Companies with women on their boards of directors have a better record of corporate transparency in the area of environmental disclosure, according to a study by researchers in the Flinders University Business School. The study comparing corporate governance with levels of environmental reporting was undertaken by the Business School’s Interim Dean, Professor Carol Tilt, and postgraduate Mrs Kathy Kathyayini. The analysis of the annual reports of Australia’s top 100 Australian Stock Exchange-listed companies showed that environmental reporting is on the rise. When analysing and comparing the composition of the company boards, the researchers found that the presence of women on boards produced a positive effect on levels of environmental reporting. “Earlier studies have identified a number of attributes of female directors, including active involvement, better preparation and independence, that enable them to make a significant contribution to complex discussions and decisions such as environmental disclosure,” Professor Tilt said. “Consequently, you might anticipate better reporting performance among companies with higher numbers of female directors, and our findings show that boards that include both independent and female directors are likely to have a positive influence on firms’ environmental activities and reporting,” she said. In terms of board size, Mrs Kathyayini found that some earlier studies suggested larger boards could be less effective. “While some studies argue that larger boards are more effective as they can bring wider... continued on page 2...
A consortium led by Flinders University is the only Australian finalist in MAGIC 2010, an international challenge to develop the next generation of battlefield robots.

A joint initiative of Australia’s Defence Science and Technology Organisation and the US Department of Defence, the MAGIC 2010 grand final will be held at Adelaide’s Royal Showground in November.

Team MAGICian (Multiple Autonomous Ground-vehicle International Challenge by Intelligent Autonomous Navigators) comprises researchers and students from Flinders School of Computer Science, Engineering and Mathematics, the University of Western Australia’s Department of Electrical and Electronic Engineering, Edith Cowan University and industry partners Thales and Illiarc.

It also enjoys in-kind support and the provision of equipment from sponsors Allied Data Systems, Logitech, SICK and D-Link.

And as do each of the five teams against which they will compete, Team MAGICian will receive US$50,000 in addition to the US$50,000 it has already received to complete work on its robots.

A much greater bounty awaits the top three ranked teams to successfully complete the challenge, which will receive US$750,000, US$250,000 and US$100,000 respectively.

Professor David Powers, MAGICian team leader and Director of Flinders Artificial Intelligence, Knowledge Discovery and Language Technologies Laboratories, said the critical dimension of the challenge was that each team was required to demonstrate the robots’ ability to operate autonomously as they map their surroundings and deal with a simulated emergency response scenario.

“The robots use a variety of technologies – computer processes, infra-red sensors, cameras, an onboard compass, as well as some "top secret" features we’ve designed – to autonomously map the inside and outside of buildings and to distinguish between potential threats and allies,” Professor Powers said.

“Only two team members are permitted to supervise the robots. And this is the point: to date, it takes one or more humans to actually control or operate the robot. Solving this dilemma has enormous potential for expanding the opportunities to use robots in dangerous situations where you want to keep humans out of harm’s way,” he said.

“In addition to getting us to the finals, a really important spin-off is that the technology we’re developing is feeding directly into Flinders undergraduate engineering programs and will boost our intake of PhD candidates in the area of robotics.”

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... continued from page 1

experience and knowledge and offer better advice, other studies have said large boards can also suffer from a lack of communication, slow decision-making, and a lack of unanimity that ultimately reduces board effectiveness and efficiency,” Mrs Kathyayini said.

The Flinders study, however, found that as board size increased, so did the level of environmental reporting.

And while there has been speculation that the presence of institutional investors would mitigate against disclosure, the study found that companies with high levels of institutional investors are actually better at environmental reporting. Professor Tilt said a broader study of more varied companies is required to confirm the link.

“We hope to consider this issue next year as part of Kathy’s PhD thesis,” Professor Tilt said.

“Kathy also plans to interview Board members to try to understand how these sorts of decisions are made,” she said.

Professor Tilt said the study has implications for regulators such as the Australian Stock Exchange which wants to increase corporate responsiveness and accountability to shareholders and investors. There are lessons too, she said, for directors, company strategists and the companies themselves.

“Companies which include a commitment to the environment in their mission and strategies should consider the impact of board structure and composition, as both of these are shown to have a significant effect on the amount of environmental information disclosed,” Professor Tilt said.

Charles Gent

Cover photo: Professor Carol Tilt (right) and Mrs Kathy Kathyayini
Hearing the needs of remote communities

Eye conditions tend to dominate coverage of health in remote communities, but Dr Simon Carney, consultant and associate professor in ENT surgery at Flinders University and Flinders Medical Centre, says hearing loss due to ear infections affects as many as 40 per cent of school-age Indigenous children in remote communities, seriously disrupting their classroom learning and their future prospects.

Associate Professor Carney helps to run an educational program that sees Flinders students perform diagnostic hearing and ear health tests in remote Indigenous communities. The program recently received a Citation Award from the Australian Teaching and Learning Council (ALTC).

With Associate Professor Linnett Sanchez, Ms Karen Sparrow and Associate Professor David Turner, Associate Professor Carney takes groups of audiology, speech pathology and medical students on two-week visits to the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands in South Australia.

The ALTC Citation acknowledged the team for “fostering professional and personal learning and development beyond the comfort zone”.

Associate Professor Carney said increasing numbers of medical students are becoming involved in the trips to the Lands.

“A lot of them want to make a difference, and want to find out at first-hand what the problems are of managing medical conditions in that sort of environment,” he said.

While the distance to the APY Lands and the basic accommodation on schoolroom floors might be initially daunting, Associate Professor Carney said the students acquire invaluable hands-on experience.

“The skills that all the students develop have been quite impressive; they’re pretty good diagnosticians at the end of the two weeks,” Associate Professor Carney said.

“It’s hard work, but everyone works together as a team, and as an educational experience it’s pretty unique.”

As well as its educational role, the program brings obvious health benefits to the communities and is providing research data that could lead to innovative programs of prevention as well. Associate Professor Carney said that the program was also informing the improvement of systems of service delivery to remote areas.

“This isn’t just an Indigenous health issue, it’s related to location as well: kids in the desert communities do far worse than Aboriginal kids in urban settings.”

Help for depressed medical students

This month, in the first event of its kind in Australia, 250 Flinders University medical students met to explore ways of addressing this troubling phenomenon at Mental Health in Medicine 2010, a seminar run by the Flinders Medical Students’ Society.

One of the nation’s leading mental health specialists, 2010 Australian of the Year, Professor Patrick McGorry, was a special guest speaker.

Chair of the seminar, Flinders medical student Minh Nguyen said the aim of the seminar was to shift attitudes to mental health and wellbeing among medical students.

“With their tremendous study load, medical students have a lot of strain on their personal and family lives, as well as their physical and mental wellbeing,” Mr Nguyen said.

“Some stress, anxiety and strain on personal life is intrinsic to medical school and some even see this as admirable.

A major survey of 1000 Australian medical students last year found they reported higher rates of depression than the rest of the population, the result of poor mental health awareness and the stigma of mental illness in medicine.

It’s a question of finding the right balance and knowing that if you’re struggling, help is available,” he said.

Executive Dean of Flinders Faculty of Health Sciences, Professor Michael Kidd, said it was “impressive to see medical students at Flinders taking the initiative to develop a seminar and accompanying research to support the mental wellbeing of their peers”.

“The first dictum of medicine is ‘First, do no harm’. This usually applies to ensuring that no harm comes to our patients but it also needs to be applied to medical students and doctors,” Professor Kidd said.

“If we don’t look after our own physical and mental wellbeing, we will not have the capacity and resilience to provide continuing high quality care to our patients and our communities,” he said.

Vincent Ciccarello
Big teaching win for small scale scientist

The Federal Government’s proposal to label products that contain nanomaterials will be a big task, according to Professor Joe Shapter – there are already thousands of nanomaterials in existence, with applications across science, medicine and industry.

Professor Shapter, who has just been named Tertiary Science Educator of the Year in the South Australian Science Excellence Awards, is the pioneering force behind the nanotechnology degree at Flinders, the first undergraduate course of its kind in the world.

Professor Shapter said nanotechnology, which focuses on creating “smart” materials and structures that are measured in the billionths of a metre, provides a profusion of novel and demanding material for teaching and research alike.

Teaching nanotechnology, he said, requires a special and complex combination of the fundamental sciences, specialised instrument training, new theory development and the personal development of students.

“When learning about cutting-edge science that can cross several disciplines, students need to be equipped with the capacity for independent thought right from the start of their studies,” he said.

The Flinders course immerses students in the “deep end” of nanotechnology from their first year.

“Nanotechnology operates on the frontiers of science, so exposure to cutting-edge problems sets the stage for students to extend themselves through curiosity driven research from the start of their studies,” Professor Shapter said.

“This independence gives students ownership of their education from the very beginning and creates tremendous enthusiasm, which is reinforced by amazing things currently happening in nanotechnology.”

As well as encouraging students to develop their reasoning skills with debates on science and society, Professor Shapter devised a topic that focuses on professional skills, employing external speakers, including practising scientists, to discuss issues such as ethics, commercialisation and corporate culture.

Charles Gent

Poppies sprout from brain and shark research

Marine biologist Dr Charlie Huveneers tracks sharks, including great whites; neuroscientist Dr Damien Keating tracks the communications between cells in the brain. Both Flinders University researchers have been named 2010 Young Tall Poppies of Science at the South Australian awards ceremony on Tuesday, August 10.

The annual awards recognise the achievements of outstanding young scientists in various disciplines for their work as researchers and communicators.

Dr Huveneers’ research includes underwater surveys, tagging and biopsy sampling of sharks, using a variety of acoustic and satellite-linked tracking devices to collect data on swimming patterns, residence times, migratory corridors as well as water depths and temperatures.

“The general goal is to develop a better understanding of sharks’ behaviour and their role in the marine ecosystem, which has implications for the fishing and ecotourism industries and for beach safety as well,” Dr Huveneers said.

His position is jointly funded by Flinders and the South Australian Research and Development Institute.

Dr Keating, an Australian Research Council Future Fellow in the School of Medicine, is investigating communication between cells in the human brain, an area...
Two researchers from Flinders School of Chemical and Physical Sciences have been named the Australian Institute of Nuclear Science and Engineering Inc (AINSE) Research Fellows for 2011.

It is the first time AINSE Fellowships have been awarded to researchers in South Australia and that two awards have gone to the one university.

The three-year fellowship will allow Dr Rachel Popelka-Filcoff and Dr Roman Dronov to use the Australian Institute of Nuclear Science and Technology Organisation’s Lucas Heights facility to carry out aspects of their research.

Dr Popelka-Filcoff is conducting a comprehensive study of the elemental make-up of ochre, a naturally occurring iron oxide pigment that is widely used by Indigenous Australians, as part of an ongoing project with the South Australian Museum and Artlab Australia.

“Ochre is found on archaeological sites of Indigenous people, worldwide. However, in Australia, ochre has a great significance both on the artefacts and in cultural expression,” Dr Popelka-Filcoff said.

“Ochre from particular sites, because of its colour and crystallinity and other characteristics, may be sought only during certain times of the year for specific ritual such as coming-of-age ceremonies,” she said.

“Ochre also has a connotation with blood and death and Dreaming stories, because of its inherent colour.

“And there’s research to suggest that the use of ochre transforms an object. A spear has a certain meaning, but as soon as you apply a certain ochre to it, it also transforms its colour and its cultural meaning.”

Dr Popelka-Filcoff will use the Neutron Activation Analysis (NAA) facilities at Lucas Heights to obtain a “geochemical fingerprint” of various ochre samples.

“We irradiate the sample in the reactor and, after irradiation, it undergoes radioactive decay, emitting delayed gamma-rays. These gamma-rays have a particular energy specific to a given element,” she said.

“Measuring the gamma-rays allows us to determine the concentrations of the elements we’re interested in, such as transition metals and rare earth elements. These concentrations represent the geochemical signature of how the ochre was formed for a particular site.

“In theory, each one of these geochemical chemical fingerprints is different for each site, so we can build a database of these for known ones and then eventually to artefacts and objects, analyse them in the same way and trace them back to original sources.”

The analyses will help Dr Popelka-Filcoff trace some of ancient ochre-exchange routes.

Dr Roman Dronov’s research is focused on developing a new generation of optical biosensors, devices that can detect trace amounts of molecules including environmental toxins and disease biomarkers.

A scientific “canary in the coalmine”, biosensors are used in a range of settings from biomedical diagnostics, such as glucose monitoring in diabetes patients, to food quality monitoring and counter-terrorism.

Using neutron-based surface analysis, Dr Dronov will examine the way proteins organise themselves in porous silicon film used in optical biosensors.

“My goal is to develop a new simple approach to assemble proteins on porous films in a single-step process that offers high stability and reproducibility for applications in advanced optical biosensors,” Dr Dronov said.

“This will find practical uses in biomedical diagnostics and environmental monitoring and can be extended to applications in tissue engineering, drug delivery or biofuel cells,” he said.

“The biosensors’ high sensitivity and selectivity, compared to classical analytical methods, and accompanied by high throughput, portability and energy efficiency, promise substantially enhanced performance and economic benefit.

“Large market demand exists for robust and cost-efficient biosensor solutions and there are hence clear opportunities in this project for IP development and technology commercialisation.

“The use of biosensors in point-of-care settings can help to achieve earlier disease detection and better disease management.”

Vincent Ciccarello

of research that has potential to improve the prevention and treatment of serious degenerative diseases.

“My lab uses cutting-edge techniques to identify how cells communicate with each other through the release of neurotransmitters and hormones,” Dr Keating said.

“We have identified several proteins, some associated with human disorders including Down Syndrome, Alzheimer’s Disease and diabetes, that regulate the release of these chemical messengers from cells.”

Tall Poppy winners in South Australia and interstate are selected on the basis of both their research achievement and passion for communicating their work, and the Flinders Tall Poppies will take the message of the merits and benefits of science into high schools with a series of presentations in coming months.

Charles Gent

Awards

Vincent Ciccarello

Award winners Dr Charlie Huveneers (left) and Dr Damien Keating (right) with Vice-Chancellor Professor Michael Barber
Teaching

Flinders students give the community a voice

Flinders University Screen Production students have boosted the profile of ten community organisations in South Australia with a series of television commercials aimed at generating volunteer support. The *Community Voices* program, in which students filmed, edited and produced commercials and short documentaries with $50,000 in support from the State Government, was launched by the Minister for Volunteers, Ms Grace Portolesi, last month. Ms Portolesi said the *Community Voices* program put “the amazing achievements of community groups” under the spotlight and was “a rewarding, real life experience” for the students involved.

“The program is also a great opportunity to showcase to young people the value to the community of volunteering, and hopefully inspire them to become volunteers themselves,” Ms Portolesi said.

Lecturer in Screen Production at Flinders, Mr Cole Larsen, said “the *Community Voices* program aims to replicate a near commercial environment where students are required to interpret the needs of the community group and ensure these needs are met in terms of program content, design and audience reach.”

“Students are exposed to ‘real life’ commercial production where client needs rather than student aspirations drive the project. Students get experience in working to briefs, milestones and deadlines as well as the commercial specifications required to produce television commercials for network broadcast,” Mr Larsen said.

“Students have the opportunity for their work to be seen by audiences of more than 100,000 with the television commercials being screened in prime time television spots including commercial news, sporting events such as the Australian Open tennis and Test match cricket and evening programming,” he said.

The ten community groups supported in the 2010 program were Community Food SA, Eldercare Inc, Fauna Rescue of SA Inc, Hackham West Community Centre, Holiday Explorers Inc, Iron Knob Progress Association Inc, Parkinson’s South Australia Inc, RPH Adelaide Inc, Sammy D Foundation Inc Youth Opportunities Association SA Inc.

Digging up the future on climate change

As an active public intellectual, Tim Flannery is very much engaged in spirited topical debates — his visit to Flinders University was punctuated by radio interviews in which his opinion was sought on issues ranging from the policies of the major political parties on alternative energy — “must do better” — to the growing synergy between the green movement and primary producers.

But as soon he was off the phone, he was plucking textbooks from the shelf in a frantic search for evidence to back up his interpretation of the evolution of the kangaroo. In the paleontology lab of Dr Gavin Prideaux, the issues of the Federal election were temporarily forgotten as good-natured argument raged over the significance of the depth and angle of the facets in a fossilised kangaroo heel-bone.

Professor Flannery and Dr Prideaux are old academic adversaries; for two decades, each has subscribed to different schools of thought on the ancestral lines of the kangaroo. The two scientists stood side by side at a table laden with fossil fragments, pointing out the features of ancient heels and femurs and hunting for other skeletal samples to illustrate their respective points of view.

Prehistory might seem poles apart from contemporary debate over the impact of climate change, but one very much informs the other, Professor Flannery said. Speaking at the Investigator Lecture to a capacity crowd of 600 in the Matthew Flinders Theatre, Professor Flannery said his studies initially led him to view climate change as a long-term phenomenon that was gradual and cyclical. But evidence, especially from the 740,000-year record trapped in the ice of Greenland and Antarctica, shows that climate change can be swift and dramatic, he said.

Driven by an accumulation of CO₂ unprecedented in the ice record, the Earth is facing a temperature rise of four degrees in the next 90 years, a rise parallel to that which occurred over thousands of years in the wake of the Ice Age, Professor Flannery said. He said the effects on biodiversity will be catastrophic.

“We have nothing to fear from reducing our emissions in this country, but we have a very great deal to gain,” he said.

Charles Gent
More than 10,500 students and parents were introduced to the study and research opportunities available at Flinders when they attended the University’s two Open Days this month.

Information sessions were extremely popular, with other highlights including a live broadcast from the Hub by radio station Fresh 92.7, a massive depiction of a microscopic carbon nanotube made from balloons, a dome screening a film in 360 degrees and a re-enactment of a famous legal case.
Does enriched uranium bring happiness?

For over two decades the Republic of South Australia has relied on a clean, safe energy source: uranium. This unique method of energy production and recycling is now powering the world. But there is a catch: the global energy corporation generating this green electricity is also developing the ultimate weapon, a neutron bomb that targets the biological cells of select individuals.

If, as you read this, you think you might be living in a parallel universe, you could be forgiven. The scenario is not some shattering journalistic scoop – it is part of the promotion for Double Happiness Uranium, a new science fiction film about a fictitious company of the same name. It is the first feature film for Flinders University's Head of Screen Production, Cole Larsen and fellow Adelaide filmmakers Matt Hawkins and Tom Young. Combining "larger than life corporate architecture and Chinese revolutionary social realism", Double Happiness is described as a "near future dystopian science fiction" that is both "a dark morality tale and forecast of what could happen".

To be directed by Mr Larsen, the project brings together emerging filmmakers, students and artists in a collaborative pilot mentorship scheme. The cast includes Bad Boy Bubby star Nicholas Hope, accomplished artist, cook and television personality Poh Ling Yeow, and Stephen Sheehan, who was named Best Established Comedian at the 2010 Adelaide Fringe Festival. The movie is currently in pre-production but film buffs can get a taste of Double Happiness Uranium by visiting the project website at www.doublehappinessuranium.com or those who would like to financially support the project can contact the producer, Tom Young, at thomas.young@flinders.edu.au

Vincent Ciccarello

Graphic: Karl Larsen, This Big Design

Documentary wins prize but leaves us dangling

Everyone has seen a pair of shoes dangling from power lines and idly speculated about how and why they got there – Matt Bate has made an award-winning documentary about them.

The Flinders Screen Studies graduate wrote and directed The Mystery of Flying Kicks, which won the Best Short Australian Documentary at the Melbourne International Film Festival. The 12-minute film was produced by another Flinders graduate, Viron Papadopoulos.

Matt, who is a partner in local filmmaking company Closer Productions, said the "viral" nature of the global shoes-on-wires phenomenon and its on-line popularity fascinated him. He found thousands of photos of dangling shoes, along with plentiful speculation about their meaning and origins.

A public appeal through blogs, forums and pop culture sites produced a huge response, Matt said. "The phenomenon had gone viral via the Internet, so why not use the Internet to make the film?"

"It was an experiment in film-making in that we didn’t travel anywhere, but at the same time it was an international film made as a collaboration with the global public."

Hundreds of contributions in the form of emails, audio Skype submissions and film clips were edited down and threaded together to form a narrative using motion graphics and animation, and finished with a specially written song by a sneaker-loving US female rapper. The film gives no definitive answer to the phenomenon. "The truth is very nebulous, and part of the film is a reflection on how supposed truth operates," Matt said.

"I was interested in how these urban myths spread – I call it global Chinese whispers."

Matt has stuck with documentary-making and popular culture for his upcoming feature: Shut Up Little Man explores an infamous series of tapes of two arguing old men made by their neighbours in 1980s California.

Photo: Liam CH

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