



Making the most of our water

Dr Steve Burgess inserts a probe into a bamboo plant

Students' invention adopted world-wide

by Lindy Brophy

A device invented by a UWA plant physiologist is helping scientists and agriculturalists all over the world work out how much water their plants are using.

Dr Steve Burgess was a PhD student, under the supervision of Professor Mark Adams, when, nearly ten years ago, he came up with an improved way to measure sap flow in woody plants.

The University has recently signed a worldwide exclusive licence agreement for an international company, ICT, to manufacture and sell the *Heat Ratio Method Sap Flow Probe*, developed by Dr Burgess and his colleague, Dr Tim Bleby.

Up to 700 of the simple devices are in use in areas such as horticulture, viticulture and tree farming in the USA, China, Brazil and Australia.

"The invention improves the accuracy and reliability of quantifying the amounts of water used by woody plants, and so is of considerable importance in Australia, as we seek to better manage water in our ecosystems," Professor Adams said.

The device uses heat as a tracer to monitor water movement in plants. Three needle-like probes are inserted into the trunk or stem of the plant. One has an element that injects heat. The other two have tiny sensors that measure the heat. The way the heat is distributed in the tissues indicates how fast the water is moving inside the plant, which in turn shows how much water the plant is using.

Information gathered by the sensors is converted to a digital readout, which is then stored on a data logger.

Professor Adams says the invention should have enormous spin offs for Dr Bleby and Dr Burgess as well as the

University. "The University's Office of Innovation and Industry has done a great job in helping us to commercialise this invention," he said.

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In the field: early days of testing the device

Making the most of our water

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“But what it also comes down to is a PhD student pursuing his idea in a conducive environment. The University has to keep working on providing a conducive environment for such work to progress.”

The inventors said Professor Adams has been extremely supportive, finding money for them in the early stages, and encouraging them to keep going.

“It is an example of the importance of maintaining continuity of ARC grants, of the importance of postgraduate students for the national research effort and of the value of industry-linked research funding,” Professor Adams said.

“Like most research, this is an outcome of one group ‘standing on the shoulders of others’. This work began as a result of collaboration with Dr Neil Turner of CSIRO and with the International Centre for Research in AgroForestry, headquartered in Nairobi, Kenya.”

The young scientists’ work, while it has real world applications, was also an opportunity to employ pure science to find out what drives water to move through trees. Dr Burgess has published several papers on the phenomenon that have been highly cited around the world.

Following the completion of his PhD, Dr Burgess was awarded a postdoctoral fellowship at the University of California Berkley, which is collaborating with him and Dr Bleby on developing a wireless network for the device. (UWA’s School of Computer Science and Software Engineering is also part of the collaboration.)

When Dr Burgess returned from California two years ago, Dr Bleby was doing postdoctoral work with Professor Adams, and the pair resumed work on the device. Several months later, they were approached by ICT International Pty Ltd, which had learned of the invention through scientific journals.

The probe has already been tested in the blue gum farming industry, which wants to expand to drier climatic areas.

It is also being used in the wheatbelt, around Narrogin and Corrigin, to test viability of specific trees for treating saline land.



Dr Steve Burgess and Dr Tim Bleby are still experimenting and refining their invention

The probe takes measurements every 10-30 minutes, so depending on the question, it can supply answers about water use within a day. But it can be left in place for weeks or even years to capture seasonal dynamics.

“Steve and Tim have every reason to be proud of their achievements, and their success reflects a commitment by academic staff in Australian universities to the spirit of inquiry that need not be stifled by working with industry or on real-life problems,” Professor Adams said.

Dr Burgess is now working in the CRC for Salinity and Dr Bleby has accepted a postdoctoral appointment at Duke University, in the US.

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Life at the edge

Learning to predict thresholds

Floods, severe storms, droughts, landslides — they continue to take us all, including scientists, by surprise when they happen.

These are all climate-driven systems and they all have one thing in common: it is almost as if there is an accumulation of material, water, energy, or forces, and when they reach a threshold, they crash over with enormous power causing intense damage.

Other natural phenomena, such as earthquakes, are not necessarily climate driven, but still threshold driven, and just as devastating when they happen.

Most day-today natural processes, including climate-driven processes, occur, in a more or less regular manner, and are much more predictable because they tend to follow a predictable pattern, and can be studied using traditional methods.

However, when it comes to extreme, threshold driven processes, predictions are difficult because we do not yet know the mechanisms that contribute to the accumulation of forces.

Professor Murugesu Sivapalan, from UWA's Centre for Water Research, said scientists could understand what they could observe around them within their life experiences, but some of these extreme phenomena had happened infrequently, with centuries in between.

"But now, it seems that they are happening more frequently, and scientists have not mastered the analytical tools to analyse them; do not even know where to look and what to observe, let alone make predictions into the future. This is becoming a major challenge to all branches of hydrology, almost requiring a whole new paradigm change," he said.

Since they are concerned with natural hazards such as floods, droughts and landslides, scientists in the climate, hydrology and environmental areas want to know more about thresholds and the patterns they generate, to improve long-term predictions and risk assessment.

"But this is a much broader problem, and even scientists in far-flung fields such as seismology, geomorphology, economics, public health, fluid mechanics, mathematics and structural mechanics are equally concerned," Professor Sivapalan said.

About 70 of the best of them are gathering at UWA next week for a four-day *Thresholds and Pattern Dynamics* conference, aimed at creating a new scientific paradigm for dealing with predictions of climate driven processes affected by thresholds.

It is the first Sir Mark Oliphant Conference for 2005, administered by the Australian Academy of Science, aimed at pushing international frontiers of science and technology. The

conveners of the conference from UWA are Dr Christoph Hinz from the School of Earth and Geographical Sciences and Professor Sivapalan. They are joined by Dr Greg Hancock from the School of Environmental and Life Sciences at The University of Newcastle

More than 20 speakers from Australia, New Zealand, Europe and the United States will look at complex and simple models and case studies of climate driven processes to try to identify thresholds in natural and managed systems.

The possibility of global climate change indicates that extreme events may become more frequent, and an event-based approach that quantifies hydrological thresholds will significantly contribute to improving scientists' predictive capabilities.

The shift in understanding, that the conference is designed to promote, is motivated by the fact that many natural processes cannot be observed directly. An example of this is earthquakes, where seismic waves that can be measured are just the signature of the actual movement of tectonic plates.

Thresholds and pattern dynamics is an exciting field of science with a new take on nature. It's shaping as one of the most significant new ways of looking at the environment.

Current and future developments to be discussed at the conference include:

- How earthquakes help us predict the unpredictable
- Triggers for climate chaos, ecological chaos and human chaos.
- Improving early warning of major floods
- Landscape and resource changes driven by climate
- The human impact on ecosystem decline
- How pesticides move through the landscape
- How environment and disease cause human injustice
- What drives societal collapse and ecosystem collapse?

Natural disasters mean climate-drive systems have reached a threshold

Vice-Chancellor's column

Building research strengths

Over recent months, debate about the future shape of the higher education sector in Australia confirms our view that new national policy settings are going to favour those universities that have a focus on quality, research intensity and impact, and which build strong relationships with other institutions as well as the government, business and community sectors.

These views provide affirmation of the direction currently being pursued by our own University where quality is paramount, and where building our research capacity provides direct and positive benefits for teaching and learning.

That capacity has been further enhanced in the past two weeks with the announcement that we will host a new Australian Research Council Centre of Excellence for Plant Energy Biology (with funding of \$12.5 million over five years). We will also be a partner in two other centres hosted by the Australian National University — the Centres for Excellence in Antimatter-Matter Studies and in Vision Science.

Also significant is the recent news of the award of a Federation Fellowship to Professor Mark Randolph who will continue his internationally renowned work on geotechnical engineering solutions for deep-water oil and gas developments as Director of the Centre for Offshore Foundation Systems in our Faculty of Engineering, Computing and Mathematics. This latest award brings to three the number of Federation Fellows being hosted at the University.

All this comes on the back of the announcements earlier this year of three successful applications in the Western Australian Centres of



Excellence Program – Data Linkage Australia (\$2.1m over five years); Nanoscale Characterisation Centre (\$2.3m over five years); and the Centre for Child Health Research (\$1.7m over five years). As well, our University is a partner in several other successful centres at other institutions.

We are also confident that we will be successful in our proposals for two Western Australian Premier's Research Fellowships aimed at attracting high-profile researchers to Western Australia from the eastern states and overseas.

And on the horizon are new chairs in exploration targeting, bio-geochemistry and structural biology which are being established with substantial industry support.

All of these developments are significant for two key reasons: first, they support areas of strategic opportunity identified in the University Academic Profile; and second, they help significantly to build the University's research depth, contributing to the overall goal of *achieving international excellence*.

On behalf of the University community I congratulate all those involved in these latest achievements — the individuals and groups who have been recognised for their international excellence, and the many staff who support them (both academic and professional). Your work continues to help position the University so that we can best take advantage of the changing environment in which we operate. And your efforts provide the evidence that we don't only aspire to excellence — we achieve it.

Alan Robson
Vice-Chancellor

Market peak

Marketing publications have put UWA in the top five of 106 Asia-Pacific universities.

The *Journal of Marketing Education* recently published an analysis of marketing research productivity across universities in the Asia Pacific region which put UWA fifth after the University of New South Wales; National University of Singapore; Hong Kong University of Science and Technology; and Auckland University.

Associate Professor Jill Sweeney from UWA Business School said the University was very proud to have made the top five, especially when the number of academic marketing staff was taken into consideration.

"In the Business School we have just ten academic marketing staff. UNSW has approximately 30 full time equivalent staff, so this is an incredible result," she said.

The Business School is currently organising the biggest conference ever hosted by the faculty. The Australian and New Zealand Marketing Academy (ANZMAC) conference 2005 will be held in December at The Esplanade Hotel in Fremantle.

Professor Geoff Soutar, director of the GSM, and A/Professor Sweeney are chairing the organising committee.

"We expect at least 300 delegates, and this year, given Perth's proximity to Asia, are making a big effort to attract academics from countries such as Thailand and China as well as Singapore and Malaysia.

A total of 17 people are contributing to the committee and subcommittees. It is creating quite a buzz as we are all working together to make it a success," A/Professor Sweeney said.

Professor Dick Mizerski is chairing the ANZMAC Doctoral Colloquium, to be held on campus, the weekend before the conference, with about 70 doctoral students from Australia and New Zealand expected to attend.

The theme of the conference is *Broadening the Boundaries*, looking at the opportunities for synergies between marketing and other disciplines created by changes in our society and environment, including technological advances.



CONFERENCES *Nanotechnology* — at The University Club from July 17 to 20

Huge interest in micro scale research

With nanotechnology, scientists will have the ability to detect diseases, treat cancer, improve security and make computers even smaller and more efficient.

Nanotechnology is an umbrella term that covers the study of science and technology at length scales around a nanometre (1 billionth of a metre).

It encompasses multiple efforts across a range of scientific and technological disciplines such as chemistry and physics, electronic and materials engineering, biological and biomedical sciences. To make significant progress, there is a need to foster work across traditional academic and institutional boundaries.

To address this need, UWA, through the Institute of Advanced Studies and the Materials Science and Engineering Discipline Group, has organised an international workshop on nanotechnology, to be held on campus in the third week of July.

The university, together with the ARC and the State government, has already made a significant contribution to nanotechnology research at UWA. Three existing state centre of excellence in nanotechnology are based at UWA, including the Nanoscale Characterisation Centre and the UWA node of the NANO Major National Research Facility (Jointly funded by the ARC) both based in CMM and the \$2.5 Million Nanofabrication Facility based in Electrical, Electronic and Computer Engineering. The university has also recently awarded funding to establish a Nanotechnology Fledgling Centre

coordinated by Professor Colin Raston in Chemistry

Two examples of this nanotechnology research at UWA can be found in the schools of Electrical, Electronic and Computer Engineering and Physics.

Professor Laurie Faraone and Associate Professor John Dell are working on semiconductor-based nanoelectronics and photonics. This work enables core technology for such advanced capabilities as new generations of ultra-large scale integrated circuits such as computer chips, micro-electromechanical systems (MEMS) for sensors and nano/micro-scale machines.

“New nanostructured materials are coming to the fore in the areas of targeted drug delivery and optical/biomedical applications”

Professor Faraone said the Microelectronics Research Group (MRG) was undertaking research into nanostructured semiconductor materials and devices to develop new capabilities in infrared sensing, which can be used in security and defence, biomedical instrumentation, chemical/biological sensing, and processing industries.

“New nanostructured materials, such as porous silicon, are coming to the fore in the areas of devices for targeted drug delivery and optical/biomedical applications,” Professor Faraone said.

The biomedical area is also the focus of nanotechnology research in the School of Physics.

One avenue of their work is the design and development of techniques for the production of chemically stable biocompatible magnetic nanoparticles.

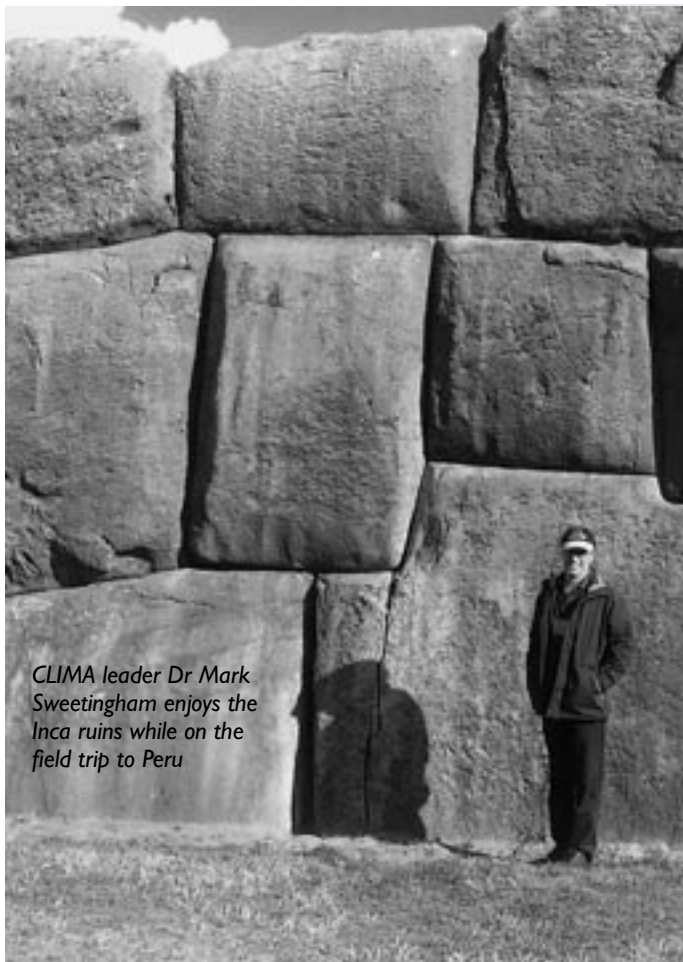
This work is a collaborative project between UWA's Associate Professor Tim St Pierre and Dr Robert Woodward with Professor Judy Riffle from Virginia Polytechnic Institute and State University and Dr Elliot Gilbert from the Australian Nuclear Science and Technology Organisation.

This project involves the production of novel polymer based nano reactors (micelles) in which magnetic nanoparticles are grown. The polymer shells act both to control the size of the particles and provide biocompatibility. By careful control of the magnetic properties the nanoparticles can be tailored for specific applications.

The aim of the project is to develop biocompatible magnetic nanoparticles for future generations of therapeutic and diagnostic applications.

These applications include the reduction in overall toxicity of chemo- and radio-therapy by magnetic target drug delivery, enhanced ability to diagnose diseases using magnetic binding/sorting techniques, an enhanced ability to repair detached retinas, as contrast agents for Magnetic Resonance Imaging, and in the treatment of cancer.

More than 150 scientists are expected at the workshop where speakers from the US, Europe and Australia will present information dealing with a wide range of issues in nanotechnology from the details of their latest research, to addressing safety and health concerns of nanotechnology, and examples of commercialising of successful university research. If you are interested in more details see the workshop's webpage at www.ias.uwa.edu.au/anao



CLIMA leader Dr Mark Sweetingham enjoys the Inca ruins while on the field trip to Peru

Two young researchers in the Centre for Legumes in Mediterranean Agriculture (CLIMA) have spent most of their careers trying to adapt legumes to Australian conditions.

Dr Jon Clements concentrates on lupins and Dr Heather Clarke focuses on chickpeas, both of which are valuable crop rotations for Australian farmers and could become the prized food sources in our country that they are overseas.

Inca diets on the menu

Lupin research could have Australians consuming the same grain that the Incas ate in Peru a thousand years ago.

Dr Jon Clements, a senior research officer with the Centre for Legumes in Mediterranean Agriculture (CLIMA), has recently returned from travel in South America with Dr Mark Sweetingham, Manager, Grain Legume Breeding, Department of Agriculture Western Australia (DAWA) and CLIMA Program leader.

They visited Peru and Chile to foster a collaboration on crop improvement of the Andean lupin (*Lupinus mutabilis*) for the mutual benefit of agriculture in both South America and Australia. There is increased interest in each of these countries in the nutritive value of lupins and their incorporation into modern human diets.

The Incas and pre-Inca civilisations used the Andean lupin as a food, eating the debittered bean or making it into a porridge with maize or the cereal-like grain quinoa.

“We are collaborating with the South American researchers,” Dr Clements said. “All parties will contribute to a set of germplasm that will be evaluated across a large number of locations. As part of a team of researchers based at UWA and DAWA, in collaboration with the groups in Peru and Chile, we hope to develop varieties of the Andean lupin that will be adapted

to broadacre farming, with an improved yield, drought tolerance and disease and herbicide resistance.

Australian farmers grow mainly narrow-leaved lupins as a nitrogen-fixing crop on infertile sandy soils. It has been an excellent grain for stock feed and more recently interest is increasing for its use in aquaculture.

“But the broad-leaved Andean lupin has a similar seed quality to soy beans and could be the cool-season equivalent of that crop. The Andean lupin has the unusual combination of both high protein (42 per cent) and oil (18 per cent). If South American and Australian farmers could produce reasonable quantities of this type of lupin, it could have a variety of end uses, including protein concentrates and isolates for breads, sausages, cakes, milk-substitutes, ice-cream, yoghurt, baby foods, in fact anything in which soya bean is used,” he said.

The Grains Research and Development Corporation and CLIMA-funded travel allowed Dr Clements and Dr Sweetingham to observe lupin crops and their wild relatives growing in the Andes mountain regions and to visit researchers Maywa Blanco (Universidad Nacional San Antonio Abad del Cusco) and Dr Angel Mujica (Universidad Nacional del Altiplano-Puno). The South Americans are particularly interested in maintaining and preserving the genetic diversity of wild lupins and promoting a return to native crops for their Aymaran and Quechuan people.



Dr Heather Clarke works with chickpeas from the pollen stage to the edible stage.

On a chickpea mission

breeding them tough for Australian conditions

If Dr Heather Clarke had any doubts about the direction of her research career, she could have taken a hint from her spell as a restaurateur.

“After completing my PhD here, I went back home to Ireland for a while and ran a Mexican restaurant, where I was one of the first people in Ireland to serve chickpeas.” said Dr Clarke, who has now been working on chickpeas for nearly 12 years in the Centre for Legumes in Mediterranean Agriculture (CLIMA) based at UWA.

Chickpeas, like lupins, are a valuable legume for crop rotation in the Australian grain belt, but severe damage caused by *Ascochyta* blight in recent years has made farmers reluctant to plant chickpeas.

Dr Clarke’s mission is to help breed chickpea varieties suited to our climate, by bringing together high cold tolerance during the sensitive flowering stage, with strong resistance to disease and pests.

Chickpeas can be a good export crop. Most chickpeas grown in Australia are the small dark seeded type (desi type) which is exported to the Indian sub-continent. The chickpeas sold and eaten here in Australia are the large white seeded type (kabuli type) mostly imported from Turkey. “Chickpeas can be eaten in salads, cooked in curries and stews, ground into a flour called gram (besan) flour, ground and shaped in balls and fried as

falafel, cooked and mashed into a paste called hummus, or roasted and spiced for a snack. They are very good for you because they are 20 per cent protein and low in fat,” Dr Clarke said.

“During early phases of domestication chickpea was grown in the middle east and Mediterranean during the summer or where winter temperatures were warmer, but we have been working on new varieties that can withstand the colder winter temperatures in southern Australia, and two of them, which also have some *Ascochyta* blight resistance, were released by CLIMA and the Department of Agriculture WA late last year.”

Dr Clarke and her team develop the best cold tolerant material by selecting it just after the pollination stage. “Breeders usually select at the whole plant stage, so adding a selection pressure this early in the life cycle is a novel idea,” Dr Clarke said.

“The method was developed overseas for tomatoes but doesn’t seem to have been picked up anywhere else.

“We give the chickpea pollen a cold stress when it’s hand pollinated onto the stigma (the female part of the plant). That means only cold-tolerant pollen germinate and grow down through the stigma to fertilise the egg. Survivors are grown on to produce cold tolerant plants which can be used further in plant breeding.”

Dr Clarke works closely with the

Director of CLIMA, Professor Kadambot Siddique. “Professor Siddique has really been the driving force for the chickpea industry and for much of the research behind new varieties and agronomic practices in Australia,” she said.

“The Grains Research and Development Corporation (GRDC) play a key role in funding our work. More recently Council of Grain Growers (COGGO) has also started funding chickpea improvement projects at CLIMA.”

Currently, they are looking for wild plant species which are relatives of chickpea and have desirable traits which could be bred into cultivated chickpea. “Some wild species survive under snow during winter in Turkey,” Dr Clarke said.

“We are collaborating with India and Canada, who also want improved chickpea varieties and are looking for faster or better ways of achieving these.”

But most wild species cannot be crossed with chickpea. Dr Clarke explained that incompatibility between distantly related species led to crossed flowers or pods dropping off the plant (aborting).

“We want to develop tissue culture protocols so that we can rescue and incubate the hybrid embryos in the laboratory before pods are aborted.

“We hope that the final outcome of this work will be access to a whole range of genes from chickpea’s wild relatives.”

Delicate balance: work, parenting and life ...

The fecund Faculty of Arts, Humanities and Social Sciences has put parenting under the spotlight at UWA.

With nine babies born within the past 12 months, to members of the faculty, the hot topics are parental leave, childcare, changing and feeding facilities and the University's family-friendly policies.

The new parents (a few of them for the second time) mostly agree that the University's new parental leave arrangements are a boon. But, as Associate Professor Loretta Baldassar points out, the National Health and Medical Research Association's guidelines recommend exclusive breastfeeding for six months.

"You can't do that with three months' leave," she said. "Sydney University has recently gone to nine months' paid maternity leave, and this is worth considering."

She was able to exclusively breastfeed both Felix (10 months) and her older son Xavier for the full six months, by employing flexible work arrangements: buying teaching relief from her research grant; and enjoying the support of other staff and her extended family.

The University now offers 14 weeks paid parental leave (for the primary carer, regardless of gender) that can be spread over 28 weeks at half pay. New parents can take a total of 104 weeks off work, that is their jobs will be held by the University for up to two years after parental leave is started.

Senior employee relations officer David Rogers said that, under the recent Enterprise Bargaining Agreement, there were also return-to-work bonuses. Staff who have worked for the University for between one and five years are entitled to an extra 12 weeks paid leave if they return to work following parental leave and stay working at the University for the next 12 months.

For staff who have more than five years service, the bonus is bigger. A staff member can take an extra 22 weeks paid leave under the same arrangements.

"Some people return to work part-time and use that bonus to offset their lower salary," Mr Rogers said. "We see these bonuses, and the whole parental leave scheme, as an investment in our good staff. It says to staff that we value their contributions and we want them to come back to work."

Partner leave is now also available for the partner of the primary carer (usually the father), who can take two weeks leave on full pay around the time of the birth.

The three new fathers in the Arts faculty were all very appreciative of the partner leave, especially Shaun Procter, whose six week-old son Will needed surgery in his first week of life.

"Will has to have more surgery over the next 12 months and I have some annual leave saved up so I can be with him and my wife Lara at those times. In the meantime, I've started coming to work early so that I can be home earlier to help out in the evenings. I am definitely doing less work from home," said Shaun, who is the Information Systems Manager in the Arts Multimedia Centre.

History PhD candidate Susannah Thompson says she works more productively while on campus so she can get home to see her daughter Olivia (just over a year old) and her husband James, who cares for Olivia at home.

But others choose to do more work at home so they can be around their children and share the load with partners, extended family and paid child care.

"But it means being a lot more organised and prepared to concentrate on work in the small amounts of free time available," said second time around mother Sue Broomhall, a senior lecturer in early modern European history, who has a ten-week-old son Cai.

"I have to take ten minutes here and there and find my writing rhythm quickly. I also work at nights from eight to



midnight, once they have gone to sleep."

Alistair Paterson, a lecturer in archaeology, and his wife Jennifer, have a nine-month-old daughter Ruby. Alistair found the partner leave at the time of Ruby's birth "invaluable" and now says he take more work home in the evenings. "Everything is a little more intense!" he said.

Vicki Wilson, the School Manager for music, took eight months parental leave when she gave birth to Elise (now a year old).

She has negotiated a four-day fulltime working week, so she has more time with her daughter and pays less in child care costs. "I recommend this to new mothers whose jobs can be done like this," she said.

But Vicki had great trouble in finding child care for Elise when she wanted to return to work. "We were on the waiting list for University-based child care for eight months, by which time we'd found another place. More places are urgently needed."



The Arts babies and their parents: (BACK): Mike Fardon and Ashlee, Susannah Thompson and Olivia, Alistair Paterson and Ruby, Shaun Proctor with baby Will's teddy bear, Pam Sharpe and Freya. (FRONT): Sue Broomhall and Cai, Chantal Bourgault and Tabitha, Loretta Baldassar and Felix. (Vicki Wilson and baby Elise couldn't make the photo shoot.)

weekends off, to spend with my child and to recuperate from the working week, and I make sure that my colleagues know that this is my attitude, because it is the only way to bring about a cultural change," she said.

Chantal is still breastfeeding Tabitha, thanks to the proximity of "the wonderful Unicare". She has brought a bicycle to work so she quickly can get to and from Unicare for breastfeeding.

All the parents agreed that more facilities were needed for changing and feeding babies on campus. The new students' group *Parents on Campus*, has acquired a room in the Student Services area and has applied for funding to fit it out with comfortable chairs and couches for breastfeeding, a microwave oven, some toys and a door barrier to keep crawling babies and walking toddlers safe.

Vicki and other new parents will be pleased to hear that the University is actively looking at sites for a new 50-place child care centre close to the campus.

Two of the new parents in Arts have reduced their workloads to accommodate the new family members. Dr Pam Sharpe is a QEII research fellow in history and said negotiating to go part-time was not easy.

She and her husband Derek Pennington have an adopted three-and-a-half-year-old daughter, and Pam gave birth to Freya nine months ago.

"I have been managing to go to conferences only due to Derek's support in bringing the family with me. He's taken some months off work, which has been great. But I'm not publishing as much as I would like to be."

Pam said that while UWA was very supportive, especially compared to the

private sector, it was still "extraordinarily difficult to negotiate the campus with a pram."

Mike Fardon, Director of the Arts Multimedia Centre and his wife Kellie have a six-month-old daughter, Ashlee. "I have found that I needed to and wanted to reduce my workload, which was previously 50 hours a week plus. This has meant losing almost two days per week, which has taken some adjusting."

Chantal Bourgault, who teaches in communications studies and whose daughter Tabitha is 11 months old, said parenthood forced a balance into your life.

"The university community still tends to operate on the assumption that being an academic is your whole life. I think there are lots of good reasons to challenge this assumption at the best of times, but becoming a parent really brings the unreasonableness of this attitude into sharp relief," Chantal said.

"I now make a point of taking

Bev Hill, Manager Equity and Diversity, believes the University has a responsibility to cater for both students and staff with families.

"The UWA endeavour to support life balance encompasses more than generous leave benefits and flexible work practices. We provide child care, parenting facilities, a recreation centre, prayer and worship facilities; a health care service, including Employee Assistance Providers (for the emotional and psychological wellbeing of the staff and their families), lifelong learning and development opportunities."

She said the University was installing a further five baby change tables on campus. Five were installed last year and, this year, they will appear at the School of Music (with access from the Somerville Auditorium), the Lawrence Wilson Art Gallery, Human Resources, the Reid Library and Winthrop Hall.



UWA staff will enjoy more space for a break during seminars

Love those renovations

Renovations at Love House, the home of Organisational and Staff Development Services (OSDS), have opened up the facility for more inclusive staff development.

Shower and toilet facilities for people with disabilities now mean that all University staff can attend professional development and other courses and seminars without inconvenience.

New bifold doors have taken the place of the back wall, which, along with the clear blinds that weatherproof the adjoining terrace, effectively doubles the

area used for coffee breaks and lunches for people attending courses.

Professor Shelda Debowski, the Director of OSDS, said the new enlarged area would make life more comfortable for the large numbers of staff who often crammed into the previous small space.

"These renovations have been done, dare I say, with love, and we express our great appreciation for Facilities Management and their smooth running of the project," Professor Debowski said at a launch of the new facilities.

The Vice-Chancellor, Professor Alan

Robson, told the gathering that staff development was very important at UWA. "You can't begin to make changes without staff development, and for that you need good facilities," he said.

Bob Davies, the project leader from Facilities Management, said the \$100,000 project had also included renovation of the front reception area and upgrading of a storage and photocopy area.

"It was designed by consultant architect Chris Maher and we implemented his design through our contract administration," he said.

Caring work continued ...

Kate Camins was a dedicated social worker who devoted herself to child protection and drug abuse and sought to help families escape the destructive cycle of poverty and addictions.

Her premature death in 2003 left a sad gap in the list of supervisors in the discipline of Social Work and Social Policy in the School of Social and Cultural Studies. Kate is remembered on the discipline's Practice Supervisors' Honour Roll and she has now been honoured with the inaugural presentation of the Kate Camins Scholarship. It recognises Kate's outstanding work in the field and as a supervisor for Social Work students.



Kaye Shipley, Emily Camins, Kristy Camins, Associate Professor Mike Clare, Chair of Social Work and Social Policy

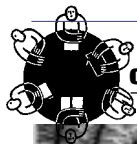
Kate was awarded a Churchill Fellowship in 2001 to assist her research into understanding international approaches to service provision for parents with drug problems, and the scholarship seeks to continue her work in this area.

It has been awarded to Kaye Shipley, in recognition of her vision, achievements, and contribution to social work research and children's interests. It will assist her current Honours research on parents who

have children in out-of-home care. Kaye's research explores how this group of parents experience the concept of partnership within the child protection system.

Kate's daughters, Emily and Kristy Camins (both UWA graduates) presented the scholarship to Kaye at the UWA celebration of Social Work Day 2005. Emily told the assembled gathering that she was delighted to recognise the achievements of someone who shared her Mum's passion and enthusiasm for improving the lives of vulnerable children.

The value of the Kate Camins Scholarship is currently \$2,000 and is awarded to encourage research in Social Work and Social Policy at UWA in the area of families, children and poverty. If you are interested in more information about this scholarship, or wish to submit an application, please ring Associate Professor Mike Clare on 6488.2998 or email mclare@cyllene.uwa.edu.au



CONFERENCES *Animals and Society* — at The University Club from July 12 to 15

Animals in our society

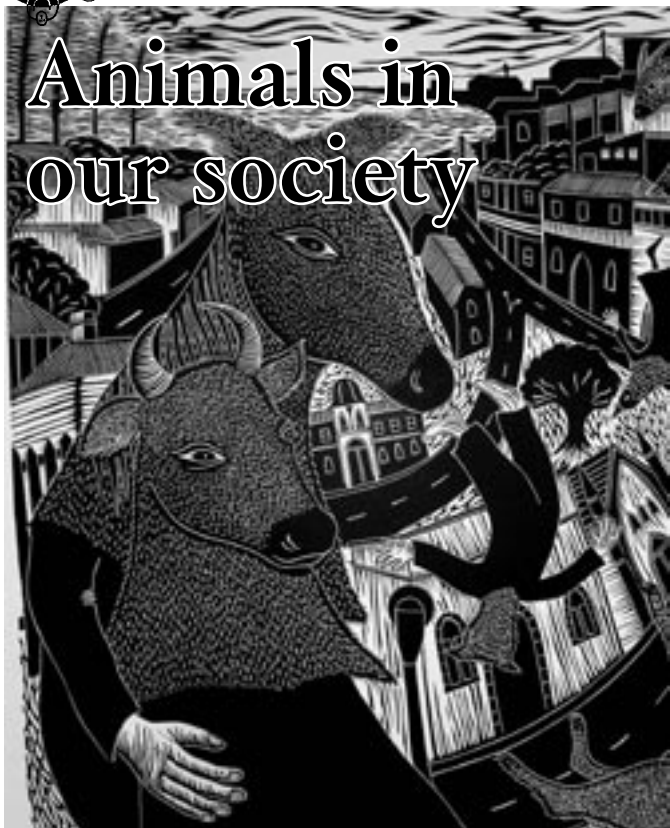


Illustration by Kati Thamo

Fashion and hygiene were probably behind a move back to bare concrete cages for animals in Australian zoos in the 1950s.

Dr Natalie Lloyd, who has just had her PhD thesis on the history of zoos in Australia passed, said that Taronga Park Zoo in Sydney had been leading the way, before the second World War, with a swing away from bare cells for zoo animals to more naturalistic environments. But the 1950s produced a hiccup that saw a temporary return to the modern aesthetic of clean concrete.

Dr Lloyd said her history of Australian zoos from 1860 to

1939 showed that one family, the Le Souefs, had set up many of the zoos in the country, starting with Melbourne Zoo in 1860.

“There is no doubt that zoos are refuges for animals, and perhaps we would be losing animal species at a greater rate if not for zoos,” Dr Lloyd said. “But zoos also tend to make animals seem as if they are there for our enjoyment, rather than existing in their own right.”

Dr Lloyd set up the Animals and Society study group last year with postdoctoral research fellow in Anthropology and Sociology, Dr Jane Mulcock.

It brings together Australian-based scholars working in a variety of disciplines to better understand the roles and meanings attributed to non-human animals in human societies. This group is part of ongoing initiatives to develop national, cross-disciplinary research programs on Environment and Society.

It has organised its first conference, *Animals and Society*, for the second week in July.

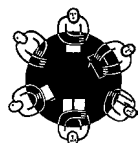
Animals and Society showcases the work of new and established scholars committed to increasing the understanding of the complex and diverse relationships between human and non-human animals.

This expanding and interdisciplinary field of study is gaining prominence, as the significance of animals as symbols, resources, and companions becomes more widely acknowledged in Australian society and beyond.

“It is an Australian group but we are not limited to Australian work. One of our speakers is Professor Kay Milton, an anthropologist from Queens University, Belfast,” Dr Lloyd said.

The conference will look at pets as therapy; welfare of agricultural animals; zoos; wildlife management; animals in literature and art; and animals in the city.

Animals and Society will be held at the University Club from July 12 to 15. There will be a public lecture given by Mike Searle, a local wildlife documentary producer, on July 12 at 7pm. For more information, please go to the website, www.anthropology.uwa.edu.au/home/envirosoc/animals



CONFERENCES *Transition, Growth and Globalization* — at The Business School July 7-8

Focus on China

Hot on the heels of the establishment of Australia's first Confucius Institute, UWA is hosting an international conference on the Chinese economy.

Transition, Growth and Globalization is the focus for the two-day conference next month, which is organised by the Faculty of Economics and Commerce and the Association for Chinese Economic Studies (Australia).

The conference is designed to enhance the understanding of the Chinese

中国经济国际研讨会

economy; to exchange ideas with scholars and policy makers in the field; to present recent research results about the Chinese economy; and, for postgraduate students, to meet potential employers.

Speakers from China, Japan, Australia and the US include Dr Nazrul Islam, from the International Centre for the Study of the East Asian Development (ICSEAD) in Japan.

Other speakers are coming from the Development Research Centre in Beijing; China's Bank for International Settlement; the China Steel Industry Research Institute and the Energy

Research Institute, both in Beijing.

The conference will look at China's economic prospects from 2006 to 2020; China in the structure of world manufacturing; sources of growth in Mainland China; and regional political capacity and foreign direct investment in China.

Conference sponsors are the Australian Government, AusAID, the Australia-China Council and Business Council, Rio Tinto and Edward Elgar Publishing.

For more information, please go to <http://acesa.ecom.uwa.edu.au/>

All smiles on Day 1: Jon Stubbs, Harvey von Bergheim (manager, Student Administration), Mary Carroll (system manager), John Murray and Peter Curtis



SIMS LAUNCH ...

all systems go

After more than two years of work by up to 40 staff members, the University's new information management system was launched this month, with champagne and ribbons.

The Student Information Management System (SIMS) covers every administrative facet of the University, not just, as the name implies, student records.

It has been a huge job tailoring the system, developed by Deakin University, in consultation with 10 other universities, to the specific needs of UWA.

When Jon Stubbs, Director of Student Services, joined the University four years ago, one of the reasons he was chosen for the position was the experience he could contribute to implementing the new system.

Mr Stubbs chose John Murray to head the implementation project, and both Mr Murray and Mr Stubbs earned high praise from the Vice-Chancellor, Professor Alan Robson, and the Registrar and Executive Director, Peter Curtis, when they launched the new system in the Student Administration Office.

The SIMS staff, wearing their signature bright blue polo shirts and sipping champagne, cheered as Professor Robson cut the ribbon to celebrate the end of the project and the start of a new improved

system for UWA.

When Professor Robson signed the agreement with Callista Software Services nearly two-and-a-half years ago, John Murray was assigned eight staff to start work. It quickly grew to 15, then peaked at 40, as some of the best people on campus were recruited.

Mr Curtis said the project had been superbly managed and congratulated the hand-picked staff, while singling out Jon Stubbs and John Murray, and thanking the Vice-Chancellor for committing \$8.5 million to the project.

Professor Robson said it was no accident that the project had gone smoothly and that Jon Stubbs and John Murray had done a great job in selecting staff to work with them.

"It was a very important and very difficult project — so many things hang off it," Professor Robson said.

After the champagne and ribbon cutting, the Student Administration staff went to work updating the new system with the backlog of data that had been held since the old system was frozen on May 25.

A help desk has been established for anybody having problems with Staff Connect or Student Connect. You can call 6488 4777 or email callistasupport@admin.uwa.edu.au

If you need further training in using the new system, please email callistatraining@admin.uwa.edu.au



CONFERENCES

Research Week – July 4–7

PSA answers FAQs

All the questions asked by postgraduate students will be answered in a four-day seminar at the University Club.

Research Week is a new initiative from the Postgraduate Student Association (PSA), which President Natalie Mast says is also aimed at third year students considering Honours and Honours students thinking about postgraduate research.

"During the week, we hope to showcase the services available to research students at UWA as well as provide answers to frequently asked questions," Natalie said.

On the first day, a session specifically for third year and Honours students will be run concurrently with a seminar on presenting posters at a conference. Later that day will be a focus on library services and archiving your work.

On day two, *Applying for a scholarship, Dealing with University administration* and *IT: Things you need to know* should answer many questions.

"On the third day, we help students to deal with the rudest question of all: 'How's your thesis going?!'" Natalie said. "We will also look at what happens when a postgraduate student hits a flat spot: how to become re-enthused; and depression among postgrad students."

In the afternoon, all you need to know about planning a field trip and the pros and cons of working while doing postgraduate research.

The final day will be devoted to formatting a thesis, the submission and correction process and how to deal with corrections with which you don't agree. There will also be a session on postdoctoral and teaching positions: when do you apply?

More than 30 UWA staff members will be participating in the seminars which are free. Postgraduate students do not need to register for the sessions, just turn up. Full details are on the PSA website, www.psa.guild.uwa.edu.au/nuke

Books for earlybirds

Friday night is collectors' night at the Save the Children Book Sale.

But this year, earlybirds have another chance: the doors of the Undercroft will be open to eager book buyers from 6am on the second day of the sale, Saturday July 16.

Tea, coffee, a sausage sizzle and earlybird specials should prove especially popular with booklovers who can't make it on Friday evening and who have sporting or other commitments on Saturday morning.

The reason for the early start is that the ABC's 720 breakfast show, presented by Marshall Martin, will be broadcast from the book sale. As well as hosting his usual guests, including a gardener and a handyman, Marshall will be highlighting some of the treasures offered for sale in the Undercroft.

The long-running book sale is a year-long labour of love for the University branch of Save the Children, and all profits go to helping disadvantaged children in Western Australia and around the world.

The sale opens at 6pm on Friday July 15, then at 6am the following morning, until 5pm that day. From Sunday, more civilised hours will be kept: Sunday 9.30am to 5pm; Monday and Tuesday 9.30am to 7.30pm; and Wednesday, the final day, when you can walk out with a box of books for just a few dollars, 9.30am to 2pm.

Clear some space on your bookshelves!

No ifs, no butts!

A message for smokers from Naomi White,
University Environmental Services

If you're a smoker who doesn't litter, thank you! Please continue to set a positive example. By disposing of your butts in a thoughtful and non-destructive manner you are helping us to keep the UWA campus clean and to protect our local environment, particularly our waterways.

Unfortunately smokers who conscientiously dispose of their butts in ashtrays and bins are in a minority. If you are a smoker who does litter, you probably aren't aware of the extent of the damage you are doing to your environment.

According to *Clean Up Australia*, almost 50 per cent of the litter collected in urban areas is derived from cigarette related products including butts, cellophane wrapping, foil inserts and packaging.

About 24 billion cigarettes are sold in Australia each year, of which seven billion are littered. Most of these end up in our waterways.

Cigarette filters are made up of around 12,000 plastic-like cellulose acetate fibres, which can take up to 15 years to decay into plastic powder.

Free personal ashtrays will soon be available from the University Environmental Services Department.

They are small enough to fit in your pocket or purse, reusable and long-lasting, and are lined with foil to prevent stale smoke smells escaping. If you would like a personal ashtray, please email nwhite@admin.uwa.edu.au with your name and address, and we will send one out to you as soon as they become available.

Please don't throw cigarette butts out of your car windows. Use your car ashtray.

Digest your emails

Some UWA Staff may have considered unsubscribing from the UWA Events list after being inundated with events emails.

There is however another option. By visiting <http://help.events.uwa.edu.au/page/71943> and following the instructions and prompts you can subscribe to receive a single daily digest of all events posted to the site.

This way, instead of receiving an email for every event, you merely receive one email at noon which lists all the events posted that day together with a summary of each. It means you can keep in touch with what's happening on campus or being co-ordinated by the University off campus and yet have an uncluttered inbox.

AUSTRALIAN FEDERATION OF UNIVERSITY WOMEN (WA)
EDUCATION TRUST

2005 Bursaries

**AFUW(WA) Foundation Bursary \$4,000 and
Mary Walters Bursary \$3,000**

The purpose of these bursaries is to meet a special need which will assist women in the completion of a higher degree by research.

Jill Bradshaw Bursary \$2,500

The purpose of this bursary is to meet a special need which will either assist a woman in the completion of a higher degree by research or assist a woman who has completed a higher degree by research but, at the time of the application, does not have access to academic support for her further writing and research.

Mary and Elsie Stevens Bursary \$2,500

The purpose of this bursary is to meet a special need which will assist a woman in the completion of a higher degree by research in mathematics or science.

Joyce Riley Bursary \$2,500

The purpose of this bursary is to meet a special need which will assist a woman in the completion of a higher degree by research or coursework in the humanities or social sciences.

Application forms available from:

AFUW(WA) Inc
P O Box 48
NEDLANDS WA 6909

Website: <http://home.it.net.au/~afuwwa/>
Email: afuwwa@home.it.net.au
Phone/Fax: 9386 3570

**Closing Date for Applications: 5pm Friday 29 July 2005
No late applications will be considered.**

NOTICES

PLEASE NOTE CHANGE OF TELEPHONE NUMBER FOR TICKETS

2005 SIR WALLACE KYLE ORATION
to be delivered by *Professor Paul Davies*

"Life in a violent universe"

Wednesday, 29 June 2005, 6pm

Octagon Theatre, UWA

Abstract: Violence is the leitmotif of the universe. It was born in a big bang. Its fundamental structure was forged in a searing maelstrom of unimaginable ferocity, at temperatures exceeding a trillion degrees. Its history is one of cataclysmic explosions, implosions and collisions of literally astronomical proportions. Yet amid this cosmic mayhem, life has not only emerged, but flourished. How has something so delicate and elaborate as life made a home amid the chaos of a violent universe? Paul Davies shall examine three threats to life of increasing severity—the impact of comets and asteroids, the explosion of stars, and the big bang itself—and argue that each has a creative as well as a destructive aspect in the story of life. Indeed, it seems to some as if the universe is unreasonably bio-friendly.

This event is free and all are welcome,
but TICKETS ARE ESSENTIAL to gain entry.

Tickets are available from the Octagon Theatre box office,
t: 6488 2440, Mon-Fri 12:00-4:15pm

Early bookings are advised, limit of 6 tickets per customer applies

Enquiries to ias@admin.uwa.edu.au or 6488 1340

REMINDER

Please note that the date for the public lecture by Professor George Ellis has changed to 27 July 2005, at 7.00pm.

*George Ellis, Professor of Applied Mathematics,
University of Cape Town*

"The Way the Mind Works: how emotion underlies intellect"

Wednesday, 27 July 2005 at 7.00pm

University Club Theatre Auditorium, UWA

Parking available from Hackett Drive entrance 1 in Car Park 3

Map at <http://maps.uwa.edu.au/crawley/display/11>

PHYSIOLOGY SEMINAR SERIES

Dr Shane Maloney

"Brain temperature in mammals: causes and consequences"

Wednesday 20 July 2005

Physiology Seminar Room (2nd floor Physiology Building)

4.30pm Refreshments, seminar commences at 5.00pm

Contact: Heidi Attwood, Physiology – Ext 3313

ALL WELCOME

All notices, classified ads and redundant equipment can now be sent to our email address:
staffads@uwa.edu.au

Events are now available on the Web at
<http://events.uwa.edu.au>

Please call Maryvonne Bestel in Public Affairs on 6488 1900 or Lindy Brophy, editor UWAnews on 6488 2436 if you have any queries.

RESEARCH GRANTS & CONTRACTS

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH THROUGH ANU

A/Prof Michael Burton, Agricultural and Resource Economics: 'Economics and Market Analysis of the Live Reef Fish Food Trade in Asia-Pacific'—\$111,343 (2004-06)

AW HOWARD MEMORIAL TRUST INC

Dr Kioumars Ghamkhar, Centre for Legumes in Mediterranean Agriculture: 'Travel Grant to attend the 20th International Grassland Conference (Dublin, Ireland)'—\$3,500 (2005)

DEPARTMENT OF INDUSTRY AND RESOURCES

Dr Gary Kendrick, Dr Gretchen Coupland, Plant Biology: 'Assessment of Population Genetics of *Posidonia Australis* Along the South Western Australian Coastline'—\$8,106 (2005)

LEIGHTON KUMAGAI JOINT VENTURE

A/Prof Barry Lehane, Civil and Resource Engineering: 'New Metrorail City Project'—\$122,500 (2005-06)

NATIONAL OCEANS OFFICE, DEPARTMENT OF THE ENVIRONMENT AND HERITAGE

Dr Matthew Tonts, Mrs Veronica Huddleston, Dr Trevor Ward, Earth and Geographical Sciences: 'A Socio-Economic Analysis and Description of the Marine Industries of Australia's South-west Marine Region'—\$44,653 (2005)

NHMRC SUNDRY GRANTS

A/Prof Helen Milroy, Ms Jillian Milroy, Dr David Paul, Primary, Aboriginal and Rural Health Care, Indigenous Studies: seed funding for development of 'Roots of Resilience: Transformations of Identity and Community in Indigenous Mental Health'—\$15,000

OFFICE OF CRIME PREVENTION, DEPARTMENT OF THE PREMIER AND CABINET WESTERN AUSTRALIA

Mr Frank Morgan, Mr John Fernandez, Prof Paul Brantingham, Prof Pat Brantingham, Crime Research Centre, External: 'Uncovering Suburban Travel Patterns in Burglary: Practical Implications for Crime Prevention'—\$46,000 (2005)

WHITFIELD FELLOWSHIPS

Mr Leslie Podlog, Human Movement and Exercise Science: 'Whitfield Fellowship' (2005)

CLASSIFIED ADS

Classified advertising is free to all university staff. To place your advertisement, please email: staffads@uwa.edu.au

FOR SALE

BED MATTRESS: 1 x single bed mattress with inner springs, never used and still in plastic wrapping. Selling for \$150. Phone 9339 6892 After 6pm or tdaniele@admin.uwa.edu.au

FOR RENT

NORTH FREMANTLE: 3 bedroom large house in elevated position with views, close to beach and transport for UWA. Quiet location with garden. Available August to December 2005, suit visiting academic. Fully furnished. \$300 per week. Contact David on 6488 3840 or at: dinderma@biz.uwa.edu.au

EAST FREMANTLE: House available for short term rental July and August. Fully furnished, spacious two bedroom house with study, car port and large garden. Available for short term rent as from last week of June to last week of August. Five minutes drive to shops, Freo Railway station and beach. Ph: 94331257. Email: bennes06@tartarus.uwa.edu.au

COMO: 3 bedroom, 2 bathroom. Furnished. From 1 December 2005 to 28 February 2006. Contact: dkennedy@cyllene.uwa.edu.au

NOLLAMARA: Accommodation with 2 Cars: 4 bedroom, 2 bathroom fully furnished short term accommodation (up to 3 months) is available for a Visiting Academic from mid-October-2005. Rent \$220 per week or \$280 per week with 2 cars. Nollamara is 13 kms to UWA. Email: sreeram@ee.uwa.edu.au or phone Victor on extension 3069.

WANTED

ACCOMMODATION: International artists in residence in School of Anatomy and Human Biology requiring short-term (1 month - 6 months) affordable accommodation /housesitting in the Northbridge /Mt Lawley areas on an ongoing basis. Ring Symbiotica on Ext 7116 or email jane@symbiotica.uwa.edu.au

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DEADLINES FOR UWAnews

No UWAnews in mid-year break

Please note: early deadline for next issue
WEDNESDAY June 29 for July 25 publication

WEDNESDAY July 27 for August 8 publication

WEDNESDAY August 10 for August 22 publication

WEDNESDAY August 24 for September 5 publication

WEDNESDAY September 7 for September 19 publication

WEDNESDAY September 21 for October 3 publication

WEDNESDAY October 5 for October 17 publication

WEDNESDAY October 19 for October 31 publication

WEDNESDAY November 2 for November 14 publication

WEDNESDAY November 16 for November 28 publication

THE UNIVERSITY OF WESTERN AUSTRALIA

Course Readers Semester 2, 2005

Now is the time to organise your Course Reader/Lecture Notes to be printed for Semester 2, 2005.

To save you time and money we can also arrange the sale of Course Readers to students through the Co-op Bookshop.

Contact Ray Horn on 6488 8790 to discuss all your printing needs.

Email uniprintjobs@admin.uwa.edu.au
Website www.uniprint.uwa.edu.au

REDUNDANT EQUIPMENT

Bids should be accepted by Monday 11 July with schools to have first option

CONDITION refers to the general condition of item (1 = as new, 2 = good, 3 = serviceable, 4 = unserviceable) AGE refers to the nearest year.

Schools are reminded that all university equipment available for sale must be advertised in the UWAnews. Receipts should be PeopleSoft account coded 490 (computing with barcode), 491 (non-computing with barcode) or 493 (items with no barcode). If equipment has an existing barcode please contact extension 3618/2546 for details

ITEM	PRICE	AGE	COND.	SECTION	CONTACT
Toshiba Portege 7020CT 12' screen, 1 28MB RAM docking station, Windows 2000	\$200	6	2	UWA Business School	Mark Croonen, ext 1405
Fax, Panasonic UF 595, A4 Paper	Bid	5.5	2	Library	Bids@library.uwa.edu.au
Canon NP6016 Photocopier	\$200 ono	9	2	Economics and Commerce	Tracy Taylor, ext 3923
Foresight Imaging AccuStream 170, VGA capture card	\$4,000	1	1	Arts Multimedia Centre	Shaun Procter, ext 2891
1 x Glass Bead Blaster	Offers	?	2	Mechanical Workshop, Biomedical and Chemical School	Nigel Hamilton, ext 3196

The trouble with selling UWA

It's not uncommon — a Year 12 student with a predicted TER in the high 90s plans to study Arts at UWA. A parent exclaims: "What a waste — why on earth would you choose a BA when you could do Law or Medicine?" Comments like these make my temperature rise!

Convincing a 17-year old of the benefits of a generic degree like Arts or Science can make you sound like a dodgy salesperson. There is a knack to explaining how communication and critical thinking skills — as well as the ability to work independently and to question accepted wisdom — make university graduates attractive to employers. Teenagers may think they are savvy to the hype — but they are not immune to all the career-bashing that goes on in everyday life. It can be tricky to explain that it is not necessary to study a vocational degree such as Architecture or Engineering to have a successful career ... or that not all Law graduates go on to become members of the bar (blame *Law*



and Order), that not all forensic scientists work on fascinating murder investigations on a daily basis (thank *CSI*), or that not all archaeologists dig up early hominids in the Rift Valley.

Year 12s may think that they have their career all planned out - but how can that be when they have never been exposed to courses such as linguistics or nanotechnology? It is difficult for a teenager to comprehend the innate value of a university education — and at the same time realise that it's ultimately the person, not the degree, that will land them that great job in the end. It is important to understand that a university education is much more than a vocational investment.

The word generic scares most school students off — yet it should be a key selling point for degrees in Arts, Economics and Science. How many jobs could a graduate walk straight into without requiring on-the-job training? Law, medicine and architecture graduates certainly don't — a degree is only the tip of the iceberg of learning for most graduates. In response to the demand for degrees with a tangible outcome, universities are resorting to individually labelling degrees in an attempt to make degrees more appealing to prospective students. It's a smart marketing move, but is this actually giving prospective students a false sense of security?

University is not a job-training institution. About half of any group of Year 12 students aspire to a specific career. The rest of the group is usually confused and stressed about having no idea which six TISC preferences to lodge by the end of September. They are surrounded by covert and overt pressure to choose a career at an early age. They are encouraged to attend *career* expos; many schools employ a *career* adviser; they are provided with a copy of the *DEST Job Guide* in Year 10 — 'pick a job *then* read what degree will lead you there'. The focus needs to move off *career* and switch back to *education*. No wonder Year 12s think they have to decide on a career at age 17 — what kind of message is society sending out?

It's unfortunate that most secondary students don't see university as a journey — a developmental experience with inherent value. Instead, as you would expect in individuals of that age, they are keen to focus on the end point — as a teacher, a stockbroker or a marine biologist. It is fantastic that some students are confident about where their interests lie, but in reality most students feel inadequate and panic about not having that resolution. They need to hear more stories about successful graduates who haven't taken a literal view of their course at university. Layla Tucak, producer of ABC's *Stateline*, has a BA from UWA with a major in History rather than a journalism degree. *The West Australian* has employed a significant number of UWA Arts and Law graduates through their cadetship program prior to the introduction of the BA (Communication Studies).

Looking at the context, it's not surprising that secondary students take such a literal approach to choosing a course at university. It is then up to the university to be socially responsible. We can continue to offer generic degrees, keep first-year as generic as possible, promote combined programs, encourage students to explore new areas of study, foster the movement of students between courses and promote the value of the university 'experience' — not just the outcome.