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MESSAGE FROM THE VICE-CHANCELLOR

This is a great time for research at Victoria University. As this report shows, our research is expanding, maturing and making significant impacts across a range of sectors. From refugee relocation to alternative dispute resolution, research on optical fibres and probiotic organisms to the economic impact of tourism promotion, Victoria University’s research program is linking with real world problems and real world partners to develop new, innovative solutions.

While Victoria University is a relatively new university, a member of the New Generation Universities nationally, there is a renewed commitment to research that’s built on the impressive growth we’ve experienced over the years. This year, that commitment was reinforced by University Council, which resolved to invest an additional $1.5 million in research over the next five years. Council also resolved to build our increasing research effort on the principle of community engagement, which is the heart of our mission as a university. Increasingly this research will be undertaken in close collaboration with our industry, government and community partners, and will respond to real-life issues and problems, particularly relevant to the western region of Melbourne.

The prospects for engaged research at Victoria University are very good. We have the policy commitment, the resources and the infrastructure to forge ahead to a new level of performance and social impact. The higher education reforms initiated by former Education Minister Brendan Nelson are likely to transform the sector. Through our achievements, our mission and continuing investment in this area, we can clearly demonstrate that we are a research-focused university, with a unique contribution to make at the local, national and international levels.

The notion of the ‘engaged university’ underpins our strategic planning. At Victoria University, both our teaching and our research are conduits for our engagement with our region and our local communities. This is about more than just ‘public benefit’ or ‘community service’. It is about the production of engaged knowledge – knowledge that is generated through a two-way dialogue.
with our constituencies. Our work with the culturally diverse communities of Melbourne’s West — for example, with Horn of Africa communities — is an example of this dialogue, drawing on our capacities across training, research and community building. It is not ‘just teaching’, not ‘just research’ but something entirely different. It is engagement and the scholarship of engagement.

These issues also frame our response to another major Federal Government paper, the Research Quality Framework issues paper. Although we have some concerns about the lack of representation of the New Generation Universities on the Expert Advisory Group, we strongly support the Framework proposal to assess both the quality and the impact of research. This is an important opportunity for Victoria University to highlight the economic, cultural and social impacts of our work. And we are strongly supportive of the proposal that both these areas for assessment will draw much more broadly than just on the normal academic parameters of research income, publications and higher degree by research load and completions.

In terms of research structure, the University established four institutes in 2004 to give further support to the notion of engaged research, particularly multidisciplinary research. In recognition of the special role that the University has in relation to its region, each institute has been established to address major issues relevant to our region, while recognising that these same issues have currency at state, national and international levels.

These new institutes — the Institute for Community Engagement and Policy Alternatives, the Institute for Sustainability and Innovation, the Institute for Logistics and Supply Chain Management and the Institute for Health and Diversity — will provide industry and the community with integrated access to the whole range of University activity: research, consultancy, education and training. The institutes are significant points of engagement between the University and its various communities. The institutes are complementary to the six University centres which have been focusing for some time on strategic research areas within the University, such as tourism, strategic economic studies, telecommunications, corporate governance, fire risk and safety, and rehabilitation and exercise studies.

We have been successful in recording an increase in the amount of external research funding over the recent six-year period. In 2004, our external research income was some $7.1 million. This level of research income ranks us as number three within the New Generation Universities grouping. The major source of external research income continues to be derived from government, business and industry, consistent with the University’s strategic focus on undertaking research that has application to the problems of society and our stakeholders.

Applications for funding from the Australian Research Council under the various schemes were successful in 2004–05, with 15 new grants received in this period. Similarly, University income from the Co-operative Research Centres in which we participate, experienced a further increase. This funding now accounts for 13 per cent of the University’s external research income.

These are tremendous achievements not only in terms of University funding and future research but also as a reflection of the energy and the endorsement of our business, industry and community partners.

In addition there has been a significant increase in research income from international sources. Three recent examples of large industry grants, all of which involve our staff in major industry collaborations, are worth mentioning: projects with OneSteel Manufacturing; with the Merck Company Foundation; and with the Toyota Motor Company.

The University’s publication output has continued to increase, with the publication of 11 Books, 84 book chapters and 279 journal articles, and 241 conference proceedings, an overall increase of 0.49 per cent in 2004 over the previous year. This output accounts for approximately 1.5 per cent of the sector’s publications and places us third among the New Generation Universities.

Our postgraduate researchers are seeding the University’s strategic research areas with energy and new ideas which will ensure the quality of the next generation of researchers and the outcomes they are able to produce. We currently have 617 students enrolled in higher research degrees. This accounts for approximately 1.7 per cent of the sector’s higher degree by research load.

Some of our research highlights are described in the following pages. I commend to you Victoria University’s 2004–05 Research Report.

Professor Liz Harman
Vice-Chancellor and President
One study currently under way is investigating whether drinking green tea, which is rich in antioxidants, is able to protect organs such as liver and muscle from damage caused by a high fat diet.
Everyone has heard the old saying ‘you are what you eat’ but there may be more truth in what this implies than first thought. With an ever-increasing public awareness of the importance of good nutrition and the need to be mindful of what we should or should not be eating, our lives are influenced by food in many ways. An emerging area that is set to have a large impact on what we eat and why we eat it is the field of nutrigenomics.

Nutrigenomics describes the interaction between nutrients and the genes found in our DNA. We are all aware that a diet that over indulges in rich fatty foods can potentially lead to conditions such as heart disease, but what many of us aren’t aware of is that the fat we eat can also switch on and off a number of genes in organs like our liver. The same is also true for other compounds found in foods such as antioxidants.

Researchers in the School of Biomedical Science in collaboration with colleagues at Deakin University, RMIT University, La Trobe University and the Howard Florey Institute are currently investigating how nutrients such as fats, sugars, proteins and antioxidants found in foods alter the expression of genes and may influence our health or possibly be used to treat diseases such as obesity or slow the aging process.

One study currently under way is investigating whether drinking green tea, which is rich in antioxidants, is able to protect organs such as liver and muscle from damage caused by a high-fat diet. Along a similar line is another study where red wine, also rich in antioxidants, is being used to protect DNA from damage that would normally occur with aging. In both cases it is thought that the antioxidants contained in the green tea or red wine are controlling genes found in DNA. Other studies currently under way are looking at how fats or sugars switch on or off genes in the liver and may contribute to the development of obesity and one of its complications, fatty liver disease.

The common theme in all these projects is the fact that nutrients found in the foods we eat are interacting and altering our DNA. Gaining an understanding of which genes are changing will enable researchers to suggest how someone’s diet could be altered not just for a healthy body, but for healthy DNA.

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SMOKE ALARMS AND SLEEP: IS THE PITCH RIGHT?
This research was the first in the world to show that under certain conditions children and adults will sleep through the current smoke alarm signal.

We have all experienced the piercing shriek of our smoke alarm, annoyingly activated by burnt toast or the Sunday roast. Most people believe that this racket could not fail to wake them up in the event of an actual fire. However, research conducted at Victoria University over the last decade has shown that many sections of the population do sleep through a smoke alarm, even one sounding inside their bedroom. Significant ‘staying asleep’ risk factors include being a child, sleeping tablets, alcohol ingestion (even a few drinks), hearing impairment, being over age 60 (for high frequency signals), being a heavy sleeper, sleep deprivation and high levels of background noise (e.g. traffic or an air conditioner). Because this means that on any one night a significant section of the population is potentially at risk of sleeping through a smoke alarm, the research team has investigated whether a different type of signal may be more effective.

The current smoke alarm signal in Australia is a continuous beeping at a very high pitch, about 3000 Hz. The effectiveness of this signal has been compared with different voice alarms (male voice versus female voice, familiar voice versus stranger’s voice), a lower-pitched beeping, and naturalistic fire sounds (e.g. a crackling bonfire). A more effective signal is one that will awaken more people at a lower sound volume. Different groups of sleeping adults and children have been tested for this, including young children aged between six and ten years, sober young adults and young adults after drinking vodka. The results have been remarkably consistent across these different groups – the current high-pitched smoke alarm signal is less effective in awakening sleepers than a voice (300 – 2500 Hz) or beeps at a lower pitch (500 – 2500 Hz). The working hypothesis is that during sleep humans respond selectively to sounds within the same pitch range as the voice.

This research was the first in the world to show that under certain conditions children and adults will sleep through the current smoke alarm signal. It was also the first to suggest that the pitch of the alarm may be an important factor in awakening effectiveness. International groups that determine the standards for emergency signals are closely monitoring new findings. The research team has secured industry and ARC funding to determine more precisely the optimal pitch and pattern for a smoke alarm. In addition, the peak fire safety body of the US, the National Fire Protection Association, has awarded the team $98,000 to investigate the comparative effectiveness of a range of signals in awakening people aged over 65 years. In this older group hearing impairment at the higher pitches is usual.

Up to two-thirds of all the people who die in home fires were asleep at the time of the fire. Moreover, one-fifth of residential fire deaths have occurred in homes where smoke alarms are known to have operated. In some cases these deaths occurred because the smoke alarm failed to awaken the occupants in time. The current research suggests that more people will wake up to a new smoke alarm signal, with a new pitch, and possibly a new pattern.

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PRIVATE PROPERTY
AND ENVIRONMENTAL
RESPONSIBILITY

“Man was invested with power, authority, right,
dominion, trust and care, to ... preserve the species of
divers vegetables... to preserve the face of the Earth in
beauty, usefulness, and fruitfulness ...”

A call to landowners to exercise
environmental responsibility with respect to
their land frequently prompts a demand to
the government for compensation. Examples
include restriction of native vegetation
clearance. That landowners should be
compensated for such ‘governmental
intrusion’ assumes much about their legal
property rights – basically that they have
total legal power over what they own.

Unfortunately governmental funds for
these purposes are scarce. In the 17
years of operation of the Flora and Fauna
Guarantee Act 1988 (Vic) not one Interim
Conservation Order has been made to
protect a rare species on private land
because of the right to compensation.
The pertinent question is: Why should
landowners be entitled to governmental
funds for acting within the ecological
constraints of the land they have acquired?

My research supports interpretation of the
law in ways that will bring it in line with
the principles of ecologically sustainable
development. This challenges the mainstream
position of the Common Law that landowners
are in principle entitled to do exactly what
they wish with their property, which would be
completely unsustainable if every landowner
sought to exercise such a right. There is land
use planning and environmental protection
legislation but it is interpreted in light of basic
Common Law principle, resulting in a posture
that many would regard as pro-development
in the conventional sense. The law should
be revised to expect landowners to act
responsibly with respect to the ecological
constraints of land they acquire; in other
words, to exercise stewardship rather than
a dominion that is environmentally despotic.
Laws pointing landowners in that direction
are not intrusions into ‘natural rights’.

How can legal research contribute to
transformation of fundamental principles
of the Common Law? Two legal research
approaches may be pursued.

First, evaluate the objective strength
of the principle in light of its historical
development and the alternative paths that
might have been pursued. The Common
Law view that one has unlimited rights to use private property are the views of one 18th century jurist, William Blackstone. In my research I review them beside other interpretations available to Blackstone that would be preferred today. For example, he could have followed the 17th century English Lord Chancellor Matthew Hale:

“Man was invested with power, authority, right, dominion, trust and care, to ... preserve the species of divers Vegetables, ... to preserve the face of the Earth in beauty, usefulness, and fruitfulness ...”

Further, Blackstone developed his views of dominion without environmental issues in mind. There are no early court case precedents on how to deal with environmental issues that we face because the ecological issues of the 21st century are unprecedented in human history.

Second, we should recognise that our conception of property in land was transformed to one of responsible proprietorship by introduction of a model of land title registration stemming from the European Natural Law – the Torrens system, largely inspired by a German system, which comprehensively transformed land title in Australia. It is a small step from the concept of responsible proprietorship to embrace environmental responsibility as well, just as the European Natural Law tradition recognises today.

In summary, my research has shown that there are legal anchors for the recognition of a fundamental principle of environmental responsibility in dealings with what one owns. The question now is whether the courts and other legal institutions will agree, and be prepared to take that step in their actual decision making.

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INFORMATION TECHNOLOGY
TOOLS FOR ENHANCING ACCESS TO JUSTICE

RESEARCH TEAM
Professor John Zeleznikow, Dr Emilia Bellucci, Dr Jean Hall and Andrew Vincent, School of Information Systems and Centre for International Corporate Governance Research; Dr Andrew Stranieri at JUSTSYS; and Domenico Calabro of Victoria Legal Aid.
The development of internet-based legal advice software can create a more level playing field, but in doing so could also dramatically alter the nature of legal guidance.

Manufacturing, finance and the communications industry have in the last decade all come to rely upon artificial intelligence. But there’s one industry that continues to put up resistance: the legal profession. The idea of a machine providing advice about legal decisions was long considered by opponents to be dangerous and ethically untenable. That’s about to change, says John Zeleznikow, a professor of Information Systems at Victoria University. Research being conducted at the Centre for International Corporate Governance Research is helping develop computer software that will allow a greater number of Australians to access legal knowledge and receive important advice. Such software will improve an individual’s access to justice and massively reduce the costs of running legal services. It will also support consistency, transparency and efficiency in decision-making.

Zeleznikow and his colleagues have constructed a number of decision support systems that advise upon the outcomes of likely disputes. SplitUp advises on property distribution following divorce. It uses an expert knowledge base of 94 different variables, which are the factors identified by legal experts as most important to judges dealing with domestic property disputes. Because no two cases are ever the same, and because judges use different degrees of discretion, it is not enough simply to apply a set of rules to these variables, however. Hence the need for machine learning, a technique in which a decision making system is tuned using historical examples, and adjusting the model to ensure it produces reasonably accurate answers. The system is trained using a sample of previous cases to learn how these variables have been combined by judges in the past. All of this builds an accurate model of the decision-making process a judge might use, and allows it to be applied to new cases. A separate system of argumentation justifies the result in terms of legislation and past cases.

GetAid is being used in Australia by Victoria Legal Aid (VLA) to assess applicants for legal aid. This is a complicated process that normally consumes about 60 per cent of the authority’s operational budget, because it involves assessing both the client’s financial status and the likelihood that his or her case will succeed. GetAid also makes inferences, but instead of working out what the courts will award the client, its intelligence lies in its ability to predict whether the client has a winnable case. Both systems are incredibly accurate. Tests of GetAid, carried out by VLA, showed that when 500 past applications were fed into the system it gave the same result as the actual outcome 98 per cent of the time. The remaining 2 per cent were then reexamined and found to be borderline cases. All 14 of VLA’s offices now use GetAid. Similar systems have been built in refugee law, copyright law, evaluation of eyewitness evidence, sentencing in the Victorian magistrates court and Scottish family law.

A further system provides advice on the resolution of disputes. Family Winner asks the disputants to list the items in dispute and to attach importance values to indicate how significant it is that the disputants be awarded each of the items. The system uses this information to form trade-off rules. The trade-off rules are then used to allocate issues according to a ‘logrolling’ strategy. The development of internet-based legal advice software can create a more level playing field, but in doing so could also dramatically alter the nature of legal guidance.

The project is and has been supported by the Australian Research Council through Linkage and Linkage International grants, as well as industry partners Victoria Legal Aid, JUSTSYS and Phillips and Wilkins and researchers at La Trobe University, the University of Ballarat and Bar Ilan University (Israel).

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International tourism is a traded service and is important to countries as it contributes foreign exchange earnings, employment, and economic growth. In the face of a fluctuating global economy, international tourism has continued to grow during the last two decades and is considered to be the second largest industry in the world. According to estimates from the World Tourism Organisation international tourism accounts for 6 per cent of the global Gross Domestic Product and 5 per cent of global employment. Given the significant contribution of this industry and the highly competitive nature of the global tourism market, many countries invest a large amount of scarce resources into tourism marketing in order to increase their market shares. The Federal Government allocates a substantial amount of its budget to the Australian Tourist Commission (ATC) to accomplish the task of tourism promotion to Australia. The objective of the ATC is to create and increase the desire to travel to Australia compared to competing destinations. In this process the ATC is in partnership with the Australian travel industry, Federal Government and the states/territories. With limited resources, the ATC allocates resources to markets and market segments that offer the greatest potential yield (basically the level of expenditure by international visitors on Australian tourism products). A major share of this expenditure is devoted to four major origin markets, namely Japan, New Zealand, UK and the US.

The Federal Government funding commitments to the ATC’s marketing activities is continuous. For example, Government funding to the ATC in 1987 was $47.7 million (in 1997/98 dollars) and in 2003 it was $99.7 million (in 1997/98 dollars).

When public funds are spent, there is a demand for justification of the expenditure and for an assessment of the return from the ATC’s promotional activities. The Sustainable Tourism Co-operative Research Centre was funded to measure the impact of ATC promotional strategy in the major tourism market. The aim of this research was to quantify the effects of marketing expenditure by the Australian Tourist Commission. The latest econometric techniques such as cointegration analysis and dynamic modelling were used to estimate the elasticity of income, price, price of substitute, cost of travel and marketing expenditure for Australia’s four major tourism markets, Japan, New Zealand, UK and the US.

The findings of this project show that ATC marketing expenditure has a positive effect on international tourism demand and the magnitude of the effect varies from country to country. In promoting international visitor arrivals to Australia, the study found that not only ATC and non-ATC marketing but the ‘word of mouth effect’ and visitor satisfaction leading to repeat visits also play an important role. The performance of the ATC marketing strategy measured in dollar return per dollar invested in international tourism marketing is higher in the New Zealand market, followed by UK, Japan and USA markets. The estimated overall average dollar return per dollar invested in international tourism marketing is 8:1. The estimated high-income elasticity indicates that international tourism is a luxury item and it can be highly influenced by the tourist origin country’s economic growth cyclical pattern. This study concludes that ATC should revisit its current tourism marketing strategies in order to increase the impact of ATC marketing expenditure and to increase arrivals from the major tourism markets: Japan, New Zealand, UK and the US.

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In promoting international visitor arrivals to Australia, the study found that not only ATC and non-ATC marketing but the ‘word of mouth effect’ and visitor satisfaction leading to repeat visits also play an important role.
REACTIVE OXYGEN SPECIES, ANTIOXIDANTS AND MUSCLE FATIGUE
Research undertaken in the exercise physiology laboratory, School of Human Movement, Recreation and Performance and in the Centre for Ageing, Rehabilitation, Exercise and Sport (CARES) at VU, examined the role of reactive oxygen species (ROS) in muscle and in exercise performance. Production of ROS normally occurs in muscle during exercise, as a result of oxygen utilisation. However, excessive production of ROS is considered to be one important factor causing muscle fatigue.

An innovative study investigated this problem in healthy volunteers during exercise, by infusing a drug that scavenges, or ‘mops up’ ROS, called N-acetylcysteine (NAC). The research was conducted by Ivan Medved for his doctoral thesis, under the supervision of Associate Professor Michael McKenna, with expert collaboration from Austin Health anaesthetist Dr Malcolm Brown and research biochemist Dr Andrew Bjorksten from the Royal Melbourne Hospital, as well as other research students within the Muscle Ions and Exercise Group at VU. Initial aspects of the study required modelling the drug infusion to ensure that a safe concentration in the blood was achieved. Further studies were then undertaken to determine the effects of the drug NAC on exercise performance. These three preliminary studies have each been published in international journals.

The main study required healthy, well-trained athletes to cycle on a special ergometer for 45 minutes at 71 per cent of their peak work rate and then to follow this by riding at a higher work rate (92 per cent peak) until they were exhausted. NAC was infused continuously into a vein in their arm throughout exercise. Small muscle samples were taken from the subject’s thigh muscle at rest, after 45 minutes of exercise and at exhaustion. The first major finding was that the ROS scavenging drug NAC increased the time to exhaustion by 26 per cent. This strongly indicated that ROS production in muscle was contributing to fatigue, even in these well-trained athletes. The second major finding was that the muscle analyses demonstrated an important mechanism to account for this performance enhancement. Muscle has a local store of antioxidant compounds, the major one being glutathione. Glutathione was increased after NAC infusion, suggesting that the muscle could ‘mop up’ increased amounts of ROS and thereby delay muscle fatigue. This work has now been published in the Journal of Applied Physiology, the premier international journal in this field.

Comments from an expert peer reviewer of the paper indicate the impact of the work:

“This is a seminal study, the long-overdue demonstration that NAC improves human performance during whole body endurance exercise…This is a landmark paper, likely to be cited for years…..The experimental design is tightly focused and elegant…The discussion is articulate, scholarly and appropriate.”

One of the examiners of Ivan Medved now passed PhD thesis stated:

“These landmark findings establish that oxidative stress plays a causal role in physiological fatigue under specific conditions and largely resolve a quarter century of debate in this field.”

This pioneering human exercise physiology research at VU contributes to knowledge in oxidants, antioxidants, exercise performance, glutathione regulation and fatigue.

RESEARCH TEAM
Ivan Medved, PhD student; Associate Professor Michael McKenna, Thesis Supervisor, School of Human Movement, Recreation and Performance; Dr Malcolm Brown, Austin Health; and Dr Andrew Bjorksten, Royal Melbourne Hospital.

This pioneering human exercise physiology research at VU contributes to knowledge in oxidants, antioxidants, exercise performance, glutathione regulation and fatigue. This has led to excellent employment outcomes. Ivan is now employed as a principal consultant for Regulatory Concepts Pty Ltd in Sydney, compiling submissions for the approval of new medicines in Australia and New Zealand.

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Awareness is a feature of everyday, face-to-face interaction between two or more people and is a feature that we all know so well. We even take awareness for granted because it is so fundamental to interacting with others. Awareness of others during interaction assists in communication with them. Awareness of others is perceived in different ways such as body language, gesturing and tone of voice.

Software users may be located at different computers across the internet, possibly in different countries and time zones. In this situation, users lose the rich interaction available when they are face-to-face. Thus, group awareness has become a very important issue to researchers of multiple-user software over the last several years. Awareness is highly important for group activities supported by software; awareness allows communication between users, co-ordination of activities and collaboration on artefacts such as documents.

Dr Gitesh Raikundalia and Mr Hao Lan Zhang carried out research to discover new software tools for supporting group awareness during group authoring of documents. They ran experiments at the Swinburne Usability Laboratory where people worked on tasks such as creative writing and brainstorming. These participants used a multiple-user word processor (much like Microsoft Word) called REDUCE. However, REDUCE allows two or more people to work on a document at the same time. Interviews of these participants using questionnaires discovered new software tools (such as the one below) that the participants would desire during such interaction. The software tools provide information relevant to participants, allowing them to be aware of others and their activities whilst working on a document together.

This work has been published so far in four conference papers. The papers were presented at the 2004 Australian Conference on Computer–Human Interaction (where two papers were published), the Ninth Australasian Document Computing Symposium and the Sixth Australasian User Interface Conference.

This research was carried on from previous research in collaboration with Professor Yun Yang and Mr Minh Tran of Swinburne University of Technology. The present project was funded by the Victoria University Discovery Research Grant Scheme 2004.

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RESEARCH TEAM
Dr Gitesh K. Raikundalia; PhD student Hao Lan Zhang, School of Computer Science and Mathematics.

‘WHAT ARE YOU LOOKING AT?’
AWARENESS IN GROUP AUTHORING
Interviews of these participants using questionnaires discovered new software tools that the participants would desire during such interaction.
Australian scientists are required to travel all over the world to undertake their experiments at overseas facilities, often with their scientific material to be analysed precariously stowed in aircraft overhead lockers.
At a cost of $250 million, the Australian Synchrotron being built on the Monash University campus is by far the largest single investment in scientific infrastructure in Australia. A synchrotron is a stadium-sized facility that produces intense, highly-focused beams of light, which can be used to:
- probe the physical structure of materials down to the level of atoms and molecules;
- analyse the chemical composition of materials;
- produce detailed images for medical and other purposes; and
- create tiny three-dimensional structures out of silicon and polymers.

The Centre for Strategic Economic Studies was given the task of measuring its economic impact by the Victorian Department of Industry, Innovation and Regional Development.

A synchrotron is an important and iconic infrastructure investment for the knowledge economy. About 10 of the most research-intensive countries in the world have such a facility. Currently, Australian scientists are required to travel all over the world to undertake their experiments at overseas facilities, often with their scientific material to be analysed precariously stowed in aircraft overhead lockers.

Apart from the added convenience for the scientific community, the study concluded that the Australian Synchrotron would be likely to stimulate higher levels of R&D expenditure and innovation, and facilitate increased participation in new high-technology industries such as biotechnology, microelectronics and nanotechnology, as well as maintaining and developing ‘old economy’ industries.

The construction and operation of the Australian Synchrotron in Victoria was expected to have a significant and multifaceted economic impact on both national and state economies. The study quantified the likely impact of the construction of the synchrotron on the construction and related supply industries, and the impact of its ongoing operation through staff requirements and other inputs [eg. electricity]. However, the study identified the largest impact as being on the national and state innovation systems through increased R&D expenditure, encouraging companies and laboratories to cluster near the synchrotron facility, and facilitating the technological transformation of state and national economies.

The study examined overseas examples of the development of technology clusters formed around such major technology facilities as a synchrotron. With investment of time and energy to establish linkages and attract key institutions to join the cluster, such facilities have become the core of evolving clusters of high-technology R&D centres, organisations and firms through facility-related value-adding industrial outreach and technology transfer services, creating a circle of cluster development. By learning from this overseas experience, the Australian Synchrotron sited on the Monash University Campus can be successful in stimulating the development of a vigorous technology cluster.

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The aim of the research project was twofold: firstly, to restructure the record-level data from the International Visitor Survey (IVS) and the National Visitor Survey (NVS) so as to enable parametric analysis of the data sets; and secondly, to disaggregate the data from Statistical Local Area (SLA – a proxy of a local government area) into smaller Urban Centres (UC – the equivalent of a small town or residential area) to enable a better understanding of tourism in smaller areas – such as rural towns and hamlets.

The IVS and NVS are based on extensive interviews of international and domestic tourists respectively. They record information from the tourists such as the nature of their travel patterns, places visited, number of nights stayed at these places, types of transport and accommodation used and activities engaged in, as well as a variety of information about the individual traveller such as age, gender, family status and level of education. Both the IVS and NVS form the basis of the national tourism performance measures and are used extensively by all levels of government, NGOs and tourism businesses to track the overall state of the tourism industry. The data is made available to government, industry and the public by way of frequency tables and cross tabulations. Whilst these are enormously valuable, they do not allow researchers to conduct parametric statistical analysis – which is essential in order to identify and test the existence of behavioural patterns of tourists, be they international or domestic.

The SLA is the smallest geographical area used to record the places visited by tourists (both international and national). However, within many SLAs, particularly those outside the major metropolitan areas, there may be as many as six smaller townships and it is not appropriate to assume that visitation to the SLA is evenly distributed amongst its constituent townships. By using an external data set, namely, the ABS Census, the project team was able to develop an algorithm by which visitors to an SLA could be apportioned and distributed amongst the constituent UCs within the SLA.

So far, the project has produced a number of significant outcomes.

• Parks Victoria is now using the data to gain a better understanding of the visitation patterns of international and interstate visitors to their various parks and reserves.

• Tourism Research Australia and the Sustainable Tourism Co-operative Research Centre (STCRC) have formed a joint venture to explore ways to further extend the project with a view to developing commercial products.

The project was funded by a $35,000 grant from the STCRC.
LIFELINE MELBOURNE AND VICTORIA UNIVERSITY COLLABORATIVE RESEARCH

RESEARCHER
Associate Professor Bernadette Hood, School of Psychology.

Ongoing professional development in counselling practice, a sense of making a difference to the lives of the callers, and an appreciation of the opportunity to experience the world of the caller were all highly valued by telephone counsellors.

Lifeline Melbourne responds to approximately 40,000 crisis-line calls per year across the Melbourne metropolitan and Mornington Peninsula telephone sectors. Approximately 500 volunteer telephone counsellors (TCs) provide the telephone counselling service under the management of a small salaried staff.

In early 2004, Lifeline contacted Associate Professor Bernadette Hood to undertake an analysis of the experience of the TC staff to facilitate volunteer retention within the organisation. Dr Hood undertook the project with the support of the Wellness Promotion Unit, located in the School of Psychology.

The project aimed to explore: (i) the demographic profile of the individuals who seek to volunteer at Lifeline; (ii) the expectations of this cohort of working within the organisation; (iii) the experiences (satisfactions/dissatisfactions) within this role, and (iv) the drivers which facilitate retention within the TC role.

The project, which was completed over six months in 2004, utilised individual interviews, focus groups and postal surveys for the collection of data. Approximately 230 responses were incorporated in the analysis from both current and former TCs. Results identified a typical profile of volunteers – predominately young, female and highly educated – who were motivated to volunteer for professional, personal and altruistic reasons.

In alignment with the functional theory of volunteering, TCs achieved satisfaction and retention when their experiences were congruent with their motivations. Ongoing professional development in counselling practice, a sense of making a difference to the lives of the callers, and an appreciation of the opportunity to experience the world of the caller were all highly valued by TCs. As one project participant commented, “It was just a humbling experience overall, a great privilege to be part of.”

This initial project established a strong collaborative research relationship between Lifeline and Victoria University. Rebecca Bereny, a 2005 psychology student, is currently undertaking her honours thesis within the organisation, co-supervised by Dr Hood and Andrew Jago.

Lifeline and Victoria University were also successful recipients of a three-year $86,000 ARC Linkage grant in 2004. This ARC work was proposed by Dr Hood, Associate Professor Jenny Sharples and Dr Denise Charman with Heather Young, a former Victoria University honours psychology student who was the successful applicant for the associated PhD program. This ARC project involves an evaluation of the effectiveness of Lifeline from a public health perspective. It promises to provide three years of interesting theoretical, ethical and methodological challenges for the project team.

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The optical fibre now deployed on land and under the oceans has a total length that is greater than the distance from the earth to the moon.
It is now 20 years since the first transatlantic optical fibre was planned. This was an important initial step in establishing optical fibre technology as the backbone of the global telecommunications system that we all now take for granted every time we use the internet. Although optical fibres are very small (diameter similar to a human hair) they are capable of carrying vast amounts of information. The optical fibre now deployed on land and under the oceans has a total length that is greater than the distance from the earth to the moon. The technology, part of a field known as photonics, continues to develop rapidly, with many important benefits in other areas.

Researchers within the Optical Technology Research Laboratory (OTRL) have a longstanding interest in the development of optical fibre for applications involving measurement of physical parameters. These optical fibre sensors are of much interest because of their small size and flexibility, which enable them to be embedded into equipment and structures for health monitoring. Funding from an Australian Research Council (ARC) Large Grant for 2001–2003 enabled development of an optical sensor that measures both strain and temperature, simultaneously and accurately, using a specialised filter embedded within an optical fibre, known as a Bragg grating, collocated with fibre containing rare earth dopants. OTRL has its own facility for inscribing Bragg gratings into optical fibres. The use of Bragg grating sensors is very attractive since an axial strain or a temperature change (or a related quantity such as pressure) is apparent as a change in the wavelength of reflected light.

The research within OTRL, particularly relating to Bragg grating sensors, continues to benefit from ARC funding through the award of two Discovery Grants for 2004–6. One grant is concerned with the use of fibre Bragg grating sensors for locating localised regions of high strain. The other grant involves quantitative measurement of important optical parameters that will lead to advances in our understanding of the fabrication of various optical devices including Bragg gratings. Industry greatly benefits from improvements in the accuracy and reliability of physical measurements. All-fibre sensor systems offer the advantage of easy remote operation, with the controlling electronics possibly situated many kilometres from the measurement point. The current research is focused on the real-time monitoring of structures to provide early warning of possible failure.

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A number of health benefits associated with bioactive isoflavone aglycones include prevention of breast, prostate and colon cancers, cardiovascular disease, bone health problems and post-menopausal symptoms.

Fermented dairy foods have long been considered safe and nutritious. The health benefits elicited by lactic acid bacteria involved in the production of these foods were the primary reason for Metchnikoff to correlate consumption of yoghurt with longevity. The beneficiary role of yoghurt may be further enhanced by the supplementation of *Lactobacillus acidophilus*, *Lactobacillus casei* and *Bifidobacterium* species. *L. acidophilus*, *Bifidobacterium* spp. and *L. casei* are considered probiotics since they are believed to exert beneficial health effects in the host by modulating the intestinal microflora. A number of health benefits have been proposed including antimicrobial, antimutagenic, anticarcinogenic and antihypertensive properties, and reduction in serum cholesterol, alleviation of lactose intolerance, and reduction of allergic symptoms. In order to avail their desired health properties, probiotics should meet several basic requirements for the development of marketable probiotic products, including their survival and activity in the product, and stability during storage of the product.

Lactic acid bacteria including probiotic organisms are fastidious in nature, requiring numerous essential growth factors. Milk, although a rich growth medium, contains low concentration of free amino acids and peptides to efficiently support growth of lactic acid bacteria. In a response to this limitation, lactic acid bacteria have developed a complex system of proteinases and peptidases, which enables them to utilise casein as an additional source of amino acids and nitrogen. The structural components of the proteolytic systems of lactic acid bacteria can be divided into three groups on the basis of their function; namely, proteinases that breakdown caseins to peptides, peptidases that degrade peptides, and transport systems that translocate the breakdown products across the cytoplasmic membrane. The first step in casein degradation is mediated by proteases in the cell wall, which cleave casein to oligopeptides. Further degradation to smaller peptides and amino acids that can pass through the cell membrane and subsequently be incorporated as building blocks, is performed by peptidases.

Biologically active peptides are generated during milk fermentation by proteolytic enzymes produced by various lactic acid bacteria, such as *L. helveticus*, *L. lactis* subsp. cremoris and *L. delbrueckii* ssp. *bulgaricus*. Peptides derived from caseins and whey proteins including opioid, hypotensive peptides, casein phosphopeptides, lactorphins and albutensin have been shown to possess various bioactive properties. Once liberated from proteins, these peptides may influence different physiological functions.

Proteolytic activity of yoghurt culture, consisting of *L. delbrueckii* ssp. *bulgaricus* and *S. thermophilus*, and selected probiotic strains of *L. acidophilus*, *L. casei* and *B. lactis* during growth in skim milk has been assessed. A relationship between proteolytic activity to viability and formation of bioactive hypotensive peptides, expressed as ACE inhibitors, has also been studied. The organisms have been found to produce varying amounts of ACE inhibitory activity during milk fermentation.
In another related project, probiotic micro-organisms have been screened for endogenous-glucosidase activity enzymes that are responsible for breakdown of the isoflavone glucosides, predominantly found in soy milk. A standard scientific procedure for evaluation of the hydrolytic potential of probiotics in the transformation of isoflavones has been established. Based on this, the bioactive isoflavone aglycones, whose composition is about 8 per cent in unfermented soy milk, was increased to 76.9 per cent, using a L. acidophilus strain. Five of the other selected probiotics in the VU culture collection are able to improve bioactive aglycones in the range of 60 to 70 per cent. The increment in the concentration of isoflavone aglycones is important for the improvement of biological activity of soy milk. Isoflavone aglycones have structural similarity to the mammalian oestrogen, oestradiol-17. This similarity in structure enables them to mimic the function of oestradiol in the human body, hence the ability to accrue health benefits as the hormone replacers.

A number of health benefits associated with bioactive isoflavone aglycones include prevention of breast, prostate and colon cancers, cardiovascular disease, bone health problems and post-menopausal symptoms. The stability of isoflavone aglycones in fermented soy milk has been also studied at various storage temperatures and computational isoflavone degradation models at various storage temperatures are being established. These bioactive compounds have been isolated by Professor Nagendra Shah and his PhD students in the School of Molecular Sciences. These projects provide a unique approach to manufacturing yoghurt and cheese enriched with bioactive peptides, and soy yoghurt with bioactive isoflavones by probiotic microorganisms. The biologically active, estrogen-like isoflavone has been linked to reduced risk of most hormone-associated health disorders.

The research has been funded by the Australian Research Council Linkage grant in collaboration with DSM Food Specialties (Moorebank, NSW, Australia) and Sanitarium Health Foods Co, Cooranbong, NSW.

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ENVIRONMENTAL DETERMINANTS OF PHYSICAL ACTIVITY AMONG CULTURALLY DIVERSE OLDER WOMEN IN THE WESTERN SUBURBS

RESEARCH TEAM
Dr Susan Feldman, AURA; Professor Terence Seedsman, AURA; Professor Steve Bird, Western Health; Associate Professor Colette Browning, La Trobe University; and Professor Shane Thomas, La Trobe University.
It is also evident from past research that such health and social problems are more prevalent amongst older people in regions such as the western suburbs of Melbourne.

Dr Susan Feldman, Alma Unit for Research on Ageing (AURA) and Professor Terence Seedsman, (AURA) joined with a group of colleagues from La Trobe University and Sunshine Hospital in 2004 to undertake a preliminary study that set out to assess some of the barriers and facilitators to participation in physical activity in women over the age of 60. Participants were from culturally and linguistically diverse backgrounds living in the western suburbs of Melbourne. Women from Italian, Anglo-Celtic and Vietnamese communities shared their views with the researchers about the physical environment in which they live.

In the past, research concerned with the quality of life of older people has clearly identified the lack of participation in physical and general recreational activities as a major health and social problem. It is also evident from past research that such health and social problems are more prevalent amongst older people in regions such as the western suburbs of Melbourne. This study was built on the premise that failure to address these issues is liable to place additional burdens on local health and social services, as well as affecting the quality of life of those older people residing in the region.

In this study older women from diverse cultural backgrounds and over the age of 60 living in the western region were asked to identify physical activity participation, the walkability of the neighbourhood, neighbourhood aesthetics, health, transport, social and environmental issues. The project was funded by VicHealth.

Seventy-two community-dwelling women completed survey questionnaires and groups of women participated in focus group discussions. The findings of this study included the importance of access to public recreation facilities, the look and feel of local activity venues, access to bicycle or pedestrian trails in the neighbourhood, and opportunities for meeting people. General neighbourhood aesthetics according to the participants also enhanced leisure satisfaction, whereas ‘fear of crime’ was identified as an inhibitor to moving about their communities. These findings have been reported to identify priorities and inform local policy development in the region.

Having demonstrated the contribution of this study to generate valuable community-based information to inform future service planning, it is proposed to build on this preliminary study with funds to be provided in 2005 by City of Brimbank Primary Care Partnerships in conjunction with the City of Maribyrnong and Shire of Melton. The research team will collaborate with the Aged Care and Disability Services from these local regions to ask 350 women and men over the age of 60 questions about the physical environment and barriers to their involvement in physical activity. It is proposed that older people will be drawn from the Macedonian, Greek, Indian, Maltese and Serbian communities. Cultural and gender issues, as well as factors considered from a local perspective (street by street) using geographic mapping, will be analysed.

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RELOCATING TO A NEW LIFE

RESEARCH TEAM
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The New Arrivals Regional Relocation Evaluation project is an action research evaluation of two relocation programs developed by the Murray Mallee Training Company and the Warrnambool Local Government to relocate refugees and Temporary Protection Visas holders living in Melbourne to the communities of Swan Hill and Warrnambool respectively. The Swan Hill program was undertaken in conjunction with the Horn of Africa Communities Network, with VU TAFE delivering the training component for those relocating to Swan Hill, while the Warrnambool program recruited participants directly through migrant resource centres. By the end of 2004, 30 people had relocated to Swan Hill and 90 to Warrnambool.

These relocation programs reflect nationwide initiatives to relocate migrants to fill labour shortages in regional areas, a development supported by the Commonwealth and State Governments. The evaluation research, which is being carried out by ICEPA associates who are staff in the School of Education, and funded by the Victorian Health Promotion Foundation (VicHealth), has a particular emphasis on good practice and the impact of relocation on the mental health and wellbeing of the people participating in the relocation programs. The evaluation will be conducted over a two-year period to be completed in February 2006.

The aims of the evaluation are to:
- Contribute to the knowledge base on practices in regional migrant and refugee relocation that improve access to economic resources, facilitate social inclusion and address discrimination and violence, thereby promoting the mental health and wellbeing of migrants and refugees and regional communities.
- Support and engage refugee, migrant and regional communities in the planning and evaluation of pilot regional resettlement projects in Swan Hill and Warrnambool.

The conceptual framework for the evaluation is based around VicHealth’s Mental Health Promotion Framework 2005–2007 which is focused around three key social and economic determinants of mental health and wellbeing: social inclusion, freedom from discrimination and economic participation. The conceptual framework is also informed by a literature review about good practice in refugee relocation, such as the UNHCR handbook on refugee resettlement, reception and integration.

The achievements of both programs have been recognised through the conferral of various awards, such as the Business/Higher Education Round Table Award and the Diversity@work award for the Swan Hill program and the National Local Government Award for Community Services/Rural and Regional Community for Warrnambool.

The preliminary findings of the evaluation study give clear indications as to the types of community infrastructure required for successful relocation. The infrastructure needs include housing, expertise in English as a second language – both for schools and for workplaces, and the establishment of employment strategies and access to further education opportunities. Other important components identified by many, and supported in the program evaluation findings to date as part of a successful relocation experience, were feeling safe and establishing community links, both for themselves as individuals and for their children, in addition to establishing economic independence through work and further study opportunities.

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In recent years a specialist interest in Chinese business-related research has developed in the Faculty of Business and Law at Victoria University. This has had a particular focus on corporate governance and the legal regulation of corporations and securities markets. This research work is in part being undertaken within the framework provided by the Centre for International Corporate Governance Research (CICGR) and has involved basic research by staff from the Faculty, the conduct of conferences in China and Australia and the work of doctoral students within the university.

Many of these various China-related projects have been led by Professor Roman Tomasic, working in collaboration with colleagues from the Faculty of Business and Law. For example, in 2004 a multi-disciplinary DEST-funded linkage project on corporate governance in post-WTO entry China came to an end, producing about 30 papers that were either published in 2004 or were in press; ten papers from this DEST-funded project were published in October 2004 in a special China issue of the Australian Journal of Corporate Law that was edited by Professor Tomasic and Andrews; the remaining papers are to appear in a book that is to be published by Law Press in Beijing.

During 2004 work was also underway in the university on the final stages of an ARC Discovery Grant project on corporate governance in China’s top 100 stock exchange-listed companies. This project was led by Roman Tomasic, Neil Andrews and Ms Jane Fu. A total of 108 face-to-face interviews were completed by the researchers in nine Chinese cities. These were mainly with 63 company officers and directors from the top 100 listed companies. Interviews were also conducted with 27 independent directors and professional lawyers and accountants, and 18 interviews were conducted with regulatory officials from China’s stock exchanges and the China Securities Regulatory Commission.

One of the most interesting stories to come out of this research was the success that the researchers had in gaining access to senior Chinese corporate officers and regulatory officials. Their frankness in answering our questions was sometime quite surprising. This success was in part attributable to the high reputation of Victoria University in China, as well as to the skills of the Chinese-speaking research staff working as part of the project team. Professors Tomasic and Andrews were personally involved in the conduct of most of these interviews. The transcription of these ARC project interviews was largely completed in 2004, and this has allowed work to commence on preparing reports based on this research. The richness of the empirical data set that has been produced in this way is probably unique in the research literature on corporate governance in China.

The research has shown that the improvement in the level of corporate governance is an area of considerable contemporary interest in China, especially on the part of the People’s Republic of China National Government. In the corporate sector itself, the degree of commitment to improved corporate governance is mixed, with legal compliance often being low and commitment to corporate governance ideas (such as the protection of minority shareholders and the centrality of the board in policy making) varying greatly. We found that companies that...
had higher levels of government ownership had greater difficulty in putting into practice governance reforms that were often being discussed by them in general terms. The fact that many listed companies were still closely tied to their parent companies, and the dominant role of the Communist Party, also significantly affected the degree to which corporate governance reforms were able to be effectively put into practice in China.

In the interests of broadening the skills of doctoral students associated with CICGR, on three occasions in 2004 during the fieldwork for this ARC Discovery project, Chinese-speaking doctoral students from within the Faculty assisted with the conduct of interviews. Through their involvement in these interviews (as translators and interpreters) they were able to obtain practical experience in the conduct of empirical field work that would prove useful in their own doctoral studies.

Tomasic, Andrews and Fu propose to publish a book based on this research project and have prepared a number of conference papers based on their research data. These will be delivered at corporate governance conferences in 2005. The project has stimulated ideas for further projects related to corporate governance in China. As a result another ARC Discovery Grant application was prepared in late 2004 for a study of corporate governance in the Chinese private company sector. We have also been seeking to increase the number of Victoria University doctoral students and academic staff in the University working in the area of Chinese corporate governance, as case studies in Chinese corporate governance are of considerable interest to graduate students.

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EQUAL OPPORTUNITY IN THE VICTORIAN PUBLIC SECTOR: A MISNOMER?

Associate Professor Santina Bertone and Dr Jamie Daughney
When researchers Santina Bertone and Jamie Doughney (assisted by Mary Leahy) were commissioned by the Office of Public Employment, Victoria, to research the issues for immigrant employees in the Victorian public sector, they approached the project with an open mind. It was mid-2004 and Santina was in the throes of finalising her PhD thesis on immigrant work patterns in Australia. Her previous research had highlighted a range of disadvantages faced by immigrants in employment. She knew there would be issues.

“However, when I first received the survey data from a survey sample of nearly 20,000 employees, I was surprised. There were major differences between the employment experiences of different ethnic groups.”

Some of the standout findings from the research, which were reported to an expert forum of approximately 40 community and public sector leaders in December 2004, showed that:

- First generation immigrants of non-English speaking backgrounds (NESBs) were seriously under-represented in Victorian public sector jobs. At 9.4 per cent of employees, their numbers were just over half (55 per cent) of the Victorian workforce average of 17 per cent.
- Language diversity among Victorian public servants was generally much poorer than in the Victorian population, with two-thirds less language diversity being present.
- Employees born in Australia, the UK and USA were significantly over-represented in Victorian public sector jobs.
- Multivariate analysis showed that recruitment and promotion systems, on average, are biased against females and those from culturally diverse backgrounds.
- The initial disadvantage is compounded by significantly lower returns to education compared to other groups (NESB employees receive between 8 and 14 per cent lower pay than similarly qualified Australian-born employees).
- NESB people in the sector were more likely to report having had no promotions since entering the service, NESB women being most disadvantaged in this regard.
- Notwithstanding the above, NESB employees were more highly qualified on average than English-speaking background employees in the sector, but an NESB PhD holder in the sector earns 57 per cent less than an ESB person (Doucouliagos et al, 2004).

The report advised that the Victorian public sector is failing to adequately recognise and utilise the pool of qualifications and abilities held by NESB people. Moreover, the failure to attract and/or retain sufficient numbers of NESB people may have major implications in an increasingly tight labour market where skill shortages are apparent, and likely to continue with the ageing of the population. The lack of language diversity had adverse implications for the capacity of the sector to provide culturally-relevant services to Victorian residents in areas such as health, education and community services. Moreover, there were political considerations in the continuation of a case where significant minority groups had restricted opportunity to shape and influence government services and policy.

In early 2005, a new Public Sector Standards Commissioner was created and Mr. Greg Vines was appointed to the position. Santina Bertone and others associated with the research steering group – the Victorian Multicultural Commissioner and the Deputy Director of the Victorian Office of Multicultural Affairs – will be meeting to discuss follow-up action on the report and its recommendations. The Ethnic Communities Council has indicated a keen interest in seeing the recommendations implemented.

Santina concludes: “I think it is imperative that strategic actions are taken to address the issues raised in the survey analyses. Public sector employment covers a large area, more than 230,000 employees, including those in universities and TAFEs. In the UK, the Home Office has set a range of targets for ethnic minority recruitment in response to similar concerns observed there. I hope our research will be the start of a long reappraisal of how things are done in the VPS and beyond”.


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Much of the DNA sequence within a particular species or closely-related species is common. However, there are some differences. These differences have been exploited in a wide variety of areas in the field called DNA profiling: for identification of criminals, distinguishing between plant species and sub-species, and other forms of identification. Our research is making use of DNA variations in two main areas.

Our first target is the area of human forensic investigations. The DNA profiling that is currently used in forensic laboratories, the ‘bar code’ technology, can provide valuable evidence leading either to incriminate or exonerate the suspect of a crime. However, it can only be applied when there already are suspects to a crime. Identikits are often created by police artists using descriptions from eye witnesses, such as ethnic appearance, estimated age, hair colour, eye colour, clothing and whether they wear glasses. But what if there are no suspects or eye witnesses to the scene of a crime; what sort of person are police to look for? Can DNA be an eye witness and provide some of this information? Of course, one could not predict the clothing someone is wearing from their DNA! However, other characteristics such as age, hair and eye colour may be predictable. We have been studying genes that are linked to hair and eye colour to see if variations in the genes could be used to predict these features. We are also investigating whether changes over time in other types of DNA could be used to predict the age range of an individual. The age-prediction work has been supported by a VU Discovery grant. The eye colour prediction research is being carried out in collaboration with a US-based company, DNAPrint, and supported by an International Science Linkages grant. Volunteers are always required and are most welcome to contact us! (see details below).

Our second target is the determination of biodiversity; how many species of a a plant, such as an endangered plant, exist, which can greatly assist conservation efforts. We are using several molecular techniques to help sort out the distribution of spider orchid species in Victoria, many of which are on the endangered species list – some on the verge of extinction. This work is being carried out in collaboration with the Royal Botanic Gardens. Using DNA techniques such as RAPD-PCR and ISSR, regions of DNA have been amplified from numerous specimens, producing a ‘bar code.’ type of pattern. With the help of programs such as NTSYS and PopGene, similarities and differences in these patterns have been utilised to map out their relationships with each other, producing a dendrogram (a tree-like structure showing relatedness among the various species). The results from this work have generated a great deal of interest in people concerned about conserving our native species such as the author of the book and CD ROM, *Wild Orchids of Victoria*, Gary Backhouse, who has declared that this work will be a major contribution to taxonomic efforts in this area. The Australian Orchid Foundation and the Department of Environment and Heritage have both recognised the potential significance of this work and provided funding for it.

Funding support has been received from the VU Discovery Grant Scheme, the International Science Linkages Grant Scheme, the Australian Orchid Foundation and the Australian Biological Resources Study (ABRS) Grant Scheme. swati.baindur-hudson@vu.edu.au

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**CAN DNA ACT AS AN ‘EYEWITNESS’ FOR IDENTIFICATION?**

We are also investigating whether changes over time in other types of DNA could be used to predict the age range of an individual.
RESEARCH TEAM
Dr Swati Baindur-Hudson, School of Molecular Sciences; Dr Roland van Oorschot, Victoria Police Forensic Services Department; Wendy Probert, School of Biomedical Sciences; Neville Walsh, Royal Botanic Gardens; PhD students Kathryn Lauder, Chutima Kongjaroon, Michelle Vaughn, and Sudinna Hewakapuge; and Honours students: Laurens Lafebre, Helen Kapodistria, Ranjeeta Prasad, Kelly Watson, and Daya Eurell.

Dr Swati Baindur-Hudson, left
SPEEDING UP
WIRELESS NETWORKS –
WLAN GOES BROADBAND

Melvyn Pereira, left, and Dr Scott Leyonhjelm
Wireless speeds that rival 100 Mbps wired Ethernet are becoming a reality through research completed at the Centre for Telecommunications and Microelectronics, where researchers are actively working towards a new IEEE standard for the next generation of wireless local area networks (WLAN).

Today, WLAN is integrated into most laptop computers or wireless access points used in homes, offices and public areas, but the maximum wireless LAN speed of 30 Mbps falls far short of the standard 100 Mbps Ethernet connection used in offices today. “Improving connectivity speeds and Quality of Service (QoS) has now become essential to the future of wireless LANs,” says VU’s Dr Scott Leyonhjelm. Next generation wireless LAN systems with higher speed will enable broadband distribution of high definition TV, and Voice over IP-based applications.

The Victoria University research group, part of the Australian Telecommunications CRC’s Wireless Program, has proposed a revision of the IEEE 802.11 WLAN standard to increase the data rate from 30 Mbps to more than 100 Mbps, based on their research with Multiple Antenna (MIMO) systems. The proposal was prepared in collaboration with a Swedish startup company called Wavebreaker AB. This proposal was one of 36 presented at the September 2004, IEEE 802 standards meeting in Berlin. Industry interest was intense, with over 300 participants, mainly industry-based, participating in the week-long meeting. Since then, the Victoria University group is actively participating in a multiindustry group called TGn Sync (www.tgnsync.org/home) to rapidly introduce a unified proposal, expected to be ratified in 2006–2007. Participating in a new world wireless standard is a major achievement for an Australian university.

Multiple Input/Multiple Output (MIMO) systems, defined as having multiple antennas at the base station and the terminal, can be used to exploit indoor or dense urban environments where many versions of the same signal arrive at the receiver with different time delays, via different routes. Conventional single antenna radio systems, such as those used in your mobile handset, suffer performance degradation in these conditions, whereas MIMO systems can exploit the multipath characteristics of these environments to their advantage. In simple terms, if one antenna receives a poor signal then it is likely that the other antenna is receiving a better version of the signal. The benefits of multiple antenna techniques are:

- increased data throughput;
- increased link robustness resulting in extended coverage; and
- increased system capacity for a given spectrum allocation.

Multiple Antenna technologies are also being considered to increase data rates in third and fourth Generation Mobile Cellular Networks, and to extend range in Broadband Wireless Access, an alternative where wired broadband delivery, such as ADSL or Cable, is not available.

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RESEARCH TEAM
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During 2004 the Wellness Promotion Unit, School of Psychology, undertook a range of community engagement research projects with local, state and federal government and non-government organisations as well as through the private philanthropic sector. Undergraduate and postgraduate students have routinely been involved in community-based research projects. This has provided students with real-world experience, skill development, employment references and income.

One of the unit’s aims is to aid the community in designing and providing preventative interventions. As a community we spend most of our investment on direct service and little on preventative measures. One area of prevention is to invest in the early years of life when most brain development occurs.

One of the unit’s aims is to aid the community in designing and providing preventative interventions. As a community we spend most of our investment on direct service and little on preventative measures. One area of prevention is to invest in the early years of life when most brain development occurs.

With these aims in mind, 2004 has seen Anthoula Kapsalakis and Jenny Sharples working closely with the Bookstart for Maribyrnong Babies project on an evaluation of this initiative. This has involved engagement with various external partners, including Maribyrnong City Council, seven Maternal Child and Health Centres, local libraries and the Rotary Club.

BookStart is part of the Maribyrnong Best Start Demonstration Project, a prevention and early intervention project that aims to improve the health, development and learning of children aged up to eight years old. Best Start targets socially disadvantaged areas and focuses on recognised needs. Department of Education data reveals children attending school in the Maribyrnong area have lower levels of literacy than their counterparts across Victoria. The literacy component of Maribyrnong Best Start is comprised of three Best Start projects, one of which is BookStart for Maribyrnong Babies.

BookStart aims to engage parents of very young children in early literacy activities and to increase parents’ understanding of the importance of early experiences on children’s success in reading in later life. The evaluation to date has involved 331 parents completing an early literacy activities survey to investigate their perceptions of literacy and how much they engage in pre-literacy activities. A sub-group have also been interviewed. Pre-literacy activities include reading or telling stories to children, teaching children songs and nursery rhymes and exposing children to books from a very early age. The most common pre-literacy activity that parents engaged in was singing.

“I think singing is very important with their language development and it’s a nice way to spend time with the child, and it’s lots of fun and it just calms them down, and teaches them to have a good attention span.”
Parents with older children engaged in more pre-literacy activity than first-time parents. Those from culturally and linguistically different backgrounds had fewer books in the home and nominated an older age for introducing children to books and reading.

A relationship was also found between when a parent thinks a child should start looking at books and how much time the other children spend watching television. This is an interesting result as parents who allow their children to watch considerable periods of television may also be less likely to engage the child in early literacy activities. These differing perspectives are well illustrated by these contrasting comments from project participants:

“Books may be tedious as he is too young to benefit from a book. They are pointless at this age.”

“I think it is important to show them books. I think they would benefit a lot if I did start now, especially because I don’t work at the moment. It’s hard sometimes though because they don’t look like they’re responding or even listening. But at two months old, their attention span is low. I think showing them books is good because of the contrasting and bright colors, which will probably help them like books more. I think that the earlier they start reading, they will be more likely to enjoy it when they’re older, which will hopefully make them continue reading.”

It is anticipated that the study, by drawing the parents’ attention to the importance of books and reading, will provide encouragement that will enhance the child’s reading experiences in later years.

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FOOD: SMALL AND MEDIUM ENTERPRISES (SME) IN THE DIGITISED ECONOMY

They were “awed” by the technology and “frightened” that they would not be able to compete in an environment where the market was dominated by a few large buyers who dictated what and how they would purchase.
It is widely canvassed in studies on business strategy that a major competitive advantage of Small and Medium Enterprises (SMEs) over their larger counterparts is their ability to build superior relationships with customers, suppliers and other stakeholders. Many SMEs strive to become preferred suppliers by developing trusting and enduring relationships with key customers. A large number of past studies on the competitiveness of SMEs conclude that the commercial successes of many SMEs are not based on price competitiveness or other transaction cost efficiencies alone, but are very strongly linked to relational bonding with their suppliers, customers and other stakeholders. In short, positive exchanges in the past help create loyalty, trust and commitment between the SME and its customers, the SME and its suppliers and between the SME and other stakeholders. As a result, customers, suppliers and other stakeholders tend to have enduring and loyal partnerships with the SMEs.

The advent of the digitised economy appears to have completely altered the cosy relationship-based business environment in which SMEs operated. Findings in a number of overseas studies therefore conclude that SMEs have had to adopt different strategies to survive in the digitised business environment. The objective of this study was to investigate the problem in the context of SMEs in Victoria.

The aim of the study was the identification of the experiences of food SMEs in Victoria, in terms of how these businesses cope with the increasing adoption of IT-enabled business protocols in their sector. We proposed to determine whether digitisation has helped grow the business of food SMEs, whether it has made the business of food SMEs more efficient or whether digitisation had introduced an environment in which traditional relationships had collapsed and the SMEs had to compete in a playing field that has significantly reshaped their customer, supplier and other stakeholder relationships and strategies. We also explored the role that universities and governments can play to assist SMEs adjust and compete in the new IT-enabled business environment.

The field study for the project has just commenced and already the research provides valuable insights on the training and information needs of food SMEs, and how the public sector and training institutions can help SMEs cope with the demands of adopting e-business and successfully operating in a digitised business environment. In the still early phases of the field study, owner-managers of several food SMEs indicated that they did not really understand how they could use e-business to improve their relationship with customers, suppliers and other stakeholders. They were “awed” by the technology and “frightened” that they would not be able to compete in an environment where the market was dominated by a few large buyers who dictated what and how they would purchase.

They were also concerned that some buyers appeared quite ready to dispense with very long-term relationships with them and switch to new overseas suppliers. Several respondents reported that, were it not for their major customers “demanding” that they adopt IT-enabled order receiving, pricing, billing and payment receipt protocols, they would not have moved into e-business at all. Some interviewees reported that the changeover to IT-enabled business protocols have neither increased their business nor their profits.

However, some respondents adopted exactly the opposite tack and said that they see substantial longer-term benefits in switching to technology-enhanced business protocols to share information with customers and suppliers, to improve supply chain efficiency, to improve customer service levels, to increase customer satisfaction, to reduce switching behaviour of customers, to widen their market reach, and as a result of these actions, to improve their bottom line.

With larger businesses, there is ample evidence that digitisation has improved customer service levels, by providing new forms of service delivery, enhancing customer relationships through better information exchange, and facilitating seamless order and delivery procedures and protocols. It seems that effective transfer of technology, supported with training programs, will enable SMEs to adjust more smoothly and successfully to the new IT-enabled business environment.

This two year study is supported by the Rural Industries Research and Development Corporation with GS1 Australia Ltd as the major industry partner.

suku.bhaskaran@vu.edu.au
The mission of Centre of Ageing, Rehabilitation, Exercise and Sport (CARES) is to conduct multidisciplinary research that focuses on improving, maintaining and understanding health, function and performance of individuals and communities across the human lifespan in all its diversity. 2004–05 has been successful for CARES members with grants exceeding $350,000, publication of five books and over 20 book chapters and 42 refereed papers in professional journals. Research projects have been successful in diverse areas such as psychological and physiological wellbeing of jockeys, enhancing physical activity levels in older women, weight training and older participants, dietary intervention and wellbeing and osteoporosis education in Vietnamese communities.

CARES associates continue to work with ageing populations, with studies examining themes such as ageing well, physical activity in culturally and linguistically diverse communities, through to studies of nationality, involvement and social capital.

The Centre for Environmental Safety and Risk Engineering (CESARE), which was established as the inaugural University centre in July 1991, continues to conduct research projects in fire safety engineering, largely funded directly by industry and government bodies and through grants from the ARC.

In 2004–05, the link between CESARE and the School of Psychology at Victoria University was strengthened considerably. This resulted in significant new insights (and data) into the response of sleeping people to fire cues and alarms of various types. Professor Ian Thomas (CESARE), Associate Professor Dorothy Bruck and Dr. Wendy Saunders (School of Psychology) were awarded the Vice-Chancellor’s Medal for Excellence in Research as the best research team in 2004–05. Subsequently six papers were presented to the Third International Symposium on Human Behaviour in Fire in Belfast in September 2004. Of particular interest were the findings that signal pitch may be a most important factor in residential alarm signal design and that drinking alcohol, even in moderation, will adversely affect a person’s ability to awaken to their smoke alarm. Public awareness campaigns have ensured that people are well aware of the role that alcohol intoxication plays in increasing the risk of accident or injury while driving, and have been advised on safe levels of drinking and appropriate behaviours. But you may not awaken to a smoke alarm at home, even if you have only had a couple of drinks!

With the support of a number of its more than 65 research associates across a range of disciplines, the Centre for Hospitality and Tourism Research coordinates a number of projects. In 2004–05, the Centre undertook 20 major research projects covering a wide range of topics within the hospitality and tourism field including events, tourism finance and economics, food and wine, destination management and tourism enterprises.

One of the Centre’s key studies was of the Lower Yarra River and the newly developed Docklands. This study resulted in a tourism plan for the newly emerging Melbourne’s Waterfront. The need for this plan was driven and funded by key tourism organisations that believed this area is strongly representative of many of Melbourne’s and Victoria’s key product strengths. The focus of the plan is on tourism and visitation and provides strategic direction for the development and marketing of Melbourne’s Waterfront leading up to and immediately beyond the Commonwealth Games to be held in Melbourne in 2006.

In 2004–05 the Centre harnessed expertise with other centres, institutes and schools, and research training was also a priority with a number of seminars conducted for the benefit of research students and staff throughout the University.

Corporate governance: an antidote to corporate deception
The aim of the Centre for International Corporate Governance Research is to raise the standards of knowledge about
governance in Australia. With over 80 research associates in law, management, accounting, economics and IT we are well placed to reach this goal. Knowledge of governance is promoted through our research, seminar programs and conferences. In particular, ARC grants by Professor Roman Tomasic and his team supported research into the changing governance environment in China, while Professor Anona Armstrong and Professor Ronald Francis explored new dimensions in public policy and community engagement in Australia. Examples of other studies supported by external partners were implementation of compliance and risk management and the ethical behaviour of our business and government leaders.

Dissemination of knowledge has occurred through our training programs, monthly colloquia, a major conference about governance in the public sector – Beyond Fragmented Governance, and our publications. This year we produced six books, 23 book chapters, 13 refereed articles and two special editions of journals.

Research by our four doctoral students who graduated this year has produced new models of risk management, motivation on the web and governance in developing countries.

CENTRE FOR TELECOMMUNICATIONS AND MICROELECTRONICS (CTME)
DIRECTOR: PROFESSOR MICHAEL FAULKNER
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WEB: www.ctme.vu.edu.au

Boosting Wireless Information Capacity
The Centre for Telecommunications and Microelectronics (CTME) was established at Victoria University in late 2001. The Centre’s mission is to provide excellence in research and development in telecommunication and micro/nano-electronics, particularly as a partner with government, commerce, industry, professional organisations and the community.

Major research activity in 2004–05
- A test bed for high capacity wireless has been developed. It uses multiple antenna techniques to give up to a fourfold increase in data rate. The research work is contributing to the IEEE 802.11n standardisation effort for the next generation of Wireless Local Area Networks.
- A new research area in sensor networks has commenced. Activities include microelectronic sensor design and low power consumption wireless network design. This research work entitled RUNES (Reconfigurable Ubiquitous Networked Embedded Systems) is affiliated with the European Union’s 6th Framework Program for Research and Technological Development. Twenty-two European academic and industrial organisations are participating in this project as research partners.

A number of conferences and industry seminars in the area of microelectronics were held throughout the year which included:
- Cadence Rapid Analog Design workshop;
- Synopsys Seminar;
- Clarinox Seminar on Bluetooth Technologies; and

CENTRE FOR STRATEGIC ECONOMIC STUDIES
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The seek employment index
The Centre for Strategic Economic Studies has commenced a joint research venture with SEEK Limited to develop the new SEEK Employment Index. The Index was launched in July 2005 in a high profile event and with the participation of Vice-Chancellor, Professor Liz Harman. Professor Peter Sheehan and Dr George Messinis at CSES have developed three new employment indicators: new job ads posted, job applications, and applications per ad. Worldwide, this the first time the internet is used to simultaneously measure both new job vacancies and labour supply in a timely fashion.

These indicators provide a more complete picture of the state of the labour market in Australia than ever before at both the national and state level. In stage two of the project, the CSES-SEEK team will extend the SEEK EI to shed light on employment trends in industries and occupations. The research will provide new insights on job skills and structural change in Australia.

INSTITUTE FOR COMMUNITY ENGAGEMENT AND POLICY ALTERNATIVES
DIRECTOR: ASSOCIATE PROFESSOR DANNY BEN-MOSHE
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What is ICEPA?
The Institute for Community Engagement and Policy Alternatives (ICEPA) draws on a cross-section of University staff and students to undertake a wide range of qualitative and quantitative research to build and share knowledge about community trends, challenges and policy options.
Our Focus
ICEPA's activities focus on four key hubs:
• Community Strengthening and Wellbeing;
• Social and Cultural Diversity;
• Learning, Creativity and Social Action; and
• Globalisation and Policy Alternatives.

Key ICEPA projects and activities include:
• The Community Building Resource Service(CBRS) – an initiative funded by the Department for Victorian Communities designed to provide practical support to community - strengthening activities in Victoria;
• An action research evaluation of refugee relocation to regional areas – funded by VicHealth;
• A study that examines community diversity and economic development in regional Australia – funded by the Department of Transport and Regional Services; and
• The Learning and Innovation West network of western regional learning and education providers.

INSTITUTE FOR HEALTH AND DIVERSITY
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Victoria University’s Institute for Health and Diversity, a University-wide initiative, brings together our research and learning expertise in the areas of health and diversity.

We have a clear vision: a world enriched by diversity, where everyone reaches his or her full health potential. We also have some clear goals, working towards the development of national benchmarks for cultural competence for medical and health science graduates in Australia, because if Australia is to provide appropriate health care, it is essential that cultural competency be embedded in all facets of health research and delivery.

Everyone across the University sector requires cultural competency - students, teachers, administrators and researchers.

To achieve this, we need to raise the profile of cultural competency, particularly in the areas of health and human development, and bring it to the forefront of international agendas, by working with grassroots communities, service providers, government, and international organisations.

The Institute for Health and Diversity has developed local, national, regional and international partnerships. A collaborative approach will ensure that the benefits of culturally competent health care are local and also global. The Institute is working to bridge cultural competence between resource-rich and resource-poor countries – from which so many of our migrants come – and to link up with the activities being taken forward to reduce health inequalities globally.

With the University located in Melbourne’s western suburbs, the most culturally and linguistically diverse group in Australia, we have a wealth of local knowledge on our doorstep. We use this ‘intangible cultural heritage’ to help build culturally competent health program and revitalise culture in a changing world. We seek real life solutions.

INSTITUTE FOR LOGISTICS AND SUPPLY CHAIN MANAGEMENT
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The Institute commenced work in January 2005, when the Director, Professor Pieter Nagel joined the University. The Institute aims to develop a Knowledge Centre for Logistics and Supply Chain Management with a particular focus on industry engagement, pursuing research activities that will have relative immediate value to industry.

Regarding the research component of the institute’s activities, a program has been initiated which aims at developing integrated mathematical models for the measurement of performance throughout the supply chain, in order to facilitate improvement in its management. The ongoing development of the supply chain in industry, the associated development of new concepts, and the continuous striving towards efficient supply chains, competitive advantage and globalisation in the logistics industry put a particular focus on measurement of performance throughout the supply chain.

Existing research has developed various performance models and associated metrics which form the base of modern supply chain management. The research challenge however, exists in the development of mathematical relationships which will improve the current singular approaches to performance measurement and improvement of the supply chain. The research is focused on assessing current performance metrics, and particularly on developing statistical inferences as to the commercial and business value of the various performance measurement models. The outcomes from this research will be applied to particular organisational benchmarking, thereby allowing the Institute to transfer this knowledge into an immediate contribution towards building supply chain excellence in industry.
Research activity in the four main performance measures used across the university sector – publication of research findings, external research income, research student load and research student completions – is recorded in the tables to the left. Victoria University’s overall performance has shown a marked increase in the last five years.

Research outcomes, as indicated by the publication of research findings, have grown substantially in this period in each of the categories of books, chapters, journal articles and conference papers, and the total DEST points for publications shows a very pleasing increase since 2001.

The University has been successful in recording an increase in the amount of external funding for research over the six-year period. Total external research funding has stabilised since 2003.

Research student performance, as indicated by effective full-time student load, has also increased, most notably in the area of Doctorates, while there has been a decline in the category of Masters by Research.

Research student completions, for both Masters and Doctorates, have shown an increase in 2004 over the 1999 figures.
DORASAMMY RAO — School of Hospitality, Tourism and Marketing
Dorasammy’s PhD thesis investigated entrepreneurial trends and strategies of current and prospective small business managers from Fijian ethnic backgrounds. These traits were then used to formulate strategies for encouraging entrepreneurship in tourism. The Fijian Government is interested in using this research to develop entrepreneurship. A chapter of the thesis will appear in the Journal of Fijian Studies, and negotiations are underway to convert this thesis into a commercial book.

ENZA GANDOLFO — School of Communication Culture and Languages
Enza’s PhD project was presented as a novel and exegesis and examined fictional representations of women who do not have children. The work offers a rich sympathetic resonance lacking in more standard works on this topic. The exegesis provides a dialogue between the author as creative artist and literary critic, highlighting the tensions of writing in two different modes. Examiners applauded both works for breaking new ground in content and presentation.

FRANK BRUNO — School of Molecular Sciences
This PhD research project investigated the effects of intestinal bacteria and a commercial probiotic in suppressing a form of bacterial resistance to antibiotic treatment. Certain natural bacteria common in children combined with the probiotic reduced staphylococcal resistance to conventional drug treatment. These highly significant findings have widespread applications in hospitals world-wide in preventing staphylococcal infections, and have already been published in several international journals.

SANJOY BOSE — Victoria Graduate School of Business
Sanjoy’s research has succeeded in developing strong, applied models for estimating the value of intellectual capital in corporate environments. Sanjoy has produced five refereed journal papers and 14 refereed conference papers during study for his PhD.

DECLAN MCCROHAN — School of Applied Economics
Declan’s PhD work argues that the flow of Thai overseas students to Australia has positively affected trading relations between the two countries. Examiners commented that this work has significant practical implications for trade relations. This work was incorporated into Austrade strategies during 2004/5 when Declan was employed by the company before taking up a full-time position as a teacher researcher within the University sector.

IAN WARREN — School of Human Movement, Recreation and Performance
Ian examined 200 years of legal, ethical and literary history on the sport of boxing. In his PhD he demonstrated the ongoing clashes between sport, law and power and the effect of this on contemporary sporting life. Throughout, Ian taught law at TAFE and University levels, published a book on regulating sports venues, became research editor with the Australian Society for Sports History, and presented at three national conferences.

ROONGFA KITIYANUSAN — School of Education
This PhD study investigated reflective practice, questioning and systematic inquiry in teacher education in Thailand, and explored practical ways that teaching might reflect a changing global world. This research challenges existing teacher education models by emphasising inquiry and student - centred learning. The outcomes of this research have already changed practice in Thai teacher education.

ANNE DAVIES — School of Education
In her PhD thesis, Anne has generated a new theory of professional development for teachers. It identifies the spaces and places of learning and weaves narrative case studies into a model of development that highlights professional, political and social processes. Examiners commented that “this excellent thesis makes a significant contribution to the field of education and our understanding of professional development”.

MELAINIE CAMERON — School of Human Movement, Recreation and Performance
Melanie’s PhD thesis examined how alternative manual therapies and water exercise are helpful in managing chronic rheumatoid and osteo-arthritis. Rheumatologists and health professionals in Europe and Australia have applauded Melanie’s work for helping improve the quality of care and the lives of chronic arthritis sufferers.
YOUNG EUN NOH – School of Human Movement, Recreation and Performance

In her PhD research, Young Eun explored the stressors and coping strategies affecting Korean ballet dancers, and developed several interventions to help reduce the frequency and length of injury. Young Eun has published her findings in three academic works, and two more articles have been submitted, offering advice to elite ballet dancers on the value of strong coping skills for injury reduction.

TONY AITKENHEAD – Victoria Graduate School of Business

Tony’s work has developed an effective electronic commerce process, allowing non-government organisations to improve planning and resource management for efficient commercial dealings with government. Arising from his PhD research, Tony has published a book chapter on ‘Web Portals in Government Service’, he has also been invited to deliver the keynote address at a forthcoming Web conference, and to contribute to an encyclopaedia of portal technologies and applications.

JEN COUCH – School of Social Sciences

Jen has investigated the culture of the anti-globalisation “global justice movement”. The PhD thesis was commended for its originality in mapping such a diffuse movement and as a “welcome addition to action-oriented participative research”. Jen has been contacted by her examiners in the UK regarding the possibility of postdoctoral fellowships and future publications. The thesis has led to journal articles in three prestigious, internationally reviewed publications.

HELEN O’SHEA – School of Social Sciences

Helen’s PhD thesis investigated the global consumption and performance of Irish traditional music, and challenged the notion that this music expresses an essential Irish identity. Examiners have unanimously described this thesis as one of the best they had ever read, and as “exemplary”, “outstanding” and “meticulous in every detail”. Helen has published in two international journals and has two published book chapters. She is joint winner of the University’s Vice-Chancellor’s Award for Excellence as a Research Student.

RUTH-ANGELA BLISS – School of Psychology

This PhD research found that a positive domestic environment and increased exposure to natural daylight helped reduce symptoms among women undergoing menopause. One examiner applauded this research for linking psychological and hormonal factors, and acknowledged the significance of this integrated model in improving the understanding of female menopause. The work is being published in several international journal articles.

RENO VITTORINO – School of Psychology

This research is the first psycho-social study of Latin American Australians. In his PhD, Renzo discovered that firm commitments to traditional cultural values helped young people successfully explore life beyond the family and develop self-identity. Examiners commended this work for its originality, its cogent design, clear thinking and significant conclusions.

ALLAN MANNING – Victoria Graduate School of Business

This research developed The Crisis Management Model for Small and Medium Enterprises. The aim is to guide strategies for small and medium businesses facing a major crisis such as a fire, flood or related disasters. Allan’s book, based on his PhD research, is now published and receiving warm reviews from the insurance industry.

IAN MICHAEL – Victoria Graduate School of Business

This is one of the first Australian doctoral theses to study online consumer behaviour. It examined psychological ‘flow’ and consumer decision making on whether or not to shop and buy online. This study identified key elements of good web design, and the findings on consumer behaviour have significant practical implications for organisations relying on internet product marketing.

LEONIE LOCKSTONE – School of Hospitality, Tourism and Marketing

This research has developed a flexible employment framework for paid tourism staff and volunteers. Statistical tests revealed that greater flexibility increased job satisfaction and reduced the likelihood workers would leave their employment. This PhD thesis contributes significantly to volunteer research, and was commended for its literate and reflective approach. Leonie has presented three conference papers and published one refereed journal article. She has also made several presentations to industry partners.

SALLY WELLER – Centre for Strategic Economic Studies

Sally’s PhD research shows how control over the creation and use of fashion ideas determines geographic and profit distribution of the garment industry. One examiner commented that this work makes significant contributions to labour policy, economic development and trade, while another said this was an exceptionally thoughtful study challenging scholars to rethink their approach to the clothing industry. The thesis has resulted in several articles in international, peer-reviewed journals.

ANDREW WILLIAMS – School of Biomedical Sciences

This important practical work demonstrates how resistance exercise improves both strength and endurance performance in chronic heart failure patents. Examiners of the PhD commented on the importance of this work for improving quality of life and longevity, as well as reducing the need for later medical intervention. The work has been presented to, and received high acclaim from, a range of medical and professional audiences.

NICOLETA DRAGOMIR – School of Electrical Engineering

A precise knowledge of the properties of complex optical fibres is essential to continuing development and innovation in the communications industry. This PhD thesis has made a significant contribution to the non-destructive determination of optical fibre properties. Important applications of this work are now developing in European and Australian optic sensing fields.

TUAN NGUYEN – School of Communication, Culture and Languages

Tuan traces the history and effects of socialist realism in Vietnamese literature and showed how ideals harden into ideology under the pressures of a war culture. All examiners of the PhD commented on the outstanding quality of the literature review. Over 100 documents, many of them ancient, and in several different languages, were scrutinised. One examiner said this was one of the best theses he had ever examined and that it should be published commercially so as to be widely available. This was a rare case where all examiners recommended that no changes be made.
ACKNOWLEDGEMENT OF OUR EXTERNAL PARTNERS

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Good Shepherd Youth and Family Service Inc.
HAC Technologies
Horizon Science
Horticulture Australia

Sydney Fish Market
The Australian Wine Research Institute
The Epworth Centre
The Foundation For Young Australians
The Laminex Group
The Victorian Institute of Teaching
The World Bank
Tontine Fibres
Tourism Victoria
Toyota Motor Company (Australia)
VANSC Group Pty Ltd
VicHealth
VicRoads
Victorian Multicultural Commission
Victorian Qualifications Authority
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Visions Systems
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Western Region Health Centre
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