intelligent Nano-Tera Systems Research Laboratory (INTER, RL) at the School of Mechanical, Materials and Mechatronic Engineering in July. He will primarily contribute to ongoing projects on smart and soft robotic devices typified by Electroactive Polymers and novel soft robotic devices fabricated by using 3D printing technologies. His research interests include soft mechatronic systems, involving actuators and manipulators and their implementation into medical devices, polymeric artificial muscles, bio-inspired robotics, modelling and control of those systems and their optimization, additive manufacturing and 3D printing technologies, and rapid prototyping.

“The University is in such a good position to be a world leader in manufacturing soft robotic systems in macro and micro size, thanks primarily to UOW’s ARC Centre of Excellence for Electromaterials Science (ACES) and its expertise in materials, which can lead to applications in highly compliant medical devices,” Dr Mutlu said.

Dr Mutlu earned his Bachelor of Science in Mechanical Engineering from the Uludag University in Turkey (2007) and a Bachelor of Business Administration from Anadolu University in Turkey in that same year. He worked as a Process Design Engineer in industry during and after his undergraduate studies until his move to Australia. In 2009 he received a Masters degree in Mechatronics and a graduated in 2013 with a PhD in Modelling Electroactive Polymers as Smart and Soft Robotic Actuators and Manipulators from UOW.

Dr Mutlu has published several articles as part of his research in journals including the Journal of Mechanical Design – ASME and Smart Materials and Structures – IOPscience, and presented his work at international conferences. He has recently joined the Editorial Board of the Soft Robotics - Mary Ann Liebert, Inc.
Professor Simon Ville to deliver Keith Hancock Lecture

Simon Ville is Professor of Economic and Business History and Head of the School of Humanities and Social Inquiry at the University of Wollongong. He previously worked at the Australian National University, and at the universities of Auckland and Manchester, with visiting positions at Harvard Business School, University College London, London School of Economics, the Universities of Glasgow and Melbourne, and the Australian National University. He has written widely on big business, industry associations, social capital, the Vietnam War, and the rural and resource industries for major publishers such as Cambridge, Oxford and Melbourne University Presses and many leading international journals. He has research collaborators from the USA, Norway, Britain and Japan. His edited Cambridge Economic History of Australia has just been published and was recently cited in Hansard. He is a Fellow of the Academy of Social Sciences in Australia (FASSA) and a member of the Oelage of Experts at the Australian Research Council.

The Academy of Social Sciences in Australia, in partnership with UOW is pleased to present its 2014 Keith Hancock Lecture: ‘Resilience and fragility in the Asian century: refocusing Australia’s economic narratives through the lens of economic history’ with Prof Simon Ville. Behind every policy strategy, of government or business, lies a narrative that contextualises and justifies a course of action. Restrictive immigration policies are necessary to prevent an oversupply of labour and a taxing of our natural resources... allegedly. Who develops these narratives and how well informed are they? Often they derive from the thinking of influential foreign and supranational organisations, or the conventional wisdom and philosophies of domestic political parties and powerful media organisations. In this lecture, Prof Simon Ville argues that the design of narratives that best shape our future must draw deeply upon our national historical experience. The newly-published Cambridge Economic History of Australia provides a modern statement of our past experience to guide our economic narratives for the Asian century, highlighting our sources of resilience and exposing our potential frailties.

HDR Student Conference

The inaugural Faculty of Social Sciences HDR Student Conference will be held on Friday 7th November, 2014. This one day event will provide an opportunity for students to engage in dialogue on emerging research that fosters learning, questioning, creating, and developing an academic identity. There will be workshops on theoretical perspective, thesis by compilation, and life after thesis with a panel of speakers sharing their experiences.

INFO & RSVP:
http://bit.ly/1u07kwr

Uni in the Brewery with Professor Dan Hutto

Where sporting prowess collides with conceptual blindness - you’ll leave seeing performers (be they athletes or dancers) in a whole new light. In this Uni in the Brewery, our newest Professor in Philosophical Psychology will examine professional sporting performance through the lens of cognitive science. The fact that the mind is embodied in important and surprising ways is now beyond serious dispute. Professor Hutto will demonstrate how failure to fully embrace this new line of thinking about expert performance can prevent full appreciation of some very important lessons. Prominent scientists are actively calling for theories about expert performance to be informed by the embodied cognition framework,” Professor Hutto said. “This presentation identifies some pivotal, but not obvious, lessons of direct importance on expert skill acquisition and performance,” he said.

>>Find out more: http://bit.ly/1kO5HJq